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Aims & Scope

The aim of the Korean Journal of Transplantation (Journal Abbreviation, Korean J Transplant; Acronym, KJT) is to publish articles of up-to-date and high-quality in organ and tissue transplantation and the related clinical and basic sciences that can contribute to saving lives and curing diseases in patients needing transplantation. The journal pursues its advancement through original/special articles, reviews, case reports, study protocols, editorials, and correspondences. The journal is concerned not only with clinicians and scientists in transplantation but also with those in other fields who are interested in transplantation.

The scope covers transplantation internationally as a separate discipline. This includes but does not limited to organ and tissue donation and preservation; tissue injury, repair, inflammation, and aging; immune recognition, regulation, effector mechanisms, and opportunities for induction of tolerance; histocompatibility; drugs and pharmacology relevant to transplantation; graft survival and prevention of graft dysfunction and failure; clinical trials and population analyses; transplant complications; xenotransplantation; and ethical and societal issues. Also included are the relevant sciences of medicine, surgery, pediatrics, cell biology, and infectious diseases. The journal includes thoracic transplantation (heart, lung), abdominal transplantation (kidney, liver, pancreas, islets), transplantation of tissues, and related topics. The KJT serves as a platform for debate and reassessment, a trigger of innovation, and a major pedestal for promoting understanding, improving outcomes, and advancing knowledge and technique in this dynamic area. Published quarterly, the KJT furnishes an indispensable resource for researchers and clinicians around the world.

About the Journal

The Korean Journal of Transplantation is the official journal of the Korean Society for Transplantation (http://www.mykst.org/). It was first launched in December 1987, and is published quarterly (on the last day of March, June, September, and December). In March 2019, the name of the official publication was changed from Journal of the Korean Society for Transplantation to Korean Journal of Transplantation (Korean J Transplant, KJT) and articles were published exclusively in English. Total or a part of the articles in this journal are abstracted in KCI (Korea Citation Index), KoreaMed, DOAJ, and CrossRef. Full-text articles are freely available from: http://www.ekjt.org/. There is no page charge or article processing charge on the author's side.

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This paper meets the requirements of KS X ISO 9706, ISO 9706-1994 and ANSI/NISO Z.39.48-1992 (Permanence of Paper).

Editorial Board

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ASIAN TRANSPLANTATION WEEK 2021

Day 1. October 7 (Thu)

08:30-10:00	**PG Course 1 (Education Committee)** Application of information technology to the field of solid organ transplantation	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Hee Chul Yu** (Korea), **Sang Il Kim** (Korea)	
08:30-09:15	Where are we now and where are we going in digital health care in solid organ transplant? **Kwang Joon Kim** (Korea)	
09:15-10:00	How to deal with big data in the solid organ transplant? **Jae Hyun Kim** (Korea)	
10:00-10:20	Coffee Break	
10:20-11:50	**PG Course 2 (Kidney)** Update in immunosuppression for kidney transplantation	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Yeong Hoon Kim** (Korea), **Sangho Lee** (Korea)	
10:20-10:50	Prevention and treatment of ABMR **Yoshihiko Watarai** (Japan)	
10:50-11:20	New desensitization agents for kidney transplantation **Stanley Jordan** (United States)	
11:20-11:50	Monitoring and management for recurrent glomerulonephritis **Hajeong Lee** (Korea)	
10:20-11:50	**PG Course 3 (Liver)** To go or not to go; Various limits and the outcomes in liver transplantation	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Jae-Won Joh** (Korea)	
10:20-10:38	Age limit of donor and recipient in liver transplantation **Dong-Sik Kim** (Korea)	
10:38-10:56	Anatomical limits in liver transplantation **Kenneth Chok** (Hong Kong)	
10:56-11:14	Donor and recipient selection and risk prediction in DCD **Paolo Muiesan** (United Kingdom)	

Day 1. October 7 (Thu)

11:14-11:32	Acute on chronic liver failure : when to transplant, when not to transplant **Gi-Won Song** (Korea)	
11:32-11:50	Liver transplantation for hepatocellular carcinoma with macrovascular invasion **Hae Won Lee** (Korea)	
11:50-12:00	Break	
12:00-13:00	**Lunch**	Grand Ballroom B, 3F (Room 1)
13:00-13:10	Break	
13:10-14:40	**PG Course 4 (Basic)** **Organoids: Modelling organ development and applications**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Kyungho Choi** (Korea), **Hyori Kim** (Korea)	
13:10-13:32	Engineering organoids for regenerative medicine **Seungwoo Cho** (Korea)	
13:32-13:54	Microphysiological system based organoid culture **Gi Seok Jeong** (Korea)	
13:54-14:16	Development of mosaic genetics in a mammalian system **Bon-Kyung Koo** (Austria)	
14:16-14:38	Organoid Models of Human and Mouse Ductal Pancreatic Cancer **Chang-il Hwang** (United States)	
13:10-14:40	**Reviewer Training Course I**	**Korean** Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Eun-Jee Oh** (Korea), **Jung-Hwan Park** (Korea)	
13:10-13:20	Introduction of education course and current status of KJT **Ik Jin Yun** (Korea)	
13:20-14:00	Improving communication skills for reviewing English journal articles **Yunhee Whang** (Korea)	
14:00-14:40	Introduction to Publon **Hye-Min Cho** (Korea)	

Day 1. October 7 (Thu)

13:30-14:30	**Vitallink Symposium 1** Asian Country Transplantation Activity Report Deceased Organ Transplantation	Room 3
MODERATOR(S)	**Ghazali Ahmad** (Malaysia), **Curie Ahn** (Korea)	
13:30-13:40	Thailand **Cholatip Pongkul** (Thailand)	
13:40-13:50	Malaysia **Diana Mohd Shah** (Malaysia)	
13:50-14:00	Taiwan **Hsu-Han Wang** (Taiwan)	
14:00-14:15	Gender disparity in organ transplantation in Asia (ASTREG-WIT-KT) **Yeong Hoon Kim** (Korea)	
14:15-14:30	Asian Transplantation Activity Summary(ASTREG) **Jong Cheol Jeong** (Korea)	
14:40-14:50	Break	
14:50-16:20	**PG Course 5 (Pathology/Laboratory)** New insights in Antibody-Mediated Rejection	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Eun-Jee Oh** (Korea), **Kyu Ha Huh** (Korea)	
14:50-15:10	Basic concept of HLA epitope analysis in transplantation **Borae G Park** (Korea)	
15:10-15:30	Clinical application of epitope matching and analysis: current status and update **Hyeyoung Lee** (Korea)	
15:30-15:35	Discussion	
15:35-15:55	Pathological diagnosis of antibody-mediated rejection in liver transplantation **Hyo Jeong Kang** (Korea)	
15:55-16:15	Pathological diagnosis of antibody-mediated rejection in heart and lung transplantation **Beom Jin Lim** (Korea)	
16:15-16:20	Discussion	

Day 1. October 7 (Thu)

14:50-16:20	**Reviewer Training Course II**	**Korean** Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Chul Woo Yang** (Korea), **Ik Jin Yun** (Korea)	
14:50-15:20	How to Write a Good Peer Review (Focused on STROBE, CARE) **Soo Young Kim** (Korea)	
15:20-15:50	Review Practice: guidelines **Sun Huh** (Korea)	
15:50-16:20	Discussion	

14:50-15:30	**Vitallink Symposium 2** **School Education on Organ Donation and Transplantation**	Room 3
MODERATOR(S)	**Faissal A.M. Shaheen (Saudi Arabia), Samuel Lee** (Korea)	
14:50-15:00	USA **Medhat Askar** (United States)	
15:00-15:10	TTS & Dutch Transplant Foundation and the Canadian Society of Transplantation **Marcelo Cantarovich** (Canada)	
15:10-15:20	Korea **Hyun Bae Yoon** (Korea)	
15:20-15:30	Q&A	

15:30-16:10	**Vitallink Symposium 3** **Financial burden on deceased organ donation**	Room 306, 3F (Room 3)
MODERATOR(S)	**Jeremy Chapman** (Australia), **So Yeon Kim** (Korea)	
15:30-15:45	DICG point of view on financial neutrality **Dong Hyeon Lee** (Korea)	
15:45-16:10	Panel discussion (Online) **Harun Ur Rashid** (Bangladesh) **Vivek B.Kute** (India) **Lkhaakhuu Od-Erdene** (Mongolia) **Khin Maung Htay** (Myanmar) **Ha Phan Hai An** (Vietnam)	

16:20-16:40	Coffee Break

Day 1. October 7 (Thu)

16:40-17:40	**Opening Session**	Grand Ballroom (3F)
MODERATOR(S)	Jongwon Ha (Korea)	
16:40-16:50	Opening Remarks **Soon-Il Kim** (Korea)	
16:50-17:20	How to promote transplantation in developing countries **Elmi Muller** (Republic of South Africa)	
17:20-17:40	Choir Performance	
17:40-17:50	Break	
17:50-18:30	**KST Board Meeting**	**Korean** Grand Ballroom B, 3F (Room 1)

Day 2. October 8 (Fri)

09:00-10:00	**COVID-19 Report**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Myoung Soo Kim** (Korea)	
09:00-09:25	COVID-19 infections in Korean transplant recipients **Sang Il Kim** (Korea)	
09:25-10:00	Instructive cases and literature review of COVID-19 **Kyungmin Huh** (Korea)	

09:00-10:00	**KST Sponsored Research Project I**	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Oh Jung Kwon** (Korea), **Sangho Lee** (Korea)	
09:00-09:15	In vitro assessment of hemolytic activity of ABO antibodies using complement dependent cytotoxicity **Dae-Hyun Ko** (Korea)	
09:15-09:30	Clinical impact of IgG subclass and C1q Binding Donor-Specific HLA Antibodies in kidney transplantation **Hyeyoung Lee** (Korea)	
09:30-09:45	The Immuno-regulating Effects of Bisphosphonates on Dendritic cells **Beom Seok Kim** (Korea)	
09:45-10:00	Research for novel mechanism of immunosuppression through PD-1/PD-L1 pathway **Kyo Won Lee** (Korea)	

09:00-10:00	**KST Sponsored Research Project II**	Room 306, 3F (Room 3)
MODERATOR(S)	**Kwang-Woong Lee** (Korea), **Cheol Woong Jung** (Korea)	
09:00-09:15	In vivo imaging of renal microvasculature in murine ischemia-reperfusion injury models using optical coherence tomography angiography **Jang-Hee Joh** (Korea)	
09:15-09:30	LI-RADS on MRI Predicts Recurrence of Hepatocellular Carcinoma After LT Within the Milan Criteria: A Multicenter Study **Sunyoung Lee** (Korea)	
09:30-09:45	The effect of Intraductal Transanastomotic Stent in Reducing Biliary Complication after Duct-to-Duct Biliary Reconstruction in Living Donor Liver Transplantation **Ho Joong Choi** (Korea)	
09:45-10:00	Application of ECD Criteria based on the New K-KDPI to Allocation System of KONOS **Jaeseok Yang** (Korea)	

Day 2. October 8 (Fri)

09:00-10:50	**Poster Presentation 1 (Kidney)**	Exhibition Hall, 5F
MODERATOR(S)	**Hyung Joon Ahn** (Korea), **Chan Duck Kim** (Korea)	
09:00-09:10	Robot-assisted kidney transplantation : A single-center experience **Seoungjun Lim** (Korea)	
09:10-09:20	Successful treatment of calciphylaxis which was developed after kidney transplantation: case report **Jun Young Lee** (Korea)	
09:20-09:30	Clinical Implication of C1q Deposition in Kidney Transplantation **Eun-Ah Jo** (Korea)	
09:30-09:40	Clinical significance of chronic active T-cell mediated rejection **Ahram Han** (Korea)	
09:40-09:50	Expansion and Characterization of Regulatory T cell Populations from Korean Kidney Transplant Recipients **Jinhyuk Baek** (Korea)	
09:50-10:00	Expansion and Characterization of Regulatory T cell Populations from Acute Kidney Injury Patients **Youngchan Park** (Korea)	
10:00-10:10	Eculizumab as rescue therapy in a renal transplant recipient with atypical HUS: a case report **Joohyun Lee** (Korea)	
10:10-10:20	Ginsenoside Rg3 attenuates ischemia reperfusion induced renal injury in mice via induction of autophagy flux **Jin Ah Shin** (Korea)	
10:20-10:30	A Case of Successful Treatment of Chronic Active T-Cell Mediated Rejection after High-Dose Immunoglobulin Administration in BK Virus Nephropathy Not Responding to Immunosuppressant Reduction **Joon Seok Oh** (Korea)	
10:30-10:40	Non-invasive diagnosis for acute rejection using blood mRNA signature reflecting allograft status in kidney transplantation **Ahrim Han** (Korea)	
10:40-10:50	Acute T cell-mediated rejection after administration of the BNT162b2 mRNA COVID-19 vaccine in a kidney transplant recipient without a history of acute rejection for 13 years **Hye-won Jang** (Korea)	

Day 2. October 8 (Fri)

10:00-10:20	Coffee Break	
10:20-12:00	**Plenary Session I**	Grand Ballroom (3F)
MODERATOR(S)	**Jongwon Ha** (Korea), **Soon-Il Kim** (Korea)	
10:20-11:10	How the Innate Immune System Senses Allografts **Fadi Lakkis** (United States)	
11:10-12:00	The Growth of Pancreas Transplantation for Type 2 Diabetics in the US **Matthew Cooper** (United States)	
12:00-12:10	Break	
12:10-13:10	**Industry Symposium 1 (Astellas)**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Kyung Suk Suh** (Korea)	
12:10-12:35	De novo DSA in Liver Transplantation (fixed) **Dong Jin Joo** (Korea)	
MODERATOR(S)	**Yeong Hoon Kim** (Korea)	
12:40-13:05	The Optimal Trough level of Tacrolimus for prevent dnDSA and ABMR after Kidney Transplantation (draft) **Hyosang Kim** (Korea)	
13:10-13:20	Break	
13:20-14:50	**Concurrent Symposium 1 (Kidney)** **Malignancy in kidney transplantation**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Ji-Il Kim** (Korea), **Beom Seok Kim** (Korea)	
13:20-13:50	Immunotherapy for cancer in kidney transplant patients **Kenar Jhaveri** (United States)	
13:50-14:20	Malignancies after kidney transplantation: the Hong Kong experience **Sydney Tang** (Hong Kong)	
14:20-14:50	Treatment option for pre/post-transplant renal cell carcinoma **Cheol Woong Jung** (Korea)	

Day 2. October 8 (Fri)

13:20-14:50	**Concurrent Symposium 2 (Liver)** **Long-term management after liver transplantation**	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Kyung Suk Suh** (Korea), **Hee Chul Yu** (Korea)	
13:20-13:40	Prevalence and Control of Metabolic Complications after liver transplantation (DM, HTN, heperlipidemia) **Jong Man Kim** (Korea)	
13:40-14:00	Surveillance and management of De novo malignancy after liver transplantation **Kiyoshi Hasegawa** (Japan)	
14:00-14:20	Long term management of immunosuppression **Ho Joong Choi** (Korea)	
14:20-14:40	Management of recurrent and De novo NAFLD /NASH after liver transplantation **Giacomo Germani** (Italy)	
14:40-14:50	Discussion	
13:20-14:50	**Concurrent Symposium 3 (Lung)** **Disease specific Know-Hows to get better outcome**	Room 306, 3F (Room 3)
MODERATOR(S)	**Young Tae Kim** (Korea), **Moo Suk Park** (Korea)	
13:20-13:42	ARDS or COVID_ Who can be a candidate for lung transplantation? **Kyeongman Jeon** (Korea)	
13:42-14:04	IPAH_ How to manage a candidate before and after lung transplantation? **Sang Bum Hong** (Korea)	
14:04-14:26	CTD ILD: What we have to know about CTD considering lung transplantation **Jieun Park** (Korea)	
14:26-14:48	Lung GVHD_GVHD involved other organs where affect outcome after lung transplantation **Jimyung Park** (Korea)	
	Panel discussion (Online) **Ala Woo** (Korea) **Hye Ju Yeo** (Korea) **Samina Park** (Korea) **Seokjin Haam** (Korea)	
14:50-15:10	Coffee Break	

Day 2. October 8 (Fri)

15:10-16:10	**Oral Presentation 1 (Kidney)**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Soo Jin Na Choi** (Korea), **Byung Ha Chung** (Korea)	
15:10-15:22	A Prediction Model of Post-donation Renal Function using Dynamic Kidney CT Volumetry in Living Kidney Donor **Seoungjun Lim** (Korea)	
15:22-15:34	Economic change and graft outcome in kidney transplant recipients: a nationwide study of Korea **Sehoon Park** (Korea)	
15:34-15:46	Robotic Ureter Reconstruction using the Native Ureter to Treat Long-segment Ureteral Stricture of the Transplant Kidney; the First Korean Experience **Jinu Kim** (Korea)	
15:46-15:58	Effects of the type of intraoperative fluid in living donor kidney transplantation: A single-center retrospective cohort study **Seungho Jung** (Korea)	

15:10-16:10	**Oral Presentation 2 (Liver)**	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Dong-Hwan Jung** (Korea), **Dong Jin Joo** (Korea)	
15:10-15:22	Pure laparoscopic hepatectomy and robotic graft implantation in living donor liver transplantation **Kyung-Suk Suh** (Korea)	
15:22-15:34	Blood stream infections in the first year after liver transplantation in children **Yeong Eun Kim** (Korea)	
15:34-15:46	Cost-effective and time-saving Three-dimensional (3-D) printing protocol of intra-abdominal cavity of liver transplantation recipient to minimize risk of large-for-size syndrome: The initial experience **Sunghae Park** (Korea)	
15:46-15:58	Reconsideration of pathology and management for acute antibody-mediated rejection in pediatric ABO incompatible transplantation. **Yusuke Yanagi** (Japan)	
15:58-16:10	Is remnant liver volume ratio less than 30% still contraindication for living donor right hepatectomy? **Joo Dong Kim** (Korea)	

Day 2. October 8 (Fri)

15:10-16:10	**Oral Presentation 3 (Lung)**	Room 306, 3F (Room 3)
MODERATOR(S)	**Jin Gu Lee** (Korea), **Woo Hyun Cho** (Korea)	
15:10-15:22	Lung transplantation for patients with severe COVID-19 related ARDS in Korea **Ryoung-Eun Ko** (Korea)	
15:22-15:34	Lung Transplantation for COVID-19-associated ARDS after extended use of extra corporeal membrane oxygenation **Soomin Yang** (Korea)	
15:34-15:46	The performance of lung transplantation according to the pattern of changing urgency; KONOS registry analysis **Jin Ho Jang** (Korea)	
15:46-15:58	Lung transplantation in six patients with idiopathic pulmonary artery hypertension **Hyeonhwa Kim** (Korea)	
16:10-16:20	Break	
16:20-17:50	**Concurrent Symposium 4 (Kidney)** **Robotic-assisted kidney transplantation**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Jae Berm Park** (Korea), **Soo Jin Na Choi** (Korea)	
16:20-16:50	Robotic-assisted kidney transplantation for classic indications **Kyu Ha Huh** (Korea)	
16:50-17:20	Robotic-assisted kidney transplantation for expanded indications **Rajesh Ahlawat** (India)	
17:20-17:50	Local hypothermia strategy for robotic-assisted kidney transplantation **Wooju Jeong** (United States)	
16:20-17:50	**Concurrent Symposium 5 (Pediatric)** **Challenges & Tips in Pediatric Organ Procurement**	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Nam-Joon Yi** (Korea), **Gyu-seong Choi** (Korea)	
16:20-16:40	Surgical issues in Split LT (with video) **Kang He** (China)	
16:40-17:00	Heart & Lung procurement (with video) **Samina Park** (Korea)	
17:00-17:05	Discussion	

Day 2. October 8 (Fri)

16:20-17:50	**Concurrent Symposium 5 (Pediatric)** Special issues for best outcome in pediatric recipients	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Kyung Mo Kim** (Korea), **Min Hyun Cho** (Korea)	
17:05-17:25	Improving long-term medical health after pediatric transplantation **Hee Gyung Kang** (Korea)	
17:25-17:45	Promising growth hormone treatment after pediatric transplantation **Jung Hwan Suh** (Korea)	
17:45-17:50	Discussion	

16:20-17:50	**Concurrent Symposium 6 (Heart)** Heart transplantation in special situation	Room 306, 3F (Room 3)
MODERATOR(S)	**Seok-Min Kang** (Korea), **Sung-Ho Jung** (Korea)	
16:20-16:40	Heart transplantation in infiltrative cardiac disease **Jaewon Oh** (Korea)	
16:40-17:00	Heart transplantation in complex congenital heart disease **Jae Gun Kwak** (Korea)	
17:00-17:20	Heart transplantation in adult valvular heart disease with prior sternotomy **Yang Hyun Cho** (Korea)	
17:20-17:50	Panel discussion **Junho Hyun** (Korea) **Gi Beom Kim** (Korea) **Jong-Chan Youn** (Korea) **Young-Nam Youn** (Korea) **Jin Oh Choi** (Korea) **MinHo Ju** (Korea) **In-Cheol Kim** (Korea)	

16:20-17:50	**Poster Presentation 2 (Liver & Lung)**	Exhibition Hall, 5F
MODERATOR(S)	**Jeong-Ik Park** (Korea), **Dong-Sik Kim** (Korea)	
16:20-16:30	Risk factors for pneumocystis jirovecii pneumonia (PJP) in liver transplantation recipients **Eun-Ki Min** (Korea)	

Day 2. October 8 (Fri)

16:30-16:40	Safety and Efficacy of Early Corticosteroid Withdrawal in Liver Transplant Recipients: New-onset diabetes after liver transplantation randomized clinical trial **Jong Man Kim** (Korea)
16:40-16:50	Complete transition from open to laparoscopic living donor hepatectomy: 8-year experience with more than 500 laparoscopy cases **Jinsoo Rhu** (Korea)
16:50-17:00	The clinical implication of hepatic venous territory mapping in living donor liver transplantation using right liver graft. **Jinsoo Rhu** (Korea)
17:00-17:10	Long-term Outcomes of Liver Transplantation (LT) Using Grafts from Donors with Active and Chronic Hepatitis B Virus (HBV) Infection **Sujin Gang** (Korea)
17:10-17:20	Classification of Intrahepatic Biliary Strictures and Assessment of Outcome in Living Donor Liver Transplantation **Hansang Park** (Korea)
17:20-17:30	Sclerosing encapsulating peritonitis after living donor liver transplantation **Jeong-Ik Park** (Korea)
17:30-17:40	The morphological mismatch changes and adapts after lung transplantation in the patient with Kataterner syndrome **Do Hyung Kim** (Korea)
17:50-18:00	Break
18:00-18:50	**KST General Assembly** — Grand Ballroom B, 3F (Room 1)

Day 3. October 9 (Sat)

09:00-10:30	**Concurrent Symposium 7 (Pancreas)** Current progress in pancreas transplantation and vascularized composite allograft	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Sung Shin** (Korea), **Ik Jin Yun** (Korea)	
09:00-09:30	Protocol pancreas graft biopsy vs. duodenal graft biopsy in pancreas transplantation **Espen Nordheim** (Norway)	
09:30-10:00	Hand Transplantation in Korea - after transplantation law revision **Jong Won Hong** (Korea)	
10:00-10:30	20 years of face transplantation **Bohdan Pomahac** (United States)	

09:00-10:30	**KOTRY Joint Session**	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Myoung Soo Kim** (Korea), **Juhee Lee** (Korea)	
09:00-09:30	Pharmacogenomic research in transplant patients **Min Goo Lee** (Korea)	
09:30-10:00	HLA epilet matching research intransplant patients **Jong Cheol Jeong** (Korea)	
10:00-10:30	Potential application of single cell RNAseq in transplantation **Sang Cheol Kim** (Korea)	

09:00-10:30	**Concurrent Symposium 8 (Basic)** Stem cells in clinical translation	Room 306, 3F (Room 3)
MODERATOR(S)	**Dong-Myung Shin** (Korea)	
09:00-09:30	Establishment of multiple isogenic disease model from human pluripotent stem cells with base editors **Hyuk-Jin Cha** (Korea)	
09:30-10:00	Cell therapeutic approaches for heart failure using iPSC-derived cardiomyocyte aggregates **Sung-Hwan Moon** (Korea)	
10:00-10:30	Development of novel strategies for cell-based cardiac repair **Kiwon Ban** (Hong kong)	

Day 3. October 9 (Sat)

09:00-10:50	**Poster Presentation 3 (Kidney & Pancreas)**	Exhibition Hall, 5F
MODERATOR(S)	**Sangil Min** (Korea), **Seung Yeup Han** (Korea)	
09:00-09:10	Association of Pre-operative non-HLA Antibodies with Kidney Allograft Rejection **Inseong Oh** (Korea)	
09:10-09:20	The worth emphasizing surgical technique; Ureteropyelostomy to manage urinary tract complications in renal transplantation **Chanjoong Choi** (Korea)	
09:20-09:30	ABO-incompatibility and DSA existence effect on ABMR in kidney transplantation **KWANG WOO CHOI** (Korea)	
09:30-09:40	The optimal dosage of rituximab for ABO-incomatible Kidney transplantation : Comparative Analysis of Efficacy and Safety **Hye Eun Kwon** (Korea)	
09:40-09:50	Long term clinical benefits of Pancreas-transplantation After Kidney transplantation (PAK) in patients with diabetes who had received kidney transplantation **Youngmin Ko** (Korea)	
09:50-10:00	Clinical significance of late onset antibody-mediated rejection without donor-specific anti-HLA antibodies in kidney transplantation **Juhan Lee** (Korea)	
10:00-10:10	Impact of donor kidney weight to recipient body weight ratio on long-term graft outcomes in live donor kidney transplantation **Juhan Lee** (Korea)	
10:10-10:20	Clinical significance of delayed or slow graft function in kidney transplantation recipients **Jeongin Song** (Korea)	
10:20-10:30	Technical factors that minimize the occurrence of early graft failure in pancreas transplantation **Byunghyun Choi** (Korea)	
10:30-10:50	Coffee Break	

Day 3. October 9 (Sat)

10:50-12:20	**Concurrent Symposium 9 (Xenotransplant)** Clinical Xeno organ Transplantation: Can be realized? Which are the barriers and methods to overcome?	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Curie Ahn** (Korea), **Ik Jin Yun** (Korea)	
10:50-11:20	Development of proper transgenic pig for solid organ xenotransplantation **Keon Bong Oh** (Korea)	
11:20-11:50	New methods to develop the humanized grafts **Ho Sup Shim** (Korea)	
11:50-12:20	New Immunosuppion and immune modulation methods **Jae Young Kim** (Korea)	

10:50-12:20	**Concurrent Symposium 10 (Liver)** Innovative Surgical Technique in Liver transplantation	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Young-kyoung You** (Korea), **Ki-Hun Kim** (Korea)	
10:50-11:08	A novel technique of organ perfusion and recovery in donor after circulatory death **Cristiano Quintini** (United States)	
11:08-11:26	The conquest of anatomical difficulties in laparoscopic donor hepatectomy **Gyu-seong Choi** (Korea)	
11:26-11:44	Laparoscopic explant hepatectomy in a liver transplant recipient **Safi Dokmak** (France)	
11:44-12:02	Unusual portal inflow in living donor liver transplantation **Deok-Bog Moon** (Korea)	
12:02-12:20	Living Donor RAPID procedure in a cirrhoctic liver with HCC **Deniz Balci** (Turkey)	

10:50-12:20	**Concurrent Symposium 11 (Coordinator)** The process of organ procurement - basic & issue	**Korean** Room 306, 3F (Room 3)
MODERATOR(S)	**Bok Nyeo Kim** (Korea), **Hyung Sook Kim** (Korea)	
10:50-11:10	The process of organ procurement of brain death donation - surgical perspective **Jeong Kye Hwang** (Korea)	
11:10-11:30	The process of organ procurement of brain death donation - perspective of the role of coordinators **Hye Yeon Jang** (Korea)	

Day 3. October 9 (Sat)

11:30-11:50	The medical costs in the field of organ transplantation by hospital **In Ok Kim** (Korea)	
11:50-12:00	Discussion	
12:00-12:20	Assembly	
12:20-12:30	Break	
12:30-13:30	**Industry Symposium 2 (Chong Kun Dang Pharm)**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Jongwon Ha** (Korea), **Myoung Soo Kim** (Korea)	
12:30-13:00	Evaluate the Tolerability and Pharmacokinetics of TacroBell® Tablet in Kidney Transplantation **Ahram Han** (Korea)	
13:00-13:30	Evaluate the Efficacy and Safety of CertiroBell® Tablet Compared with Mycophenolate mofetil in Primary Living Donor Liver Transplant Recipients **Dong Jin Joo** (Korea)	
13:30-13:40	Break	
13:40-14:40	**Oral Presentation 4 (Kidney)**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Chang-kwon Oh** (Korea), **Myung-Gyu Kim** (Korea)	
13:40-13:52	Sodium-glucose cotransporter 2 inhibitors in kidney transplant recipients **Jeong-Hoon Lim** (Korea)	
13:52-14:04	Kidney transplantation and COVID-19 infection: Presentation of COVID-19 in Kidney Transplantation in Iran (KTI) **Sanaz Dehghani** (Iran)	
14:04-14:16	Managing COVID-19 Infection in Living Donation Kidney Transplant Recipient: A Single Centre Experience **Ni Made Hustrini** (Indonesia)	
14:16-14:28	Low early post-transplant tacrolimus level within 1 month is associated with poor renal allograft survival in kidney transplant patients **JungHwa Ryu** (Korea)	
14:28-14:40	Low skeletal muscle mass is associated with mortality in kidney transplant recipients **Juhan Lee** (Korea)	

Day 3. October 9 (Sat)

13:40-14:40	**Oral Presentation 5 (Liver)**	Grand Ballroom A, 3F (Room 2)
MODERATOR(S)	**Bong Wan Kim** (Korea), **Je Ho Ryu** (Korea)	
13:40-13:52	Safe use of Hepatitis B Surface Antigen Positive Grafts in liver transplantation: A Nationwide Study Based on Korean Organ Transplantation Registry Data **YoungRok Choi** (Korea)	
13:52-14:04	Differential impact of tacrolimus intra-patient variability on liver transplant outcomes in patients with and without hepatocellular carcinoma **Hyun Jeong Kim** (Korea)	
14:04-14:16	Survival after treatable hepatocellular carcinoma recurrence in liver recipients: A nationwide cohort analysis **Cheng-Maw Ho** (Taiwan)	
14:16-14:28	The Fate of Donor-type ABO Blood Group Antigen Expression in the Liver Grafts of ABO Incompatible Adult Living Donor Liver Transplantation **Moon Young Oh** (Korea)	
14:28-14:40	Entering a new era of zero-mortality in pediatric living donor liver transplantation **Seak Hee Oh** (Korea)	

13:40-14:40	**Oral Presentation 6 (Heart)**	Room 306, 3F (Room 3)
MODERATOR(S)	**Hae-Young Lee** (Korea)	
13:40-13:52	Post-transplantation outcomes of sensitized mechanical circulatory support patients **Jong-Chan Youn** (Korea)	
13:52-14:04	The clinical outcomes of marginal donor hearts: a single center experience **Soo Yong Lee** (Korea)	
14:04-14:16	Evaluating Heart Transplantation Outcomes from Marginal Donors **Azadeh Sadatnaseri** (Iran)	

13:40-14:50	**Poster Presentation 4 (Coordinator & Other)**	**Korean** Exhibition Hall, 5F
MODERATOR(S)	**Seungheui Hong** (Korea), **In Ok Kim** (Korea)	
13:40-13:50	단일병원 심장, 폐장 이식 수혜자의 응급도 및 대기기간 분석 **In Ok Kim** (Korea)	
13:50-14:00	The influence of Healthcare Provider's Autonomy Support, Autonomous Motivation and Competence on Self-Management in Kidney Transplant Patients Based on the Self-Determination Theory **Sunyoung Son** (Korea)	

Day 3. October 9 (Sat)

14:00-14:10	In-depth analysis of potential tissue donors in Korea **Haejin Park** (Korea)
14:10-14:20	뇌사판정 절차 중 단계별 소요시간 분석 **Jungsun Kim** (Korea)
14:20-14:30	지역별 장기기증희망등록율과 장기기증자수의 유의미한 상관관계 **Young Hwan Hwang** (Korea)
14:30-14:40	Effects of Increase in Organ Donation through Strengthening of SNS-based Communication with Medical Staff **Hayoung Song** (Korea)
14:40-14:50	장기기증 희망등록이 장기기증 동의율에 미치는 영향 **Yuri Chong** (Korea)
14:40-15:00	Coffee Break

15:00-16:00	**Oral Presentation 7 (Donor & Donation)**	Grand Ballroom B, 3F (Room 1)
MODERATOR(S)	**Hyung Joon Ahn** (Korea), **Dong-Sik Kim** (Korea)	
15:00-15:12	Gestational hypertension and preeclampsia after kidney donation: A nationwide population-based cohort study from Korea **Hyung Soon Lee** (Korea)	
15:12-15:24	New technologies applied to master education in the time of covid-19 **Chiloe Balleste** (spain)	
15:24-15:36	Stepwise development of robotic donor right hepatectomy according to the anatomical variations in the hilum and the graft volume. **Hyeyeon Yang** (Korea)	
15:36-15:48	Use of minor donors for living donor liver transplantation and associated ethical issues **Shin Hwang** (Korea)	
15:48-16:00	Stepwise development of robotic donor right hepatectomy according to the anatomical variations in the hilum and the graft volume. **Shin Hwang** (Korea)	

15:00-16:00	**Oral Presentation 8 (Basic & Xenotransplant)**	Grand Ballroom A, 3F (Room 2)
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15:00-15:12	B-cell metabolism regulator IM156 contributes to the mitigation of systemic lupus erythematosus. **Eun Jee Kim** (Korea)	

Day 3. October 9 (Sat)

15:12-15:24 Immunomodulatory effects of probiotic Bifidobacterium bifidum with tacrolimus and sirolimus in mouse skin graft model
Ahram Han (Korea)

15:24-15:36 Protective effect of Berberine against Tacrolimus-induced Nephrotoxicity in LLC-PK1 cells
Hyuk-Jai Jang (Korea)

15:36-15:48 Research on Acellular Dermal Matrix, a potential vascular substitute material
Seok-Hwan Kim (Korea)

15:00-16:00 Oral Presentation 9 (Coordinator) — Korean Room 306, 3F (Room 3)

MODERATOR(S) **Jeong Rim Lee** (Korea), **Hyung Sook Kim** (Korea)

15:00-15:12 장기이식코디네이터의 윤리적 갈등과 윤리적 역량 및 윤리교육에 대한 요구도 조사
Sunyoung Son (Korea)

15:12-15:24 장기이식 환자를 대상으로 한 COVID-19 백신 접종 실태 설문조사 연구
Heeyoung Kim (Korea)

15:24-15:36 신장이식 환자의 이식 후 경과기간에 따른 적응 경험
Mi-Im Kim (Korea)

15:36-15:48 2020년 COVID-19 팬더믹 하 국내 장기기증 증가 고찰
Jaesook Oh (Korea)

15:48-16:00 혈액형 부적합 신장이식 수술의 표준진료지침 개발
Heeyoung Kim (Korea)

15:00-16:10 Poster Presentation 5 (Liver) — Exhibition Hall, 5F

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Ji Hoon Jo (Korea)

15:10-15:20 Living Donor Liver Transplantation for Advanced Hepatocellular Carcinoma with Portal Vein Tumor Thrombosis after Concurrent Chemoradiation Therapy
Jae Geun Lee (Korea)

15:20-15:30 Liver Transplantation for Azithromycin-Induced Severe Liver Injury: A Case Report
Young Il Choi (Korea)

15:30-15:40 The impact of the multiple bile ducts on postoperative biliary complications in living donor liver transplantation; single center experience
Doojin Kim (Korea)

Day 3. October 9 (Sat)

15:40-15:50	Impact of previous abdominal surgery on laparoscopic donor hepatectomy for living donor liver transplantation. **Jaehun Yang** (Korea)
15:50-16:00	Metabolic Syndrome and Health-related Quality of Life among Patients with Liver Transplantation **Suejin Kim** (Korea)
16:00-16:10	Transarterial Chemoembolization (TACE) with radiotherapy for solitary HCC bone metastasis after living donor liver transplantation **JaRyung Han** (Korea)
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16:22-16:34	The cumulative dose-dependent benefit of metformin in kidney transplantation recipients **Soie Kwon** (Korea)
16:34-16:46	The impact of DSA on chronic antibody mediated rejection (cAMR) after pediatric living donor liver transplantation **Seiichi Shimizu** (Japan)
16:46-16:58	Pre- and post-transplant risk factors for renal dysfunction in the patients with preserved renal function at 1 month after liver transplantation: a national cohort study using Korean Organ Transplantation Registry (KOTRY) **Deok Gie Kim** (Korea)
16:58-17:10	Bionic Pancreas - the first results of functionality bionic tissue model with pancreatic islets **Michal Wszola** (Poland)
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A prediction model of postdonation renal function using dynamic kidney computed tomography volumetry in living kidney donor

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Background: The risk of renal failure after live kidney donation can be predicted based on various clinical information. We tried introduce a model to predict the risk of renal failure after live kidney donation using predonation variables including residual kidney volume proportion (RKP, remnant kidney volume/total kidney volume) measured by computed tomography (CT) volumetry.
Methods: Patients who had donor nephrectomy between May 2007 and December 2019 in two independent centers. Age, sex, body mass index (BMI), hypertension, smoking history, preoperative estimated glomerular filtration rate (eGFR) and RKP were investigated. Primary end point is eGFR less than 60 mL/min/m^2 6 months after kidney donation. Univariable and multivariable analysis was performed using the Cox hazard regression model.
Results: A total of 1,628 and 690 live kidney donors were included in training and validation cohort, respectively. The eGFR was less than 60 mL/min/m^2 6 months after kidney donation in 235 donors (14.4%) of the training cohort and 178 donors (25.8%) of the validation cohort. In univariable analysis, sex, age, BMI, hypertension, preoperative eGFR, and remnant kidney proportion were significantly associated with the primary end point. After multivariable analysis, the variables used in the score system of the prediction model were sex, age, eGFR, and remnant kidney proportion. The sum of score ranges from 0 to 10 (sex: male, 1; female, 0), (age at operation: <30, 0; 30–39, 1; 40–59, 2; ≥60, 3), (preoperative eGFR: ≥100, 0; 90–99, 2; 80–89, 4; <80, 5), (RKP: ≥52, 0; <52, 1). This prediction model for the primary end point showed good discrimination (training: AUC, 0.891; 95% confidence interval [CI], 0.868–0.913; validation: AUC, 0.865; 95% CI, 0.833–0.897) and calibration by Hosmer-Lemeshow goodness-of-fit test (training: χ^2=1.9912, df=8, P=0.9813; validation: χ^2=47.335, df=8, P=1.323e-07).
Conclusions: Our prediction model based on dynamic CT volumetry and clinical data may be useful to estimate the risk of significant renal dysfunction after kidney donation.

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Economic change and graft outcome in kidney transplant recipients: a nationwide study of Korea

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Background: The socioeconomic status of kidney transplant (KT) recipients is closely associated with graft prognosis. Further study is warranted to investigate whether changes in socioeconomic status occur after KT alongside related differences in graft outcome.
Methods: We performed a nationwide observational cohort study reviewing the national claims database of Korea. Economic status was identified including income grades reflected in the insurance fee percentiles, employment status, and severe socioeconomic deprivation state. Changes in economic status in the period after KT was analyzed by linear regression. Graft failure outcome according to economic changes on 3 years after KT was also investigated.
Results: We included 18,487 KT recipients from 2002 to 2016. The median age was 47 years old and 59% had male sex. The income percentile significantly decreased until 2 years after KT (P<0.001) but there were no more significant changes from 2 years (P=0.128). Employment decreased until 2 years after KT (P<0.001); however, the employment rate significantly increased from 2 years to 5 years after KT (P<0.001). Severe socioeconomic deprivation showed similar trends, as the proportion worsened until 2 years (P<0.001) but relieved afterward (P<0.001). Those employed before KT but became unemployed 3 years after KT showed a significantly higher risk of graft failure (adjusted hazard ratio [HR], 1.47 [1.13, 1.92]; P=0.004) than those who remained employed. On the other hand, those with severe economic deprivation before KT but being improved economic status to non-aided showed better graft prognosis (adjusted HR, 0.50 [0.34, 0.74]; P=0.001) than those who remained in the aided people.
Conclusions: Economic status seemed to be changed dynamically after KT. Although economic status worsened in the acute period after KT, the employment rate increased and the proportion of severe economic deprivation decreased in long term. Improved economic status and employment were associated with different graft outcomes in KT recipients.

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Robotic ureter reconstruction using the native ureter to treat long-segment ureteral stricture of the transplant kidney: the first Korean experience

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Background: The complication of the ureter after kidney transplantation (KT) has been reported to occur in 2.6% to 15% and ureteral stricture is one of the common complications. We report two cases of robotic ureteral reconstruction surgery to correct the long-segment ureteral stricture of the transplanted kidney.
Methods: After docking the Da Vinci Xi the transplanted ureter was dissected and the stricture point was identified. Nephrectomy of the right kidney was performed and the native ureter was dissected. An end-to-side anastomosis of the native ureter to transplant ureter was done. Indocyanine green (ICG) was used to aid in identifying the transplant ureter and also to confirm the vascularity of the dissected ureter.
Results: Case 1: A 55-year-old female developed ureter stricture 5 months after deceased donor kidney transplant (DDKT) and was referred to our hospital after recurrent episodes of febrile urinary tract infection (UTI), and her serum creatinine was 3.01 mg/dL 16 months post-KT. After robotic reconstruction, she had one episode of febrile UTI 3 months after surgery and had no more episodes afterward. The serum creatinine after 1 year was 2.42 mg/dL. Case 2: A 56-year-old female developed ureter stricture 1 month after DDKT. The patient was referred to our hospital 3 months after KT for ureter reconstruction. Her serum creatinine was 1.20 mg/dL before surgery and was 1.31 mg/dL at 9 months follow-up.
Conclusions: We report two cases of robotic uretero-ureterostomy using the native ureter for the reconstruction of a long-segment ureteral stricture of the transplanted kidney. This was the first attempt in Korea to use the robot to manage urologic complications after KT. The procedure is safe, feasible and using the robot provides advantages by utilizing ICG to identify the transplant ureter and confirm the viability of the graft ureter.

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Effects of the type of intraoperative fluid in living donor kidney transplantation: a single-center retrospective cohort study

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Background: Perioperative fluid management in kidney transplant recipients is crucial for fluid, acid-base, and electrolyte balance required for graft perfusion. However, the choice of intraoperative crystalloids in kidney transplantation remains controversial. We conducted a single-center retrospective cohort study to evaluate the impact of intraoperative fluid choice on acid-base and electrolyte balance and graft outcomes.
Methods: We included 282 living donor kidney transplant recipients from January 2010 to December 2017. Patients were classified into two groups based on the type of intraoperative crystalloids (157 half saline and 125 balanced crystalloid solutions, Plasma-lyte).
Results: The Plasma-lyte group showed less metabolic acidosis and hyponatremia occurrence during the surgery. Hyperkalemia incidence was not significantly different between groups. Change in postoperative graft function assessed by blood urea nitrogen and creatinine was also significantly different. Patients in the Plasma-lyte group exhibited consistently higher glomerular filtration rates than those in the half saline group at 1 month and 1 year after transplantation after adjusting demographic differences.
Conclusions: Intraoperative Plasma-lyte can lead to more favorable results in terms of acid-base balance during kidney transplantation. Patients who received Plasma-lyte showed superior postoperative graft function at 1 month and 1 year after transplantation. Further studies are needed to evaluate the superiority of intraoperative Plasma-lyte over other types of crystalloids with regards to graft outcomes.

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Pure laparoscopic hepatectomy and robotic graft implantation in living donor liver transplantation: a case report

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Background: Successful experiences with pure laparoscopic explant hepatectomy and graft implantation using upper midline incision have allowed us to extend our minimally invasive living donor liver transplantation (LDLT) program to pure laparoscopic explant hepatectomy and pure laparoscopic and/or robotic graft implantation using suprapubic incision. Here, we share our initial experience of using pure laparoscopic explant hepatectomy followed by pure laparoscopic and/or robotic graft implantation.
Case report: A 51-year-old male required a liver transplant for autoimmune hepatitis-related liver cirrhosis. Pure laparoscopic explant hepatectomy followed by pure laparoscopic and/or robotic graft implantation was performed. The time to remove the native liver was 260 minutes, and the total operative time was 1,065 minutes. The time required for anastomosis of the hepatic vein, right inferior hepatic vein, portal vein, hepatic artery, and bile duct were 41, 26, 37, 123, and 72 minutes, respectively. Protocol computed tomography performed on postoperative day 7 revealed no abnormal findings. The patient was discharged on postoperative day 13, with no complications.
Conclusions: Pure laparoscopic explant hepatectomy followed by pure laparoscopic and robotic graft implantation in LDLT can be performed.

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Blood stream infections in the first year after liver transplantation in children

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Background: Post-liver transplantation (LT) blood stream infection (BSI) is a major cause of death in both adult but pediatric LT. In this study, we aimed to analyze the profile of BSI according to the post-transplantation periods and determine the risk factors of the BSI within the first year after LT in our center.
Methods: Children under 18 years of age who underwent LTs at Asan Medical Center from December 1994 to June 2020 were retrospectively reviewed. BSI was defined based on conventional criteria from the Centers for Disease Control (CDC) guidelines with minor modifications. We used t-tests, Mann-Whitney U-test, chi-square test, and Fisher exact test in univariate analysis. The receiver operating characteristic (ROC) curve analysis and logistic regression analysis were used in the multivariate analysis to determine the risk factors of the BSI.
Results: During the study period, 378 children had primary LTs, consisted of 287 living donor liver transplantations (LDLTs; 76%) and 91 deceased donor liver transplantations (DDLTs; 24%). The median recipient age was 1.6 years (3 months–17.4 years) and the median weight was 10.9 kg (4–90 kg). Biliary atresia (53%) and acute liver failure (23%) were the most common etiology for pediatric LTs. Among 378 patients received primary LTs, 106 patients (28%) experienced pathogen-proven BSI during the first year after LT. Of them, 71 patients (67%) had only one episode of BSI, while 35 patients (33%) had more than one BSI. Most common identified organism coagulase-negative staphylococci, followed by *Enterococcus spp.* and *Streptococcus spp.*, both in LDLT and DDLT groups. In multivariate analysis, younger age, liver support, longer hospital stay, portal vein complication, and growth failure were associated with increased risk of BSI.
Conclusions: BSI was frequently observed in pediatric LT and the BSI profile of pathogens may be informative to establish center's own policy against BSI after transplant.

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Cost-effective and time-saving three-dimensional printing protocol of intra-abdominal cavity of liver transplantation recipient to minimize risk of large-for-size syndrome: the initial experience

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Background: The application of three-dimensional (3D) printing has been increasing and we invented a protocol for a cost-effective and time-saving 3D model of intra-abdominal cavity to prevent large-for-size syndrome during liver transplantation.
Methods: Three-dimensional printing of the intra-abdominal cavity were performed on potential adult recipients with small cavity and pediatric patients scheduled for transplantation during the period of July 2020 to July 2021. To reduce time and cost, boundaries of intra-abdominal cavity were outlined based on computed tomography of the potential transplantation recipient with a 1 to 3 cm distances. The printed pieces were reassembled with a pillar and footing. The printed models of adult patients were used for comparing the size to the graft during deceased donor operation while models of pediatric patients were used for directly comparing the size to the 3D printed graft of living donors.
Results: During the study period, seven adults and five pediatric patients were included. Median time for model production was 10.8 hours (interquartile range [IQR], 9.5–11.8) and estimated median cost for the filament used was 1.64 dollars (IQR, 1.5–1.74). Transplantation of reduction graft (n=1), whole liver transplantation after giving up the previous donor match (n=2), whole liver transplantation from the first matched donor (n=3), and waiting for another donor match after giving up first matched donor (n=1) were resulted using 3D printed model in adult patients. Among pediatric patients, two cases were resulted in reduction graft as planned during preoperative planning and three cases resulted in extended left lateral graft transplantation. All the cases ended up with successful closure of the abdomen with no large-for-size syndrome.
Conclusions: Our cost-effective and time-saving 3D printed model of intra-abdominal cavity was feasible and proved to be useful for preventing large-for-size syndrome in small adult recipients and pediatric patients.

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Reconsideration of pathology and management for acute antibody-mediated rejection in pediatric ABO incompatible transplantation

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Background: The management and outcome of ABO incompatible liver transplantation (ABO-I LT) has been improved in the decades. Recently, latest pathological evaluation of acute antibody-mediated rejection (AMR) was introduced through Banff meeting and provides a new aspect.
Methods: One hundred nineteen pediatric ABO-I LT performed in our institute from 2005 to 2020 were retrospectively analyzed. All specimens of liver biopsy were newly evaluated by the Banff 2016 criteria. We evaluated the clinical and pathological differences of acute AMR according to the patient age based on the need for preoperative rituximab (RTx): the indication of preoperative RTx was older than 2 years until 2016 and changed to 1.5 years from 2017.
Results: Fourteen acute AMR related to ABO-I LT was observed. The median age of the patients with acute AMR was 2.4 years and the youngest age was 8 months. Eleven cases were mixed T cell-mediated rejection (TCMR)/AMR indicating the synergic action between humoral and cellular rejections. Two young patients in early era were diagnosed as TCMR at that time, then revealed as mixed TCMR/AMR in this study. Isolated AMR were observed in three patients in the older group requiring RTx, who were not administered preoperative RTx appropriately. Six out of seven patients with acute AMR in the older group required plasma exchange (PE) and one patient required anti-thymocyte immunoglobulin (ATG) for treatment. However, except for one case suffered from intrahepatic biliary complication treated with PE, ATG, and RTx, six patients with mixed TCMR/AMR in the younger group omitted RTx were successfully treated with steroid bolus injection, intravenous immunoglobulin and mycophenolate mofetil without PE.
Conclusions: Acute AMR in pediatric ABO-I LT can often accompany TCMR, even in children younger than 1 year. It should be actively diagnosed with pathology and treated by anti-B cell strategy, combined with anti-T cell strategy if needed.

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Is remnant liver volume ratio less than 30% still contraindication for living donor right hepatectomy?

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Background: The lowest limits for a safe remnant/total volume ratio (RTVR) for living donor right hepatectomy (LDRH) is still not clear. Most centers have followed at least 30% for RTVR based on their experiences to keep donor safety. Recently, some centers reported that extended resection with RTVR less than 30% for LDRH and therefore, we describe our center's experience for LDRH with RTVR<30% and evaluate the outcomes of living liver donors under these extended criteria.
Methods: We retrospectively reviewed the outcomes of 473 LDRHs which performed at our institution from January 2010 to December 2020. We performed right hepatectomy for 41 living donors with RTVR <30% under the following criteria: age ≤40, preservation of middle hepatic vein, no or minimal fatty changes (<15%), flat fish shaped left hemiliver, and RTVR>25% and future remnant liver volume/body weight ≥0.45. The outcomes in these extended living donors were compared with those in living donors under conventional criteria.
Results: The mean RTVR is 27.6%±1.2% (25.5%–28.9%) in extended donor group and posthepatectomy liver failure (PHLF) occurred in 50 donors (10.6%) and most cases were grade A except one case and no clinically significant PHLF was not evident for these extended criteria group. PHLF and major complications were not more frequent in living donors with RTVR <30%. In multivariate analysis, the only event for major complications was associated with PHLF but RTVR less than 30% was not related to PHLF. Moreover, in subgroup analysis with conventional donor group with same age and steatosis criteria, the evidence for PHLF and major complication rate were not different between the two groups.
Conclusions: LDRH under our extended criteria could be performed safely in donors with RTVR <30% under our strict criteria when no other donors are available.

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Lung transplantation for patients with severe COVID-19-related acute respiratory distress syndrome in Korea

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Background: There are uncertainty of lung transplantation (LT) in patients with COVID-19-related acute respiratory distress syndrome (ARDS) who failed to recovery despite optimal management including extracorporeal membrane oxygenation (ECMO).
Methods: Nationwide multi-center retrospective observational study was performed with consecutive lung transplants for severe COVID-19-related ARDS in South Korea between June 2020 and June 2021. Data on patient demographics, pre-transplant and perioperative characteristics, and post-transplant outcomes were collected and compared with other LTs with ECMO bridge from the Korean Organ Transplantation Registry.
Results: A total of 11 patients with COVID-19-related ARDS underwent LT at the five centers in South Korea. The median age was 60.0 years (interquartile range [IQR], 57.5–62.5); six were male. At listing, all patients were supported with veno-venous ECMO. The median clinical frailty scale was 1.0 (IQR, 1.0–2.0) and three patients (27.3%) were on renal replacement therapy. All patients received rehabilitation for the median of 28.0 (IQR, 17.5–43.0) days before LT. Patients were transplanted a median of 49 days (IQR, 32–66) after ECMO cannulation. Primary graft dysfunction (PGD) within 72 hours of LT was developed in two patients (18.2%). Major postoperative complications were infection in seven (63.5%) and bleeding requiring interventions in four (36.4%). One patient died 4 days after LT due to sepsis and one patient underwent re-transplant for graft failure. After a median follow up of 112 days (IQR, 97–166), 10 patients are alive and recovering well. Compared to other LTs with ECMO bridge (n=27), post-transplant outcomes including PGD and mortality were not different between the two groups. However, infection was more frequent in patients with COVID-19-related ARDS (63.6% vs. 14.8%; P=0.005).
Conclusions: LTs in patients with unresolving COVID-19-related ARDS were effective with reasonable short-term outcomes, which was similar to other LTs with ECMO bridge.

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Lung transplantation for COVID-19-associated acute respiratory distress syndrome after extended use of extra corporeal membrane oxygenation: a case report

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Background: Although lung can recover using extracorporeal membrane oxygenation (ECMO) support in patients with severe COVID-19-associated acute respiratory distress syndrome (ARDS), lung transplantation is lifesaving for those who develop irreversible lung injury.
Case report: We report a patient with COVID-19 ARDS who underwent successful lung transplantation after 97 days of bridging with ECMO support. A previously healthy 71-year-old male with no history of underlying diseases was diagnosed with COVID-19. He was intubated for severe ARDS; however, positive pressure ventilation with prone positioning and corticosteroid treatment failed to improve his hypoxemia. For refractory hypoxemia, venovenous ECMO was initiated via bi-femoral configuration performed at the bedside. When the patient was negative for SARS-CoV-2 during the third week of ECMO, the patient was transferred to the general intensive care unit (ICU), and we implemented active ICU rehabilitation. We kept the patient awake, and he was communicating frequently with his family using a video call. Despite the improvement of hypoxemia after ECMO support, hypercapnia persists even with sweep gas greater than 5 L/min. We changed the membrane oxygenator twice and then pumpless interventional lung assist was implanted percutaneously for severe hypercapnia. Double lung transplantation was performed on the day 98th of ECMO. No bleeding or primary graft dysfunction was observed within the first 72 hours. The patient was liberated from mechanical ventilation on postoperative day 5. Currently, the patient can undergo active physical rehabilitation.
Conclusions: This case suggests that it is feasible to wait for the native lung recovery or lung transplant with extended use of ECMO support in patients with COVID-19-associated ARDS. While waiting, concurrent active rehabilitation with ECMO might improve outcomes after lung transplantation.

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The performance of lung transplantation according to the pattern of changing urgency: KONOS registry analysis

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Background: The urgency-based lung allocation system in Korea increases the proportion of lung transplantation in status 0 patients. Current system prioritizes the urgency over the waiting time. This could be disadvantageous to non-status 0 patients, which are listed early. The purpose of this study is to assess how urgency-changing pattern during waiting time on list affects lung transplantation outcome.
Methods: Based on Korean Network for Organ Sharing (KONOS) database, the results of 836 lung transplants conducted in Korea from January 2010 to December 2020 were analyzed. According to the pattern of changes of urgent status, the survival rate was compared by dividing groups into status 0 at registration (group 1), upgraded status 0 from initial status (group 2), and above status 1 (group 3).
Results: The survival rates for 1-year and 5-year after lung transplantation of status 0 were 68.3% and 45.9%, respectively. Overall, the outcomes for status 0 were significantly lower than those for lower status (75.8%, 57.8%; P<0.001). In each group, the 1-year and 5-year survival rate were 55.2% and 39% in group 1, 71.9% and 52.0% in group 2, 75.8% and 57.8% in group 3, respectively. Kaplan-Meier analysis showed significantly lower survival rate in group 1 than in others (group 1 vs. 2, P=0.01; group 1 vs. 3, P=0.01; group 2 vs. 3, P=0.859).
Conclusions: The current KONOS status in lung transplant candidate did not discriminate the postoperative outcome. Urgency-based allocation system showed a pitfall to lead to lower survival rate in a subgroup, which were initially listed as status 0. Refinement on allocation system in status 0 is required to improve postoperative outcome and ethical aspects, such as equality and benefit.

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Lung transplantation in six patients with idiopathic pulmonary artery hypertension

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Background: Idiopathic pulmonary artery hypertension (IPAH) is an incurable and invariably fatal disease. Lung transplantation is a useful therapeutic option in patients who are unresponsive to medical treatment; however, lung transplantation performed for pulmonary hypertension is associated with significantly high perioperative mortality rates.
Methods: We report case series of six patients who underwent lung transplantation for IPAH between October 2008 and June 2021.
Results: Patients' median age was 28.5 years, and the study included 5 of 6 female (83%). Pre-transplantation hemodynamic parameters showed mean right atrial pressure of 12.0±7.1 mmHg and mean pulmonary artery pressure of 62.2±29.5 mmHg. Two of six patients received extracorporeal membrane oxygenation (ECMO) therapy as a bridge to transplantation over 14 and 17 days, and four patients underwent elective transplantation. Two patients required prolonged postoperative venoarterial (VA) ECMO support. Grade 3 primary graft dysfunction occurred in one patient; however, the clinical course improved following prolonged VA ECMO therapy. Five patients (83.3%) required intervention for postoperative bleeding control; one of these patients died of uncontrolled bleeding concomitant with disseminated intravascular coagulation, on the 14th postoperative day, and we observed no other perioperative deaths. One patient died of carbapenem-resistant *Acinetobacter baumannii* bacteremia, a year postoperatively. The 1-month, 6-month, and 1-year survival rates were 83.3%, 83.3%, and 66.7%, respectively.
Conclusions: In view of the poor prognosis of IPAH, lung transplantation (1-year mortality rates <40%) merits consideration as a useful therapeutic option in this patient population. However, postoperative bleeding tends to occur in most patients; therefore, close monitoring is important during post-transplantation management.

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Sodium-glucose cotransporter 2 inhibitors in kidney transplant recipients

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Background: The effect and safety of sodium-glucose cotransporter 2 inhibitors (SGLT2i) have not been investigated in kidney transplant recipients (KTRs) with diabetes. We evaluated the impact of SGLT2i in a multicenter cohort of diabetic KTRs.
Methods: A total of 2,083 KTRs with diabetes were enrolled from six transplant centers in Korea. Among them, 226 patients (10.8%) prescribed with SGLT2i for more than 90 days. The primary outcome was a composite outcome of all-cause mortality, death-censored graft failure, and serum creatinine doubling. An acute dip in estimated glomerular filtration rate (eGFR) over 10% was surveyed after SGLT2i use.
Results: During the mean follow-up of 62.9±42.2 months, the SGLT2i group had a lower risk of primary composite outcome than the control group in the multivariate and propensity score-matched models (adjusted hazard ratio [aHR], 0.52; 95% confidence interval [CI], 0.29–0.94; P=0.031 and aHR, 0.46; 95% CI, 0.24–0.89; P=0.022, respectively). Multivariate analyses consistently showed a decreased risk of serum creatinine doubling in the SGLT2i group. The overall eGFR remained stable without the initial dip after SGLT2i use. A minority of the SGLT2i users (15.6%) showed acute eGFR dip during the first month, but the eGFR recovered thereafter. The risk factors for the eGFR dip were time from transplantation to SGLT2i usage and mean tacrolimus trough level.
Conclusions: SGLT2i improved a composite of all-cause mortality, death-censored graft failure, or serum creatinine doubling in KTRs. SGLT2i can be used safely and have beneficial effects on preserving graft function in diabetic KTRs.

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Kidney transplantation and COVID-19 infection: presentation of COVID-19 in kidney transplantation in Iran

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Background: The coronavirus disease is spreading rapidly throughout the world and nearly every country has thus far, documented this infection. The aim of this study was to evaluate the risk factors for increased mortality in kidney transplant patients with COVID-19.
Methods: This was a prospective study in a single center. During the 6 months ongoing COVID-19 pandemic in Iran, 33 kidney transplant recipients returned to our center with suspected COVID-19 symptoms. Twenty-nine of these patients were COVID-19 positive, thus a therapeutic regimen was commenced for these patients. The data in this study was analyzed by using SPSS ver. 16.
Results: Majority of the patients were male (75%), with a median age of 52 years. Among these patients, 72% had hypertension, and 38% were diabetic. Nevertheless, with a mortality rate of 27%, eight of our patients died due to COVID-19. Seventy-five percent of the deceased patients had high blood pressure. There was a significant relationship between mortality and the patients' blood type in addition to flu vaccination status.
Conclusions: The kidney transplant recipients with confirmed COVID-19 experienced less fever as an initial symptom. Moreover, COVID-19 patients having an underlying disease were associated with a higher mortality, severity of infection, and progression of disease. In conclusion, appropriate management of the recipients' renal complications and flu vaccinations may help lead to more favorable outcomes.

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Managing COVID-19 infection in living donation kidney transplant recipient: a single center experience

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Background: COVID-19 is detrimental for those with comorbidities. Kidney transplant recipients are at the highest risk for developing severe COVID-19 due to their immunocompromised status. We perform a review of COVID-19 infection in our kidney transplant recipients who underwent transplantation from year 2014–2020.
Methods: We conducted a cross-sectional study of 12 kidney transplant recipients who were infected with COVID-19 from January 2020–July 2021. Data was collected through electronic health record. Clinical data includes presenting symptoms, duration from onset to hospitalization, COVID-19 severity, use of mechanical ventilation and any forms of renal replacement therapy, and laboratory values. COVID-19 severity is divided into three categories based on our local guidelines: mild (no evidence of pneumonia), moderate (clinical evidence of pneumonia without dyspnea or supplemental oxygen requirement), and severe-critical (acute respiratory distress syndrome at presentation or severe dyspnea requires supplemental oxygen).
Results: Prevalence of COVID-19 infection in kidney transplant recipient is 0,02% (12/689). Most of the patients are male (83%) and 67% patients were diagnosed with severe-critical COVID-19. Fifty percent of patients (6/12) were died and one is still in hospitalization. Among non-survivor we found a trend towards older age (58 [22.5] vs. 54 [31.5] years; median [interquartile range, IQR]), longer time to seek for medical assistance (6 [10.9] vs. 2 [3] days; median [IQR]), having multiple comorbidities, as well as higher inflammatory markers (C-reactive protein, 156.3 [173.8] vs. 42.9 [97.9] mg/L; D-dimer, 7,590 [5,615] vs. 820 [2,180] μg/mL; median [IQR]). Immunosuppressants were discontinued/adjusted in all moderate-severe cases. None of the patients who required mechanical ventilation (16%, 2/12) and dialysis (16%, 2/12) were survived. Ninety-nine percent of non-survivors were not vaccinated/unknown. Meanwhile, one fully vaccinated patient had severe-critical COVID-19 and survived.
Conclusions: Early diagnosis and timely management for COVID-19 infection in kidney transplant recipients are mandatory. Nevertheless, vaccination might have a significant impact in preventing worse outcome of COVID-19 infection in kidney transplant recipients.

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Low early post-transplant tacrolimus level within 1 month is associated with poor renal allograft survival in kidney transplant patients

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Background: Low-dose tacrolimus therapy with trough level between 3 to 7 ng/mL has been suggested as safe and better for allograft survival in previous studies. Here, we investigated the association of sequential tacrolimus trough-level from at discharge until 1 year after kidney transplantation and graft survival rate.
Methods: This retrospective observation study included patients older than 18 years who underwent kidney transplantation under tacrolimus-based regimens in the Seoul University Hospital between April 30, 1997, and April 30, 2020. Kaplan-Meier survival analysis and multivariate Cox regression analysis were performed according to tacrolimus trough-levels from within 1 month to 1 year after kidney transplantation.
Results: A total of 1,759 kidney transplant patients were included and 72 grafts failed during the study period. Tacrolimus level <7 ng/mL within 1 month after transplantation was associated with worse death-censored graft survival (P=0.000). However, mean tacrolimus level <5–7 ng/mL within 1 year was not associated with all-cause mortality or graft survival. In multivariate analysis, tacrolimus <7 ng/mL was an independent risk factor for poor graft survival (hazard ratio, 0.225; 95% confidence interval, 0.115–0.521; P=0.001). Furthermore, tacrolimus level <7 ng/mL within 1 month was associated with worse overall patient survival (P=0.017). In respect to post-transplant complications including malignancy, infection, post-transplant diabetes mellitus (PTDM), cardiovascular disease and fracture, PTDM-free survival rate was higher in tacrolimus >12 ng/mL within 2 months after transplantation was significantly lower (P=0.001). Infection rate was increased over 10 ng/mL of tacrolimus within 2 months (P=0.034).
Conclusions: Keeping sufficient tacrolimus level (≥7 ng/mL) within 1 month after transplantation is beneficial for good long-term allograft survival.

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Low skeletal muscle mass is associated with mortality in kidney transplant recipients

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Background: Muscle wasting in chronic kidney disease is associated with increased cardiovascular events, morbidity, and mortality. However, whether pre-transplant skeletal muscle mass affects kidney transplant outcomes remains undetermined.
Methods: To examine the impact of skeletal muscle mass on transplant outcomes, we analyzed 623 patients who underwent kidney transplantation between 2004 and 2019. We measured the cross-sectional area of total skeletal muscle at the third lumbar region from a pre-transplant computed tomography scan. Low muscle mass was defined as the sex-specific lowest quartile of the skeletal muscle index.
Results: During the follow-up period, 44 patients (7.1%) died and 54 patients (8.7%) experienced death-censored graft loss. The 1-year, 3-year, and 5-year overall graft survival rates were 92.9%, 87.4%, and 82.8% for the low muscle mass group and 96.6%, 93.8%, and 91.4% for the high muscle mass groups, respectively (P=0.003). A multivariable Cox regression analysis confirmed that low muscle mass was independently associated with all-cause mortality (hazard ratio [HR], 3.881; 95% confidence interval [CI], 1.613–9.336; P=0.002) and overall graft loss (HR, 2.329; 95% CI, 1.301–4.169; P=0.004). By contrast, death-censored graft survival rates were comparable between low and high muscle mass groups. Low muscle mass was also associated with an increased risk of hospital readmission within 1 year after transplant.
Conclusions: Pre-transplant low skeletal muscle mass is associated with increased risk mortality and hospital readmission after kidney transplantation.

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Safe use of hepatitis B surface antigen positive grafts in liver transplantation: a nationwide study based on Korean Organ Transplantation Registry Data

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Background: Liver grafts from donors with chronic hepatitis B virus (HBV) infection has expanded the donor pool in HBV endemic area. Endeavor to use HBsAg (+) graft as safe alternatives were kept up for several years, and the outcome has improved by using hepatitis B virus immune globulin (HBIG) and nucleoside analogs (NA).
Methods: Among 4,265 liver transplantations (LTs) registered in the KOTRY database prospectively between April 2014 and January 2020, 39 cases (0.9%) of LTs using HBsAg (+) grafts were identified. We compared outcomes and its associating factors in LT using HBsAg (+) grafts compared to HBsAg (–) grafts (n=3,971).
Results: Twenty deceased donor LT (DDLT-HBV) and 19 living donor LT (LDLT-HBV) were performed using HBsAg (+) grafts. They maintained HBIG or NA, or both in the perioperative period. The mean end-stage liver disease (MELD) score was 15.8±9.2, and the follow-up period was 28.0±19.2 months. Six LTs were performed for patients in intensive care unit. There was no difference in the patients' survival between the two groups (P=0.111). In addition, no difference between LDLT-HBV and DDLT-HBV was observed (P=0.885). Fifteen patients (38.5%) experienced HBV reactivation and HCC recurred in three patients (7.7%). Three patients underwent re-transplantation because of graft failure that was not related to HBV.
Conclusions: In the era of NA for HBV, HBsAg (+) liver graft can be used safely with expanding donor pool in HBV endemic areas.

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Differential impact of tacrolimus intra-patient variability on liver transplant outcomes in patients with and without hepatocellular carcinoma

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Background: The recurrence rate for hepatocellular carcinoma (HCC) after liver transplant is high as 15%–20% despite a careful selection of candidates. Although immunosuppression plays an important role in post-transplant HCC recurrence, optimal immunosuppressive strategies have not been clearly defined. Patients with high tacrolimus intra-patient variability (IPV) may be at risk of overexposure and adverse effects, such as malignancy and infection. We investigated the association between tacrolimus IPV and transplant outcomes in patients with and without HCC.

Methods: We analyzed tacrolimus IPV using the coefficient of variability from months 3–12 after transplantation in 526 liver transplant recipients between 2009 and 2018 at the Severance Hospital. Patients were grouped according to the presence or absence of HCC and tacrolimus IPV. High tacrolimus IPV was defined as a coefficient of variation greater than 30%.

Results: Among 526 patients, 260 were HCC and 266 were non-HCC. The association between high tacrolimus IPV and patient survival was evident in the HCC group. Overall patient survival in the HCC group was significantly impaired with high tacrolimus IPV (P<0.001). A multivariable Cox regression analysis confirmed that high tacrolimus IPV was independently associated with overall mortality in the HCC group (hazard ratio [HR], 3.262; 95% confidence interval [CI], 1.954–5.447; P<0.001). HCC recurred in 48 patients (18.5%) after liver transplantation. After adjusting tumor characteristics, high tacrolimus IPV was independently associated with an increased risk of HCC recurrence (HR, 2.310; 95% CI, 1.362–3.918; P=0.002). In contrast, overall patient survival of non-HCC group was not significantly different according to the tacrolimus IPV.

Conclusions: High tacrolimus IPV significantly increases the risk of all-cause mortality and HCC recurrence in liver transplant patients with HCC.

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Survival after treatable hepatocellular carcinoma recurrence in liver recipients: a nationwide cohort analysis

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Background: Survival after post-transplant recurrence of hepatocellular carcinoma (HCC) is dismal, and almost all treatments for recurrent HCC are off-labeled, without an extensive large-scale analysis. We aimed to delineate their post-recurrence courses and define benchmarks for comparing future treatment effectiveness.
Methods: Three national databases, including health insurance, catastrophic illness, and the cause of death, were linked for cohort establishment and data collection during the period from 2005 to 2016. Patients with HCC recurrence >6 months after transplant surgery and under treatment were recruited for survival analysis. Selection of treatment strategies for HCC recurrence after liver transplant was based on the same criteria for those without liver transplant.
Results: Of 2,123 liver transplant recipients, 349 developed HCC recurrence >6 months after liver transplant, and the median recurrence time was 17.8 months post-transplant. Within 2 years of treatment, 61% patients showed recurrence (early recurrence group), and survival in these patients was poorer than in the late recurrence group. According to a multivariable analysis, the transplant era before 2008 and radiofrequency ablation were associated with good prognosis, whereas receiving sorafenib and radiotherapy was associated with poor prognosis. The effect of transplant era became insignificant after stratification by recently receiving pre-transplant transarterial chemoembolization.
Conclusions: Timing of recurrence and interventions used were associated with the outcomes of patients with post-transplant HCC recurrence. These data provide the benchmark and indicate the critical period and high-risk factors for further therapeutic trial consideration.

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The fate of donor-type ABO blood group antigen expression in the liver grafts of ABO incompatible adult living donor liver transplantation

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Background: Despite the promising survival outcomes of ABO incompatible adult living donor liver transplantation (ABOi ALDLT) on the effective desensitization protocol of isoagglutinin titer, concerns for antibody-mediated rejection (AMR) leading to fatal intrahepatic biliary necrosis still remain. Donor-type ABO blood group antigens (dABOAg) have been identified in liver graft specimens. However, their fates and roles for AMR in ABOi ALDLT is yet uncertain.
Methods: Thirty ABOi ALDLT recipients who underwent serial liver biopsy were retrospectively reviewed. dABOAg was stained in day 0, 1-week, and 1-year post-transplantation liver graft biopsies. The expression of dABOAg was quantitatively and serially measured by the mean number of stained structures (sS) and the percentage of the stained area (sA, %) in the portal tracts in 90 liver graft biopsies. sS was defined as manually counted positively stained vascular (endothelium of the capillaries, arteries, hepatic veins, and portal veins) and bile duct (epithelium of the bile ducts) structures within the portal tract. sA was automatically measured using the ImageJ software.
Results: On day 0, 1-week, 1-year liver graft biopsies, the overall sS count (32.3±21.7 vs. 20.8±10.8 vs. 20.6±13.2; P=0.001) and sA (%) (2.9±2.2 vs. 1.8±1.1 vs. 1.7±1.5; P<0.001) significantly decreased over time. Early rejection on 1-week biopsy was seen in nine out of 30 recipients (30.0%); five (16.7%) with acute cellular rejection and four (13.3%) with AMR. The sS count in the grafts with early rejection and in grafts with AMR showed a rebound trend, with minimal change from day 0 to 1 week, but increasing at 1-year after transplantation. However, these trends were not definitely shown in the sA analysis.
Conclusions: The expression of dABOAg in the liver graft decreases over time after ABOi ALDLT. However, sustained dABOAg expression on the graft were shown in recipients with early rejection, especially in AMR grafts.

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Entering a new era of zero-mortality in pediatric living donor liver transplantation

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Background: Living donor liver transplantation (LDLT) is a significant advancement for the treatment of children with end-stage liver disease given the shortage of deceased donors. The ultimate goal of pediatric LDLT is to achieve complete donor safety and zero mortality of pediatric recipients.
Methods: We conducted a retrospective, single center assessment of the outcomes as well as the clinical factors that may influence graft and patient survival after primary LDLTs conducted between 1994 and 2020. A Cox's proportional hazards model was used for multivariate analysis. The trends for independent prognostic factors were analyzed according to the treatment era, i.e. I (1994–2002), II (2003–2011), and III (2012–2020).
Results: Primary LDLTs were conducted on 287 children under 17 years of age during the study period. Biliary atresia (52%), acute liver failure (ALF; 26%), and monogenic liver disease (11%) were the leading indications. Overall losses of the graft and patients were 45 (16%) and 27 (7%) during the study period. During era I (n=81), the cumulative survival rates at 1 and 5 years after LDLT were 90.1% and 81.5% for patients, and 86.4% and 77.8% for grafts, respectively. During era II (n=113), the corresponding rates were 92.9% and 92% for patients, and 89.4% and 86.7% for grafts. During era III (n=93), the corresponding rates were 100% and 98.6% for patients, and 98.9% and 95.4% for grafts. During era III, only a patient died of metastatic recurrences of a hepatocellular carcinoma. In multivariate analyses, primary diagnosis ALF, surgical complications, bloodstream infections, post-transplant lymphoproliferative disease, and chronic rejection were negative prognostic indicators for graft or patient survival.
Conclusions: Based on generalized care guidelines and center-oriented experiences, comprehensive advances in appropriate donor selection, refinement of surgical techniques, and meticulous medical management may eventually realize a zero mortality rate for pediatric LDLT.

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Post-transplantation outcomes of sensitized mechanical circulatory support patients

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Background: Sensitization, defined as the presence of circulating antibodies, presents challenges, particularly in patients undergoing heart transplantation (HTx) bridged with durable mechanical circulatory support (MCS). We aimed to investigate the post-transplantation outcomes of sensitized MCS patients.
Methods: Among 889 consecutively enrolled HTx recipients between 2010 and 2018 in Cedars-Sinai Medical Center, 86 sensitized MCS patients (9.7%, group A) were compared with sensitized non-MCS patients (group B, n=189), non-sensitized MCS patients (group C, n=162), and non-sensitized non-MCS patients (group D, n=452) regarding post-HTx outcomes, including the incidence of primary graft dysfunction (PGD), 1-year survival, and 1-year freedom from antibody-mediated rejection (AMR).
Results: Sensitized MCS patients (group A) showed comparable rates of PGD, 1-year survival, and 1-year freedom from AMR with groups C and D. However, group A showed significantly higher rates of 1-year freedom from AMR (95.3% vs. 85.7%, P=0.02) and an earlier decline in panel-reactive antibody (PRA) levels (P<0.01) than sensitized non-MCS patients (group B). Desensitization therapy effectively reduced the levels of PRA in both groups A and B. When group A was further divided according to the presence of preformed donor-specific antibodies (DSA), patients with preformed DSA showed significantly lower rates of 1-year freedom from AMR than those without (84.2% vs. 98.5%, P=0.01).
Conclusions: Sensitized MCS patients showed significantly lower rates of AMR and an earlier decline in PRA levels following HTx than sensitized non-MCS patients. Removal of MCS at the time of transplantation might underlie these observations.

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The clinical outcomes of marginal donor hearts: a single center experience

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Background: The average donor heart utilization rate is known to be 31.4% in South Korea, although reported to improve to 42.9% in 2019, still very low compared with other countries. More than 60% of donor hearts are discarded for the reason of their age or medical condition. However, were the donors truly marginal, and doomed to have poor outcomes? Herein, we suggest an answer to the questions with reporting outcomes of single heart transplant (HTx) center, which actively utilizes the marginal donors.
Methods: Consecutive 66 HTx done from June 2014 to March 2021 in a single tertiary hospital were analyzed. The marginal donor (MD) was defined as follows: a donor age >55 years, left ventricular ejection fraction <50% or significant structural heart disease, cold ischemic time >240 minutes, declined more than 5 times by the listed candidates as not suitable for transplant. Preoperative characteristics of recipients and donors and postoperative hemodynamic data, primary graft dysfunction (PGD), and the survival rate were analyzed.
Results: A total of 29 recipients out of 66 received an organ from MDs. A significant difference in preoperative ECMO status between MD and non-marginal donor (NMD) group (34.5% vs. 67.6%) was noted. There was no statistically significant difference in any-PGD (24.1% vs. 16.2%; P=0.623). The cardiac index recorded immediate postoperative, 6 hours, 12 hours, 18 hours showed slightly lower in MD group, however, caught-up NMD group after 24 hours. Also, long-term results represented by 5-year survival showed no significant difference between the two groups (survival rates 86.2% vs. 75.3%; P=0.92).
Conclusions: Appropriately selected donor hearts declined as 'marginal donor' hearts may increase organ utilization without an increase in post-transplant PGD and mortality.

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Evaluating heart transplantation outcomes from marginal donors

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Background: Considering lack of enough resources, such as artificial heart or ventricular assist devices for long term cardiac replacement therapy, we decided to evaluate those brain death cases, which seem non eligible as heart donor based on guidelines criteria, as marginal donners, but with no contraindication for replacement at preoperational evaluation.
Methods: This retrospective study was conducted on heart donors and their recipients at Organ Procurement Unit of Sina. Among the candidates, 75 were categorized as standard donors (group A) and 18 were marginal donors (group B), group C were heart recipients from standard donors, and group D were heart recipients from marginal donors.
Results: Based on this study 97 heart donors of a total number of 302 donors referred to Sina Hospital, 80.6% were sub grouped as group A, standard donor, and 19.4% group B as marginal group (older than 40 years, or with positive history of drug abuse or smoking, but based on echocardiography and coronary angiography, negative for HIV, or hepatitis infection). Their mean survival rate in groups C and D were 635.67±434.75 and 508.46±407.8 days respectively with no significant difference between survival rates in MD and SD recipients (P=0.961).
Conclusions: Based on this study, marginal donors could be eligible for harvesting, and decrease wait time for end stage heart recipients.

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Gestational hypertension and preeclampsia after kidney donation: a nationwide population-based cohort study from Korea

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Background: Living kidney donation has known to increase the risk of gestational hypertension or preeclampsia. However, pregnancy outcomes in Asian living kidney donors are scarce.
Methods: We performed a retrospective cohort study on 112 living kidney donors and 672 healthy non-donors using the Korean National Health Insurance Claims database from 2007 to 2018. Donors and non-donors were matched with respect to age, residency, income, insurance, and number of pregnancies.
Results: Gestational hypertension or preeclampsia was more common in living kidney donors than in non-donors (12 of 112 donors [10.71%] vs. 37 of 672 non-donors [5.51%]; odds ratio, 1.99; 95% confidence interval, 1.04–3.82; P=0.03). Use of antihypertensive drugs during preeclampsia was also more common in donors than in non-donors (3 of 112 donors [2.68%] vs. 4 of non-donors [0.60%]; odds ratio, 4.56; 95% confidence interval, 1.02–20.37; P<0.01). There were no significant differences in preterm birth and low birth weight between two groups. There were no reports of maternal death or neonatal death in the donors.
Conclusions: Our findings indicate that living kidney donors appear to be associated with increased risk of gestational hypertension or preeclampsia compared to matched healthy non-donors.

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New technologies applied to master education in the time of COVID-19

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Background: Since 2004 a master degree in donation and transplantation has been offered by Donation and Transplantation Institute (DTI) Foundation in collaboration with the University of Barcelona. Since 2011, the program had a blended modular structure: Donation, Transplantation, Management, Tissue Banking, and Internship (IS). In 2020, due to COVID-19, it was adapted to be online. The aim is to analyse the impact of the pandemics on grades and student's satisfaction.
Methods: Until 2019, face to face included the IS, theoretical sessions, simulations, cases debate and group exercises. Since 2020, theoretical sessions have been included in the virtual classroom and practical simulations have been replaced by live sessions. Immersive training (IT) has been employed to substitute IS and family approach (FA) workshop. For IS, a virtual reality tour to a simulated tertiary Spanish hospital. In FA experience, students can virtually meet with patient's family and practice their communication skills. In February 2021 only Donation module has been completed, therefore data are organized in two periods, 2011–2019 and 2020, and the grades obtained in the Organ donation module and the students' satisfaction are evaluated.
Results: In 2011–2019, the average grade in Donation was 8.07/10 and in 2020 the score was 8.08/10. In 2011–2019 the Donation module has been evaluated with an average of 9.58/10. In 2020 the evaluation was 9.36/10. Comparative results indicate slight difference in the values, demonstrating stability despite the difficulties by the pandemic.
Conclusions: The inclusion of new technologies has been essential to keep offering high quality international educational programs. Further exploring of technologies may also improve efficiency.

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Stepwise development of robotic donor right hepatectomy according to the anatomical variations in the hilum and the graft volume

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Background: Initial strict selections of donor without anatomical variations are recommended for minimally invasive living donor liver transplantation (LDLT) program because the donor safety is the most paramount. In this study, we introduced our stepwise development of robotic donor LDLT from donors with from favorable to unfavorable anatomies.
Methods: From April 2016 to October 2020, 80 donors received robotic donor right hepatectomy. All donors were divided according to the variations of the portal vein and bile duct and the graft volume (>800 mL). Donors who had at least one variable that satisfy beyond the three extended criteria were defined as 'unfavorable group.' The proportion of variations was analyzed according to the four periods and perioperative outcomes were compared between favorable and unfavorable group.
Results: Among 80 cases, portal vein variation and bile duct variation were observed 10 cases and 22 cases, respectively. Donors who had graft weight more than 800 g were 22 cases. Unfavorable group donors were eight cases in first and second period, respectively. In third period, nine donors were unfavorable group. In recent 20 cases, 14 donors were unfavorable group. Comparing the perioperative outcomes between favorable and unfavorable group, there were no significant differences regarding total operative time, warm ischemic time, estimated blood loss and postoperative complication.
Conclusions: Stepwise development of robotic donor right hepatectomy showed comparable perioperative outcomes in donor with the anatomical variations in the hilum and larger graft volume and seems to a reasonable way for a safe and successful minimally invasive LDLT program.

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Use of minor donors for living donor liver transplantation and associated ethical issues

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Background: Living liver donation by minors is regarded as justifiable only if minors possess the capacity to consent to donation and the procedure is in their best interests. This study analyzed the incidence of and reasons for living donor liver transplantation (LDLT) by minor donors in Korea, and discussed ethical issues regarding liver donation by minors.
Methods: The databases of the Korean Network for Organ Sharing (KONOS) and Asan Medical Center (AMC) from 2010 to 2019 were retrospectively reviewed to determine the incidence of LDLT by minor donors.
Results: From 2010 to 2019, 590 of 14,243 liver donors (4.1%) in the KONOS database and 276 of 3,401 liver donors (7.5%) in the AMC database were minors. The proportions of minor donors in the KONOS and AMC databases were highest in 2012, at 4.1% and 12.6%, respectively, and lowest in 2019, at 1.1% and 3.0%, respectively. Because most LDLT recipients had relatively low model for end-stage liver disease scores and hepatocellular carcinoma, they were unlikely candidates for deceased-donor liver transplantation and were highly likely to drop out of LDLT if they waited for 1–2 years. The donor-recipient relationship of minor donors in the AMC database was first-degree in 256 (92.8%) and second- or third-degree in 20 (7.2%).
Conclusions: Liver donation by minors is limitedly acceptable only when the minor proves informed, well-considered, and autonomous consent to the procedure and the procedure is in the minor's best interests. We suggest that minors be allowed to donate only to first-degree family members.

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B-cell metabolism regulator IM156 contributes to the mitigation of systemic lupus erythematosus

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Background: Current treatment strategies for autoimmune diseases, including systemic lupus erythematosus, may not sufficiently control the aberrant metabolism in B-cells. To address this concern, we investigated a biguanide derivative, IM156, as a potential regulator for B-cell metabolism.
Methods: We evaluated the anti-inflammatory effects of IM156 *in vivo* in NZB/W F1 mice. NZB/W F1 mice in the experimental group were administered IM156 (2.5 mg/kg/day)-treated drinking water for 30 weeks, starting at 14 weeks of age. Proteinuria was measured weekly from spot urine and survival rate was also observed. Immunohistochemical staining for C3 deposits in collected kidneys was also examined.
Results: IM156 treatment significantly increased overall survival ($P<0.05$; N=5–9) and reduced proteinuria ($P<0.05$ or $P<0.01$; N=5–9) in lupus-prone NZB/W F1 mice. C3 deposits within the glomeruli were significantly decreased upon IM156 administration. Our data indicate that IM156 contributes to mitigation of lupus activity.
Conclusions: Therefore, IM156 may represent a therapeutic alternative for systemic lupus erythematosus mediated by B-cell hyperactivity.

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Immunomodulatory effects of probiotic *Bifidobacterium bifidum* with tacrolimus and sirolimus in mouse skin graft model

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Background: Accumulating evidence suggests that gut microbiota actively crosstalks with the host immune system, and alterations of gut microbiota may exert immune regulatory effects. We aimed to identify probiotic strains capable of modulating the immune response in a mouse allogeneic skin graft model to evaluate its potential as a therapeutic adjunct in the transplantation field.

Methods: Tail skin of BALB/c mice was grafted to the back of C57BL6 mice. Recipient mice were treated with one of five probiotic strains (*Lactobacillus lactis, L. fermentum, L. rhamnosus, Bifidobacterium bifidum,* and *L. reuteri*) alone or in conjunction with tacrolimus or sirolimus, and survival of the skin grafts was compared to the control groups with either no medication, tacrolimus without probiotics, or sirolimus without probiotics. The experiment was repeated for selected probiotic strains that showed immunomodulatory effects for quantitative assessment of cytokines using qRT-PCR.

Results: Co-administration of *B. bifidum* with tacrolimus significantly improved skin allograft survival when compared to either the no medication group (mean 17 days vs. 11.7 days, P<0.001 by log-rank test) or to the tacrolimus only group (mean 17 days vs. 12.7 days, P<0.001 by log-rank test). *B. bifidum* also demonstrated synergistic survival improvement when administered with sirolimus (mean 15.6 days; P=0.019 and P=0.036 when compared to the control group and the sirolimus only group, respectively). Skin grafts from recipients treated with *B. bifidum* and tacrolimus or *B. bifidum* and sirolimus showed significantly increased expression of anti-inflammatory cytokine, interleukin-10 (IL-10). Expression of proinflammatory cytokine, IL-6 was also markedly inhibited in *B. bifidum*+sirolimus group.

Conclusions: *B. bifidum* promoted allogeneic skin graft survival in mice synergistically with tacrolimus or sirolimus, possibly through induction of IL-10 production. Our study suggests that such a synergistic effect of *B. bifidum* may be applicable as an adjunct to conventional immunosuppressive therapy.

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Protective effect of berberine against tacrolimus-induced nephrotoxicity in LLC-PK1 cells

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Background: Tacrolimus (FK506) is an immunosuppressant agent that is frequently used to prevent rejection of solid organs upon transplant. However, nephrotoxicity due to apoptosis and inflammatory response mediated by FK506 limit its usefulness. Berberine (BBR), a bioactive isoquinoline derivative alkaloid, found in many medicinal plants which is known to be an antioxidant and anti-inflammation compound. In the present study, the protective effect of berberine against FK506-induced damage in LLC-PK1 pig kidney epithelial cells was investigated.
Methods: LLC-PK1 cells were exposed to FK506 with Berberine, and cell viability was measured. Western blotting and RT-PCR analyses evaluated protein or gene expression of MDA, HO-1, Bcl-2, Bax, tumor necrosis factor-α (TNF-α), kidney injury molecule-1 (KIM-1), toll-like receptor-4 (TLR-4), and high mobility group box 1 protein (HMGB1) expression were assessed. The number of apoptotic cells was measured using an annexin V/PI staining with flow cytometry.
Results: Reduction in cell viability by 50 mM FK506 was ameliorated significantly by cotreatment with berberine. MDA, KIM-1, TNF-α, Bax, TLR-4, and HMGB1, increased markedly in LLC-PK1 cells treated with FK506 and significantly decreased after cotreatment with berberine. HO-1 and Bcl-2 significantly increased in LLC-PK1 cells treated with FK506 after cotreatment with berberine. Moreover, flow cytometry assay showed that apoptotic cell death was increased by FK506 treatment, whereas it was significantly decreased after cotreatment with berberine.
Conclusions: These results collectively provide therapeutic evidence that berberine ameliorates the FK506-induced renal damage via antioxidant effect and inhibiting apoptosis and inflammation.

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Research on acellular dermal matrix, a potential vascular substitute material

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Background: The homologous human vessel grafts are presently in clinical use for vascular surgery. However, these have progressive stenosis caused by an immune response that is not clearly identified. As blood vessel substitutes' importance is increasingly recognized, it is attractive to engineer human tissues for abdominal surgery or organ transplantation.
Methods: We show here that decellularized human dermis can be used for venous reconstruction (animals: 40 rabbits, patch on inferior vena cava [IVC]; 8 pigs, segmental interposed graft to IVC).
Results: Like normal veins, this human dermis formed a stable conduit. Its inner layer was covered with endothelial cells soon, and it maintained patency for a long time *in vivo* after transplantation to animals. When interposed the engineered grafts to the IVC of pigs, it fulfilled the vessel role.
Conclusions: Successful preclinical results suggest that human dermis could be applied to patients suffering from proper vessel substitutes shortage.

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An investigation of ethical conflict, ethical competency and educational needs for the organ transplant coordinators

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Background: It is a descriptive research study attempted to revitalize ethical education to reduce ethical conflicts and improve ethical competencies by identifying the ethical conflict, competency, job satisfaction, turnover intention, and ethical education needs of organ transplant coordinators in clinical practice.
Methods: Survey data were collected from 87 people who agreed to the online survey from March 22 to May 28, 2021, with about 160 people registered with the Korea Organ Transplant Coordinator Association working as organ transplant coordinators at 107 hospitals in Korea. For ethical conflict and decision-making measurement, the tool developed by Son Hee-jin (2000), the tool used by Park Jung-hye (2002), the tool used by Kim Mi-ran (2007), the ethical competency tool was revised and supplemented, and the tool developed to find out the need for education. The collected data were analyzed using SAS using independent t-test, ANOVA, Pearson's correlation, and multiple regression analysis.
Results: In general characteristics, it was 87.4% for women and the average age was 38.9 years old (±6.72). The average nurse experience was 172.2 months (±89.50) and the organ transplant coordinator experience was 89.3 months (±59.89). The tasks in charge were brain-dead only 46.0%, transplanted only 28.7%, and brain-dead+transplanted 25.3%. Ethical conflict experience averaged 3.5 points (±0.86), the lower area of ethical conflict averaged 3.8 points (±1.01), the average conflict with the medical team averaged 3.7 points (±1.02), and the average conflict with brain-dead care averaged 2.5 points (±0.96). In terms of the degree of consideration when making ethical decisions, the doctor's order was 4.9 points (±0.82), lower than other items, but when asked which opinions were reflected in the decision-making when ethical problems occurred, the doctor was the highest at 62.1%. The average degree of ethical competency was 4.7 points (±0.51), followed by an average willingness to ethics 5.2 points (±0.61), an average technology for ethical practice 4.7 points (±0.53), an average self-awareness 4.7 points (±0.61), and an average strength 4.3 points (±0.70). As for the ethics education needs, the average score for ethics education needs was 5.0 points (±0.94), and ethics related to organ transplantation was the highest at 73.6%. Ethical conflict according to general characteristics differed significantly depending on the task in charge of transplant patients and their family relations (t=3.03, P=0.003), and it was confirmed that there was a significant difference according to the experience of organ transplant coordinator in the area of professional work (t=3.32, P=0.001). Ethical competencies according to general characteristics were found to have significant differences according to the experience of organ transplant coordinator in the field of awareness (t=–2.21, P=0.030). Ethical conflict is about turnover intention (r=0.472, P<0.05), job satisfaction is ethical competency (r=0.277, P<0.05). Regarding the need for ethics education (r=0.229, P<0.05), ethical competency showed a significant positive correlation with the need for ethics education (r=0.474, P<0.05). As the turnover intention increased, the demand for ethics education increased significantly (t=2.46, P=0.016), and as the ethical competency increased, the demand for ethics education increased significantly (t=4.94, P<0.001).
Conclusions: A significant difference in the degree of ethical conflict according to general characteristics was confirmed, and organ transplant coordinators were a group with high ethical and ethical education needs, and the higher the ethical competency, the higher the ethical education demand. Based on the research results, ethics education suitable for organ transplant coordinators should be developed, standardized ethics education for supporting ethical decisions, establishing moral ethics of professionals, and ethics education applicable to clinical sites.

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A survey on the inoculation status of COVID-19 in organ transplant patients

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Background: Negative awareness of vaccination is one of the problems that threaten global health as it can lead to a decline in vaccination rates and outbreaks of infectious diseases. Awareness of vaccine effectiveness may increase vaccine acceptance. As a result of a report by the health authorities for chronic kidney disease patients, a high-risk group, as of May 7, out of 87,000 kidney disease patients, 42% were vaccinated. Since COVID-19 vaccination is important for transplant patients, who are also at high risk, it is important to check the current vaccination rate of transplant patients, identify the cause of non-vaccination, solve the hesitation in vaccination, and raise the positive awareness of transplant patient. This study was attempted to prepare basic data a strategy to promote the vaccination intention. In order to confirm the vaccination intention and awareness of transplant patients, a study was conducted to confirm whether all patients who received a kidney transplant were vaccinated COVID-19, general characteristics, and beliefs, knowledge, and experiences related to the COVID-19 vaccine.
Methods: We intend to conduct a survey study to identify demographic characteristics, response attitudes to COVID-19, and knowledge and experience related to COVID-19 by classifying the subjects as inoculated and unvaccinated.
Results: In order to confirm the intention and perception of vaccination of transplant patients, 65.3% of the respondents said they were vaccinated against COVID-19 in all patients who received kidney transplants and liver transplants.
Conclusions: It is expected to help promote social immunity formation by identifying negative perceptions that caused COVID-19 vaccination, creating strategies to promote vaccination, and increasing vaccination rates.

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Adaptation experience during the period following the transplantation in kidney transplant patients

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Background: Renal transplantation is a treatment that can be expected to improve the quality of life as well as the survival period compared to hemodialysis and peritoneal dialysis. Previous studies have shown variations in the rejection rate, survival rate, self-care performance, treatment order compliance, post-transplant management, immunosuppressive drug compliance, and competence sensitivity during the course of time following renal transplantation. Further, kidney transplant patients experienced fear, depression, anxiety, frustration, and helplessness after transplantation. Therefore, we set out to provide fundamental data that understand patients' lives in depth and establish effective nursing intervention strategies by comprehending the adaptation experience during the course of time following the transplantation.
Methods: This study conducted an in-depth interview using the interview questions prepared based on the adaptation theory of Roy (1970) to evaluate the adaptation experience during the course of time following the transplantation in kidney transplant patients, and performed quantitative research through topic analysis of Braun & Clark (2006).
Results: The study included a total of 31 patients from a university hospital in Seoul who were under outpatient treatment after kidney transplantation (10 patients in 1 year or less after transplantation, 10 patients between 1 and 5 years, 11 patients in 5 years or more). The patient pool included those who were 20 years of age or older that understood the purpose of the study and voluntarily agreed to participate in the study. Data was collected from March, 2020 to April, 2021; individual in-depth interviews were conducted through semi-structured questions with field notes and recordings based on the adaptation theory of Roy (1970). The data collection was conducted in a quiet counseling room at the organ transplant center and the analysis was conducted using the transcript following the interview. The data analysis was performed using thematic analysis of Braun & Clark (2006). It was shown that within a year after kidney transplantation, 'beginning of normalization' and 'taking on the role as a promoter of healthier' were evident and noticeable improvements were seen through 'expanding awareness of the world of living.' Between 1 and 5 years after kidney transplantation, 'role as a promoter of healthier' was stabilized through 'establishment of normalization' and 'increased self-esteem' was achieved through 'expanding network.' Patients in 5 or more years after kidney transplantation exhibited 'daily life with repeated management obsession and negligence' through 'comparing the lives of normal and abnormal people' and experienced 'unlimited expansion.' In conclusion, the patients with kidney transplantation showed differences in the experiences of normalization, promoter of healthier, and expansion during the course of time following the transplantation.
Conclusions: This study established the adaptation experiences during the course of time following the transplantation in kidney transplant patients and enabled detailed understanding of how their experiences vary. Based on the results of this study, it is necessary to recognize the shift in experience during the course of time following the transplantation in kidney transplant patients and to provide customized nursing care.

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The study of deceased organ donation during the COVID-19 pandemic in Korea

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Background: In 2020, the COVID-19 pandemic caused the global health-care system to collapse and continuously affect organ donation and transplantation. Organ donation and transplantation activity in all countries showed an overall decrease at the beginning of the pandemic due to increased health-care service utilization, this decrease stabilized as establishing response system after the first pandemic. Unlike this trend, in South Korea, organ donors have increased to 288 (January to July 2020) and showed a reduction trend from July.
Methods: In this study, we examined the effect of the COVID-19 pandemic on deceased organ donation by analyzing the number of referred potential organ donors.
Results: The first cases of COVID-19 in Korea were reported at the mid-January 2020 and gradually increased by March 2020. In this period, the outbreak in Daegu and Gyeongsangbuk-do province accounted for more than 90% of all COVID-19 cases. From early April to mid-August, the number of COVID-19 cases were decreased, and the government relaxed the quarantine rule. We noted that in the first half of 2020, the number of brain-dead patients referred to Korea Organ Donation Agency (KODA) decreased by 16% compared with the previous year; the family approach and consent rate increased to 83.8% and 37.4%, respectively, 4.4% and 5.4% compared with the previous year, respectively. There are some reasons for this trend. First, the healthcare system in the greater Seoul area worked normally because COVID-19 infection occurred only in few areas like Daegu. The potential brain-dead patients stayed longer in hospitals due to hospital transfer constraints, it extended in-hospital patient time and increased the opportunities to interview the patient's family about organ donation by medical staff or organ procurement coordinator. And two series of the drama about organ donation also affected increasing the family approach and consent rate. However, the case of COVID-19 turned to increase even in the greater Seoul area after the massive rally on August 15. The new daily cases reached 5,800, and the government announced tougher social distancing. The Korea had highest number of infections with metropolitan area in October and November, but the government eased social distancing.
Conclusions: In the second half of 2020, the number of brain-dead patients referred to KODA decreased to 933 cases which 72 cases fell compared with the previous year; the number of organ donors slightly reduced to 190 cases which seven cases dropped with the year earlier. Although the rate of patient's family approach slightly increased (2019, 80.7%→2020, 83%) in referred potential brain-dead patients, the organ donation rate was decreased due to the decline of consent rate. In the first half of 2020, despite COVID-19 hurdles, deceased organ donation increased by building an effort of the government-society-KODA and hospitals, but in the other half of 2020, the organ donation rate turned to decreased. In 2021, the government announced an organ donation initiative; it's time to join the medical staff, hospitals, and society to promote and implement the initiative.

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Development of critical pathway for ABO incompatible kidney transplant patients

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Background: A critical pathway (CP), a part of case management, has emerged in the health care delivery system for quality management that can satisfy the needs of patients with limited manpower and time and increase the satisfaction of medical personnel. In the case of ABO incompatible transplantation, the complex process that requires preoperative treatment such as plasmapheresis and immunosuppressant treatment and additional postoperative treatment and monitoring, and communication of a multidisciplinary team in the process, is required. If suitable CP is developed, it is expected that the quality of the treatment process and efficient operation will be achieved. This study was conducted to develop CP for ABO incompatible kidney transplant patients at one hospital.
Methods: The research method forms a conceptual frame of reference based on the literature review and the protocol currently used in this hospital, and is preliminarily prepared through meetings between multidisciplinary teams such as transplant surgery, nephrology, diagnostic laboratory medicine, radiology, blood bank, and nursing. In order to prepare the CP and confirm its practical applicability, the final CP is confirmed after verifying the clinical validity for kidney transplantation patients from August to September 2021.
Results: In the CP, eight items including examination, drug, treatment, diet, exercise, assessment, patient and caregiver education on the vertical axis and the horizontal axis were determined from the time of admission to the day of discharge.
Conclusions: By applying the CP developed as a result of this study to practice, it is expected that the ABO incompatible kidney transplantation process will be standardized to improve the quality of medical care and improve the efficiency of medical institution operation.

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High pre-transplant FGF-23 level is associated with poor graft survival and persistent vitamin D insufficiency in kidney transplant patients

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Background: Vitamin D [25(OH)D] insufficiency and FGF-23 elevation in chronic kidney disease (CKD) is usually ameliorated after kidney transplantation (KT). However, post-transplant vitamin D insufficiency are still associated with poor graft outcome. This study aimed to investigate the effect of pre-transplant FGF-23 level on post-transplant vitamin D status and clinical outcomes.
Methods: The KoreaN cohort study for Outcome in patients With Kidney Transplantation (KNOW-KT) is a multicenter, observational cohort study. Four hundred subjects for whom serum FGF-23 measurement was available were included in this study. Annual serum 25(OH)D and clinical outcomes; all-cause mortality, cardiovascular event, graft survival, and fracture were assessed according to baseline FGF-23 levels.
Results: Median follow-up was 6.7 years. Serum 25(OH)D levels were increased after KT (before KT, 12.6±7.4; 1 year after KT, 22.6±6.4; 3 years after KT, 24.3±5.8 ng/mL). However, they were declined to 21.2±8.4 ng/mL at 6 years after KT, 20.6±8.1 ng/mL. Vitamin D deficiency was present in 79.1% just before KT, then it was decreased to 30.8% at 3 years after KT, whereas it was increased 37.8% at 6 years after KT. Serum FGF-23 level was decreased after KT (2,140.6 pg/mL [391–9,277] before KT vs. 50.0 pg/mL [23.6–94.6] at 3 years after KT; P=0.001). The FGF-23 showed negative correlation with serum vitamin D levels. When we categorized subjects into tertile according to baseline GFG-23 level; low, middle, high FGF-23 groups. However, the 25(OH)D in the low baseline FGF-23 group was lowest at any point during follow-up. High baseline FGF-23 level was a risk factor for poor graft survival (hazard ratio, 2.098; 95% confidence interval, 1.201–3.664; P=0.009).
Conclusions: Increased FGF-23 could interfere vitamin D activation even after KT and is a risk factor for graft survival.

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The cumulative dose-dependent benefit of metformin in kidney transplantation recipients

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Background: The status of metformin as a primary treatment of choice is concrete, moreover it has recently been recommended for advanced chronic kidney disease patients. Although, the evidence of metformin usage in kidney transplant recipients is lacking. We investigated the effect of metformin in kidney transplant recipients.
Methods: The primary outcomes were all-cause mortality and death censored graft survival (DCGS) and secondary outcome was biopsy proven acute rejection (BPAR). Cox analysis and propensity score (PS) matching were done. Time-varying cox and marginal structural cox regression was conducted for HbA1c. A defined daily dose (DDD) of the WHO Collaborating Centre and penalized spline curve based on DDD was used cumulative effect of metformin.
Results: In 2,048 diabetic KTRs of six tertiary center, 1,199 patients were metformin user and 849 patients were non-metformin user. Most patients were pre-existing diabetes mellitus (DM) before transplantation (78.7%; new-onset diabetes mellitus after transplantation [NODAT], 21.3%) and pre-existing DM tends to be less prescribed metformin than NODAT (pre-existing DM: 902 patients, 56.0%; NODAT: 297 patients, 68.0%; P<0.001). The metformin user had a lower risk of all-cause mortality (adjusted hazard ratios [aHR], 0.57; 95% confidence interval [CI], 0.34–0.94; P=0.028), graft failure (aHR, 0.45; 95% CI, 0.29–0.69), and BPAR (aHR, 0.57; 95% CI, 0.44–0.73). The trend was consistent after PS matching. Even after time varying adjustment of HbA1c with other covariates, metformin usage was associated with significant reduction in all target outcomes. In addition, the more cumulative metformin exposure was correlated to the less risk of all-cause mortality, DCGS and BPAR in whole and PS matched population.
Conclusions: In conclusion, metformin can be also considered as first-line anti-diabetic treatment of choice in KTRs, not only from the benefit of lower mortality, graft survival and acute rejection, but also cumulative dose dependent protective effect of metformin.

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The impact of donor-specific alloantibodies on chronic antibody-mediated rejection after pediatric living donor liver transplantation

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Background: The development of anti-human leukocyte antigen donor-specific alloantibodies (DSA) after living donor liver transplantation (LDLT) can lead to chronic antibody-mediated rejection (cAMR). This study aimed to analyze the detail of DSA and cAMR in pediatric LDLT recipients.
Methods: We conducted a cross-sectional study for 342 pediatric recipients who were followed up for >3 years after primary LDLT and who had at least one screening for anti-human leukocyte antigen (HLA) antibodies. Liver biopsy was performed in the DSA positive cases with mean fluorescence intensity (MFI) >1,000.
Results: The median years from LDLT to DSA screening was 5.0 years (1.0–13.0 years). Of the 342 patients, 89 (26.0%) had DSA (only class I, 11; only class II, 66; both class I and II, 12). The degree of HLA mismatch and a large amount of red blood cell (RBC) transfusion at LDLT were associated with the occurrence of DSA (P=0.0082 and P=0.0013, respectively). Liver biopsy specimens could be scored for the 58 DSA positive recipients. cAMR was detected in 15 recipients (4.4% of cohort, and 25.9% of DSA positive), low graft weight at LDLT and the highest MFI were the risk factors for the occurrence of cAMR (P=0.0094 and P=0.0031, respectively), though other immunological factors or patients' characteristics were not found as risk factors for DSA and cAMR. The pathological findings after the augmentation of immunosuppression showed improvement of inflammation and C4d staining compared with before the augmentation (P=0.027). In addition, MMF contributed the reduction of DSA in the cAMR cases.
Conclusions: We identified the degree of HLA mismatch and a large amount of RBC transfusion at LDLT as the risk factors of DSA development. A low graft weight and high MFI of DSA were detected as the risk factors of cAMR. Tacrolimus and MMF-based immunosuppression appeared effective for cAMR patients with high MFI.

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Pre- and post-transplant risk factors for renal dysfunction in the patients with preserved renal function at 1 month after liver transplantation: a national cohort study using Korean Organ Transplantation Registry (KOTRY)

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Background: Renal dysfunction (RD) is an important long-term complication after liver transplantation (LT) which is associated with patient survival. This study investigated pre- and post-transplant risk factors for RD in patient with preserved renal function at 1 month after LT using the Korean Organ Transplantation Registry (KOTRY) data.
Methods: We performed retrospective cohort study using data of recipients who underwent LT between April 2014 and December 2018 and were registered in KOTRY. We defined RD as 40% decline of eGFR from the value at 1 month and at least below 60 mL/min/1.73 m^2. We performed multivariable Cox regression analyses for pre-transplant and within-one-month risk factors for RD. For post-transplant risk factors, we performed matched analyses according to 8 factors: biopsy-proven acute rejection, infection, bile duct complication, recurrence of HCC, new-onset diabetes mellitus (DM) after transplantation, type of immunosuppressants, steroid withdraw, and type of anti-HBV prophylaxis.
Results: Among 2,274 eligible patients, 251 (11.3%) developed RD during 36.6±14.4 of mean follow-up period. From multivariable Cox regression analyses, age, female sex, lower body mass index, pre-transplant DM, alcoholic liver disease, above Milan hepatocellular carcinoma (HCC), low Karnofsky performance status score at 1 month, bile duct complication within 1 month and lower estimated glomerular filtration rate at LT were identified as independent risk factors for RD after LT. Among post-transplant factors after 1 month, patients with recurrence of HCC (P=0.013), infection (P=0.003), and tacrolimus-mono treatment (vs. tacrolimus-based dual treatment, P=0.022) showed higher RD than control patients without those factors.
Conclusions: This study comprehensively indicates pre- and post-transplant risk factors for RD after LT among patients with preserved renal function at 1 month. Clinicians should consider these risk factors for managing patients during long-term follow-up.

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Bionic pancreas: the first results of functionality bionic tissue model with pancreatic islets

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Background: Three-dimensional (3D)-bioprinting using living cells is the latest technique in the field of biomedical engineering. One of the most important points of the procedure is preserving the cells and leaving them fully functional in the resulting bioconstruction. In the case of bioprinting of bionic tissue, it is important to provide cells with access to nutrients and gas exchange. These are the first results of printed bionic petals and the first studies on a mouse model.
Methods: Research was carried out on 60 mice (severe combined immune deficient [SCID]). Diabetes induction was not undertaken in animal studies because T1D is difficult to achieve in a mouse model. The mice were divided into three groups: control; IsletTx in which porcine pancreatic islets were transplanted under the renal capsule; and 3D-bioprint in which bioink petals consisted of bioink A and porcine islets. The petals were transplanted into the dorsal part of the muscles under the skin. Daily glucose measurement was performed and the level of C-peptide was tested every 7 days.
Results: The results obtained in mice initially showed no differences in the concentration of peptide-C and glucose between groups. However, as early as 7-days after transplantation, both parameters analyzed in the fasting state were significantly lower in the IsletsTx and 3D-bioprinted groups compared to the control group. On day 14, decreased values of C-peptide and glucose were observed only in the group with petals transplants.
Conclusions: Transplantation of bionic petals in mice resulted in a decrease in mean glucose levels. The mice showed a reduced concentration of their own C-peptide, which can indicate relief in mice's owns islets function. None of the animals died due to postoperative complications or the lack of biocompatibility with the bionic structure. Positive effect of transplantation was maintained throughout the experiment, which proves the optimal selection of the composition of the bioink and bioprinting parameters.

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Robot-assisted kidney transplantation: a single-center experience

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Background: Although the open approach is the standard procedure for kidney transplantation, robotic-assisted kidney transplantation (RAKT) has been recently adopted and are becoming popular, especially in Western countries. Different from previous reports, we have developed surgical procedures for RAKT without flipping. The aim of this study is to introduce the step-by-step procedures for RAKT without flipping and to evaluate surgical outcomes of RAKT at our center.
Methods: This was a single-center retrospective study of 38 patients who underwent RAKT from a living donor between August 2020 and July 2021. Dissection of the external iliac vessels was performed by conventional transperitoneal approach. However, to avoid graft flapping to retroperitoneal pouch, we initially placed graft lateral to the iliac vessels. Venous/arterial anastomosis and ureterovesical anastomosis was performed by totally intracorporeal. There was no delayed graft function.
Results: A total of 38 patients had RAKT at our center during the study period. The mean age and body mass index of recipients were 43.2 years (16–68 years) and 23.7 kg/m^2 (16.0–41.2 kg/m^2), respectively. Thirteen cases (31.7%) of ABO incompatible and four cases (9.8%) of T or B flow cytometry-positive RAKT were performed. There was one case of primary non-function due to renal vein thrombosis and one case of mortality due to respiratory arrest which was not related to surgical procedures. The mean vascular anastomosis time and rewarming time were 50.7 minutes (36–69 minutes) and 65.7 minutes (42–119 minutes), respectively. Operative time was 308.1 minutes (196–422 minutes). A patient was hospitalized for an average of 7.1 days after RAKT. The mean estimated glomerular filtration rate one month after RAKT was 72.8 mL/min/m^2.
Conclusions: Considering the lower risk of surgical complications, favorable cosmetic aspects, and earlier recovery, as well as comparable clinical outcomes with conventional open techniques, RAKT is a feasible option for those with end-stage renal disease.

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Successful treatment of calciphylaxis which was developed after kidney transplantation: a case report

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Background: Calciphylaxis is a rare dermatologic disease for kidney transplant (KT) recipients. We report successful treatment calciphylaxis skin lesions which was developed after KT.
Case report: Fifty-year-old male developed multiple ulcer-like skin lesions in both anterior tibia, end of the urethra, and anus. The patient had a history of liver cirrhosis, due to C viral hepatitis, benign prostate hyperplasia and received, 5 antigen mismatch, hypoxic brain death donor KT 15 months ago. In addition, he developed esophageal stricture 5 months after kidney transplantation. The patient's medications were tacrolimus, sirolimus for KT and furosemide for lower leg edema, and terazosin for benign prostate hyperplasia. The cause of esophageal stricture was chronic dysphagia the patient need balloon dilatation every 1 or 2 months. The patient's calcium level was 11.0 mg/dL and inactive parathyroid hormone level was 150 pg/mL. In sonography there was one parathyroid 0.6×0.5 cm well defined hypoechoic nodule in the left retro thyroidal area however there were no remarkably focal activities in the examined area of parathyroid and thyroid area in the parathyroid scan. We did a skin biopsy and reported that necrotic inflammatory exudate with dermal fibrosis, diffuse parakeratosis, orthokeratosis, irregular acanthosis, mild spongiosis, and upper dermal granulation tissue formation with dermal fibrosis. There was no other bacterial and viral infection evidence in culture and laboratory results. The wound was managed with the vacuum application, epidermal growth factor ointment, simazine, and push gel application every day. Cinacalcet hydrochloride and furosemide were applied to lower blood calcium levels and blood pressure. With those medications and wound management, ulcer-like skin lesions became smaller and eventually disappeared in both anterior tibia and end of urethra area after 6 months of treatment.
Conclusions: Calciphylaxis can develop in KT recipients and this might be associated with calcium level and could be successfully treated with hypercalcemia management.

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Living donor satisfaction survey in Myanmar

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Background: Living donation is a strategy to tackle organ shortage for transplantation, but it requires protection of the donor. The aim of this study was to evaluate living donor's satisfaction and dissatisfaction with their donation process.
Methods: This survey was conducted as a prospective descriptive and cross-sectional study from July to December 2020 at Yangon Specialty Hospital by using "Questionnaire of the European Living Donation and Public Health-Satisfaction Survey".
Results: Fifty living kidney and liver donors were interviewed. Of the 50 participant, 58% were female and 42% were male. Years of donation was 2014 to 2020, (n=32, 64%) was 1–5 year (n=11, 22%) >5 year and (n=7, 14%) within 1-year duration. Donor-recipient relationship was: siblings (n=22, 44%), relatives (n=14, 28%), offspring (n=8, 16%), parents (n=5, 10%), and non-related (n=1, 2%).Organs donated were mainly kidney (n=38, 76%), and liver (n=12, 24%). Regarding informed consent, >90% respondents were satisfied with the information given before donation. Medical attention they received during and after donation was sufficient for almost all donors (94%). Eighteen donors (36%) considered the medical test more bothersome than expected. Forty donors (80%) were suffered pain and discomfort after donation. Being a donor, there was some impact on economic loss (n=7, 14%), their job (n=9, 18%) in a negative way. Five donors (10%) felt pressured to be a living donor. Eighteen donors (36%) would not go again through all these procedures. But there is no one who regretted the donation after surgery.
Conclusions: There was slight gender disparity due to female are more dependent and male are a bread winner. Majority of donors accept donation process willingly. But small percentage did not meet their expectancies. This need to be addressed the discrepancies between donor's expectation and actual experiences. By doing so, we can improve Organ Donation Program in an effective way.

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An unusual and late presentation of urinary leak post-kidney transplantation requiring ureteroureterostomy at the single tertiary center of Bangladesh: a case report

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Background: Ureteric complication post-transplantation are a significant source of morbidity, compromised graft function and can cause mortality. The distal part of the ureter is most affected.

Case report: The patient was a 25-year-old female with end-stage renal disease secondary to (glomerulonephritis). She was on haemodialysis for 8 months. Her twin brother was a suitable donor available; donor was human leukocyte antigen (HLA) identical match and crossmatch was negative. She was transplanted on the December 2018 with standard immunosuppression protocol including Methylprednisolone, Tacrolimus and Mycophenolate mofetil. Post-transplant her serum creatinine level was 66.1 μmol/L to 51.5 μmol/L for 2 months. Her serum creatinine escalated to 199.8 after 2 months and Doppler ultrasound of the transplanted kidney revealed mild hydronephrosis. She became anuric requiring dialysis. Her transplant biopsy was done which revealed acute tubular necrosis. After a session of plasma exchange and Haemodialysis her creatinine improved and she was dialysis free. She presented again after 5 months with distended abdomen full of frank puss on aspiration which grew candida. Finally, once she was hemodynamically stable with antifungal, and antivirals a computed tomography urogram revealed a urinary leak at the junction of the transplanted ureter and bladder anastomosis site with tissue ischaemia. She then underwent reconstructive surgery ureteroureterostomy between transplant and native ureter with the transplant ureter being connected to the native ureter. She had a stent inserted at the site which was removed at day 5 and creatinine increase from 70 μmol/L to 150 μmol/L. She went into retention and developed another urinary leak. She was catheterized for 3 weeks. He creatinine normalized to 66 and remained stable.

Conclusions: On-going urine leak may manifest itself as swelling, pain, high drain output, sepsis, ileus, and eventual graft loss. Early identification, localization and quantification of leak remain essential in management of these patients.

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Clinical implication of C1q deposition in kidney transplantation

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Background: C1q nephropathy is an uncommon type of glomerulonephritis and is characterized by an extensive and dominant C1q mesangial deposition in the absence of systemic lupus erythematosus. However, there are limited studies about C1q deposition in renal allografts.
Methods: Between January 2005 and December 2018, 1,742 kidney transplantations were performed in Seoul National University Hospital. C1q deposition was detected in 104 of these cases. Twenty-eight cases had intense (≥2+) C1q-dominance and were reviewed in this study.
Results: Among the 28 cases, 10 cases were detected in the post-reperfusion biopsy and 18 cases were detected in the post-operative periods, which includes both indication (n=16) and protocol biopsy (n=2). Baseline characteristics were similar in both groups except preoperative desensitization was more frequent in the post-reperfusion biopsy (P=0.037). The post-reperfusion C1q depositions either disappeared (n=9, 90%) or diminished (n=1, 10%) in the follow-up biopsy (P=0.001). C1q disappearance or diminishing occurred at protocol biopsy in 70% of patients. The postoperative C1q depositions were frequently accompanied by borderline acute T-cell mediated or acute T-cell mediated rejection (P=0.004). Further analysis of the 15 patients with follow-up biopsy showed that although C1q disappeared or diminished there was an increase in rejection (P=0.039) and IFTA (P=0.025).
Conclusions: Spontaneous disappearance and diminishing of C1q deposition in the post-reperfusion biopsy occurred. C1q deposition in the post-operative biopsy was accompanied by T-cell mediated rejection or interstitial fibrosis and tubular atrophy or BK or immunoglobulin A nephropathy. Due to the limited number of cases, conclusions about renal allograft outcomes could not be made. However, such findings may have clinical significance, and further studies need to be taken to identify the natural history of C1q deposition and C1q nephropathy.

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Clinical significance of chronic active T-cell-mediated rejection

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Background: Chronic active T-cell-mediated rejection (CATCMR) was newly added to the Banff classification in 2017. Currently, its response to treatment, natural course, and clinical significance is largely unknown.
Methods: We performed a retrospective review of renal allograft biopsy performed after 2018 (diagnosed on behalf of Banff 2017 classification) for cases of CATCMR.
Results: We identified 38 biopsies from 36 patients with a diagnosis of CATCMR. Thirty-six initial biopsies of CATCMR were in 33.3% from protocol biopsies (1-year protocol biopsy, n=11; 5-year protocol biopsy, n=1) and the remainder (n=24) were from for-cause biopsies. While all CATCMR from protocol biopsies were isolated, 29.2% of the CATCMR from for-cause biopsies had a concurrent diagnosis of antibody-mediated rejection (AMR) pathology. All 12 patients diagnosed with CATCMR during protocol biopsy were treated with steroid pulse therapy. In one patient, graft function was further improved beyond the baseline upon treatment. During the median follow-up of 8.5 months after the index biopsy, no patient has experienced deterioration of graft function and all are free of rejection and graft failure. Patients with isolated or mixed CATCMR diagnosed during for-cause biopsy received either no treatment (n=2, 8.3%), steroid pulse therapy only (n=15), antithymocyte globulin (ATG; n=1), or AMR treatment (i.e., PP, IVIG, RTX) with or without steroid therapy (n=6), and 50% showed complete or partial response (7/15 with steroid, 0/1 with ATG, 4/6 with AMR treatment). During follow-up, seven of the treated patients (31.8%) experienced graft failure (59.9% estimated graft survival rate by 1-year post-index biopsy). Among the for-cause biopsy group, graft failure was associated with renal function at the time of index biopsy (hazard ratio [HR], 3.48; 95% confidence interval [CI], 1.48–8.2; P=0.004) and higher ct score (HR, 18.0; 95% CI, 1.51–215.7; P=0.022).
Conclusions: While further long-term studies are warranted, CATCMR detected during protocol biopsy and for-cause biopsy should be regarded as a separate entity considering their difference in outcomes.

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Immediate postoperative diastolic blood pressure as a prognostic factor in living donor kidney transplantation

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Background: Avoiding intraoperative hypotension during kidney transplantation (KT) is known to be important for maintaining adequate graft perfusion. On the other hand, poorly controlled chronic hypertension after KT is associated with worse long-term graft outcome. But the effect of blood pressure (BP) immediately after KT is not well established. We investigated the effect of immediate postoperative BP on patient outcome in living donor kidney transplantation (LDKT).
Methods: A retrospective analysis was performed for patients who underwent LDKT between January 2020 and December 2020. Variables included patients' demographics, average systolic blood pressure and average diastolic blood pressure (DBP) at postoperative day (POD) 1. Outcomes were graft functions at 1 and 12 weeks after transplantation and postoperative complication rate.
Results: There were 145 patients included. Multivariate logistic analysis showed that average DBP at POD 1 was an only significant factor associated with graft function at 1 week after transplantation (odds ratio [OR], 0.94; P=0.02) and at 12 weeks after transplantation (OR, 0.95; P=0.04), with the lower DBP the more likely to have poor graft function. An optimized cutoff of average DBP at POD 1 from receiver operating characteristic curve analysis for the favorable graft function (glomerular filtration rate over 60 mL/min/1.73 m^2) at 1 week after transplantation was 79 mmHg (AUC, 0.64; P=0.01; Youden index, 0.25), and an optimized cutoff for the favorable graft function at 12 weeks after transplantation was 87 mmHg (AUC, 0.62; P=0.02; Youden index, 0.20). Postoperative cardiac and pulmonary complication rates were significantly lower in the high DBP group (DBP over 79 mmHg) than in the low DBP group (DBP under 79 mmHg).
Conclusions: In this study, immediate postoperative DBP was found to be an important prognostic factor in LDKT. And our data suggest that achieving DBP over 79–87 mmHg immediately after KT could be beneficial in terms of graft function and postoperative morbidity.

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Ruptured brachial artery mycotic aneurysm in kidney transplant recipient: a case report

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Background: Brachial artery mycotic aneurysm is a rare condition. It can be a complication of hematogenous spread of bacterial infection. We report a case of ruptured brachial artery mycotic aneurysm in kidney transplant recipient.
Case report: A 62-year-old male patient who had kidney transplantation for end-stage renal disease was admitted with left arm pain and swelling. He had deceased donor kidney transplantation 5 years ago and he had left brachiocephalic fistula ligation 3 years previously. One month ago, the patient was hospitalized and treated for urinary tract infection. Urine culture revealed ESBL (–) *Escherichia coli*. His condition improved and he was prescribed antibiotics from the outpatient department. One week before admission, he was vaccinated on his left shoulder. The cause of his arm pain and swelling was likely cellulitis or deep vein thrombosis; we performed imaging studies. US Doppler and computed tomography angiography showed a thrombosed occluded brachial artery aneurysm measuring 25 mm in diameter and 18 cm in length throughout the brachial artery. The radio-ulnar bifurcation site was reconstituted by two early branching collateral arteries above the brachial artery aneurysm. We performed aneurysm resection and two early branching collateral arteries were preserved, one of which required reanastomosis. Brachial artery aneurysm revealed contained rupture and severe adhesion to adjacent tissues. Brachial artery microbiological examination revealed *E.coli*.
Conclusions: Brachial artery mycotic aneurysm can be potentially limb or life threatening. It is important to acknowledge urinary tract infection as a cause. The best therapeutic management is surgical repair after a prompt diagnosis.

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Expansion and characterization of regulatory T cell populations from korean kidney transplant recipients

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Background: The development of immunosuppressants has enabled remarkable progress in kidney transplantation (KT). However, current immunosuppressants cannot achieve induction of immune tolerance and their nonspecific immunosuppressive effects result in many adverse effects. Regulatory T cells (Tregs) play crucial roles in controlling allospecific immune responses. This study evaluated the distribution of Tregs and their effects on kidney allograft function in Korean KT recipients.
Methods: We enrolled 144 KT recipients with stable graft function between 1989 and 2018. Differentiation and expansion of Tregs were studied by flow cytometry to compare the Tregs subpopulations. Tregs were defined as $CD4^{+}CD25^{high}CD127^{low/-}FoxP3^{+}$ cells.
Results: Among the 144 patients, 75 patients (65.8%) were males and mean follow-up period was 144.3±111.5 months. All patients received calcineurin inhibitors as maintenance immunosuppressants. Patients with follow-up period more than 144.3 months tended to have more gating Tregs numbers than that in shorter follow-up period (92.3±142.4 vs. 50.1±76.4, P=0.061; respectively). There were no significant differences in Tregs subpopulations between patients with serum creatinine more than 1.5 md/dL and patients with serum creatinine less than 1.5 mg/dL. In terms of the number of Tregs, when the trough level of tacrolimus was at an appropriate level, the number of Tregs tended to be higher than that of Tregs when the trough level of tacrolimus was low or high, and the organ function of the transplant was also stable.
Conclusions: Tregs counts may be associated with transplant outcomes considering that there is a relationship between these cells and kidney graft function.

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Expansion and characterization of regulatory T cell populations from acute kidney injury patients

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Background: The mechanism of acute renal injury is complex. Previous studies have shown that the immune inflammatory response plays an important role in acute kidney injury. Regulatory T cells, one of the CD4-positive T cells, express IL-2 receptor (CD25). Foxp3 (Forkhead Box P3), a transcription factor that regulates immunosuppressive activity, and FoxP3-positive regulatory T cells are the drugs normal kidney monocytes, which accounts for 2%. Recent studies have shown that regulatory T cells play a role in protecting the kidney and are the expected immunotherapy target in acute renal injury. In this study, regulatory T cells were isolated and proliferated from patients with acute renal injury to confirm the kidney prognosis. Regulatory T cells that proliferated in vitro were re-administered to the same patient to reduce kidney damage, prevent chronic kidney disease, and reduce the occurrence of end-stage renal disease.
Methods: Thirty patients with acute kidney injury between March and December 2020 were enrolled in this study. Differentiation and expansion of Tregs were determined using flow cytometry to compare Treg subpopulations. Tregs were defined as $CD4^{+}CD25^{high}CD127^{low/-}FoxP3^{+}$ cells.
Results: In patients with acute renal injury, the number of regulatory T cells increased immediately after the decrease in renal function, and the number of regulatory T cells was normalized after the renal function was restored.
Conclusions: In patients with acute renal injury, the number of regulatory T cells increased immediately after the decrease in renal function, and the number of regulatory T cells was normalized after the renal function was restored. In the future, it is expected to reduce kidney damage, the occurrence of chronic kidney disease, and end-stage kidney disease by re-administering regulatory T cells grown in vitro to the same patient.

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Effect of soluble ST2 as a tool for the evaluation of volume status in kidney transplant recipients

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Background: Cardiovascular disease is the leading cause of death in kidney transplant recipients (KTRs) and it is important to evaluate volume status for heart condition. Echocardiography is an important tool for assessing heart condition, but it is expensive and not readily available. In the recent, soluble ST2 (sST2), which is associated with cardiac matrix remodeling by cardiovascular events, has been considered as a novel cardiac biomarker in the general population, but it is uncertain in KTRs. Therefore, we investigated the effect of sST2 as a tool for the evaluation of volume status in KTRs.
Methods: We retrospectively analyzed the medical records of 100 KTRs measured sST2 at Keimyung University Dongsan Hospital between 2019 and 2021. We divided them into higher and lower sST2 groups according to the median value of sST2 of 23.0 ng/mL. We performed body composition monitor (BCM), echocardiography and cardiac markers such as CK-MB, troponin-I, and NT-proBNP. Hyperhydrated status was defined as the hydration status-to-extracellular water ratio (ΔHS) >15% in BCM.
Results: The rate of male sex, dialysis vintage and serum CK-MB level were significantly higher in the higher sST2 group than in the lower sST2 group (80% vs. 42%, P<0.001; 66.6±71.3 vs. 35.0±47.6 months, P=0.014; 3.5±3.0 vs. 1.5±0.9 mg/dL, P=0.002). Plasma NT-proBNP level, serum troponin-I level, and the rate of hyperhydrated status were higher in the higher sST2 group than in the lower sST2 group, but there was no significant difference between the two groups. Hyperhydrated status, NT-proBNP, CK-MB, and troponin-I were significantly associated with sST2 levels (r=0.548, P=0.005; r=0.248, P=0.027; r=0.415, P=0.006; r=0.405, P=0.007). However, the parameters in echocardiography (left ventricular mass index, ejection fraction, and left ventricular and atrial diameters) were not associated with sST2 levels.
Conclusions: sST2, with cardiac markers and BCM, might be effective to evaluate the volume status in KTRs.

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Combined impact of extended criteria donor and cold ischemic time on delayed graft function in deceased donor kidney transplantation

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Background: The most significant complication is delayed graft function (DGF) on deceased donor kidney transplantation (DDKT). Multiple factors belonging to donor, recipient, and transplant procedures have an effect on the development of DGF. We aim to evaluate the combined impact of extended criteria donor (ECD) and cold ischemic time (CIT) of DGF and its effects on the graft.
Methods: Between January 2008 and October 2020, a total 99 recipients who underwent DDKT were retrospectively reviewed. We classified recipients into two groups: DGF(–) vs. DGF(+). Each group was subdivided according to Korea Network for Organ Sharing (KONOS) ECD criteria. The risk factors of DGF associated with donor and recipient were analyzed. The effects of DGF were examined on the graft function and survival.
Results: We included 99 DDKT cases. Among 99 DDKT, 35 cases were included in DGF(+), and the others were in DGF(–) (n=64). The serum creatinine level before donor nephrectomy of the DGF(+) group was significantly higher (1.7±1.1 mg/dL) than that of the DGF(–) group (1.0±0.5 mg/dL, P<0.0001). CIT of the DGF(+) group was 333.2 ± 95.5 minutes, compared to 289.4±62.3 minutes of the DGF(–) group (P=0.018). In the DGF(+) group, the ECD group showed shorter CIT than SCD groups statistically (301.2±92.5 minutes vs. (371.1±87.0 minutes, P=0.029). There was no significant difference in graft function and survival between DGF(+) and DGF(–) groups.
Conclusions: In this study, graft function and survival after DGF(+) DDKT were similar to that of DGF(–) DDKT. However, to reduce DGF, efforts are needed to reduce CIT in DDKT using ECD than when underwent DDKT using SCD.

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Donor kidney quality assessment with ultrasound and clinical parameters in deceased donor kidney transplantation

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Background: We try to evaluate the effect of functional kidney volume measured by donor kidney ultrasound, alone or in combination with other donor factors and see if those parameters could be a model for deciding acceptable kidney grafts in deceased donor kidney transplantation (KT).
Methods: From 2000 to 2020 who underwent deceased donor KT and those donors were recruited only at the Samsung Medical Center and total 273 patients were enrolled after adjusting exclusion criteria. Estimated glomerular filtration rate (eGFR) was the laboratory lab used for evaluating kidney function. To binarize each kidney US character, we selected an optimal cut-off value for eGFR less than 30 within 1 year after KT by using Youden's index among the values which have specificity above 60%. Cox regression analysis was performed for eGFR less than 30 within 1 year after KT and graft failure within 2 years after KT.
Results: All the US findings were risk factors of eGFR less than 30 within year after KT. Odds ratios of model 3 of renal length, cortical thickness, parenchymal thickness and renal length×cortical thickness are 6.417 (95% confidence interval [CI], 1.332–28.361; P=0.020), 10.146 (95% CI, 1.934–53.217; P=0.006), 6.665 (95% CI, 1.540–28.852; P=0.011) and 14.700 (95% CI, 2.805–77.030; P=0.001), respectively. About graft failure within 2 years after KT, cortical thickness and renal length×cortical thickness were risk factors and odd ratios of them are 3.792 (95% CI, 1.006–14.295; P=0.049), and 4.129 (95% CI, 1.119–15.236; P=0.033), respectively.
Conclusions: We confirmed that the donor kidney US findings act as predictors of short term prognosis after KT and thought that this can be used to help in deceased donor selection. However, the ultrasound findings alone cannot be a standard, and it is thought to have a meaning as a factor constituting the extended criteria.

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Successful renal artery reconstruction using a polytetrafluoroethylene graft in living donor kidney transplantation: a case report

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Background: Arterial injury can occur during donor nephrectomy. Here, we report a case of successful reconstruction of damaged renal artery with a polytetrafluoroethylene (PTFE) graft in living donor kidney transplantation.
Case report: A 47-year-old female patient was admitted for kidney transplantation. She was diagnosed with chronic kidney disease due to immunoglobulin A nephropathy. The donor was her 23-year-old son and his left kidney was selected for allograft. Preoperative computed tomography angiography showed two left renal arteries including an upper pole accessory artery. During laparoscopic donor nephrectomy, inadvertent arterial injury occurred. The main renal artery was clamped and cut in the renal hilum. After removal of the clamp, two divided branches of main renal artery were shown. Both of the main and accessory renal arteries were too short to anastomose. A standard wall 4 mm PTFE graft was used for renal arterial reconstruction. Initially conjoined anastomosis of the two branches of the main renal artery was done and it was extended with a PTFE graft. Then end-to-side anastomosis of the accessory renal artery to the PTFE graft was done. Finally, the end of the PTFE graft was anastomosed to the recipient`s right internal iliac artery. The allograft was well perfused. The cold and warm ischemic times were 149 and 45 minutes, respectively. She underwent hemodialysis due to oliguria on postoperative day 3. The urine output increased on postoperative day 5. Doppler ultrasonography on postoperative day 5 and 19 showed patent renal artery and well-perfused allograft. Renal function gradually improved and maintained with a serum creatinine level of 0.8 mg/dL. She has been followed up with aspirin for 9 months without vascular complications.
Conclusions: Arterial reconstruction using a PTFE graft is acceptable for a damaged short renal artery of allograft. Follow-up with Doppler ultrasonography and adequate antiplatelet therapy was necessary.

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Elderly kidney transplant recipients have favorable outcomes but increased infection-related mortality

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Background: Elderly patients with end-stage kidney disease have been increasing. However, the outcomes of kidney transplantation (KT) in elderly patients is unclear, particularly in Asian kidney transplant recipients (KTRs). We evaluated the clinical outcomes of elderly KTRs and analyzed the impact of elderly donors.
Methods: This is a retrospective cohort study including patients who underwent KT between January 2000 and December 2019 at the Kyungpook National University Hospital. KTRs were divided into four groups, according to recipient and donor age (≥60 years or not) combination: elderly recipients: old-to-old (n=46) and young-to-old (n=83); young recipients: old-to-young (n=98) and young-to-young (n=796). We compared the risk of mortality, death-censored graft failure, and biopsy-proven acute rejection (BPAR) using Cox regression analysis.
Results: The incidences of delayed graft function, graft failure, and BPAR were not different among groups (all P>0.05). Annual mean tacrolimus trough level was not lower in elderly recipients compared to young recipients during 10-year follow-up. The mortality was significantly higher in elderly recipients compared to young recipients (P=0.001); in particular, infection-related mortality was higher in elderly recipients (P<0.001). In the multivariate Cox regression analysis, old-to-old and young-to-old groups had increased mortality risk than young-to-young group (adjusted hazard ratio [aHR], 3.16; 95% confidence interval [CI], 1.26–7.97; P=0.014; aHR, 3.14; 95% CI, 1.57–6.30; P=0.001, respectively). However, graft failure and BPAR risk were not increased in elderly recipients than young-to-young group (both P>0.05).
Conclusions: In the elderly recipients, graft survival and BPAR-free survival were not inferior to those of young recipients, but mortality, especially risk of infection-related death was increased. Low immunosuppression intensity might help decrease mortality in elderly recipients.

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Cellular and genetic signatures of operational tolerance in kidney transplant recipients through single cell RNA sequencing analysis

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Background: Patients with operational tolerance do not use immunosuppressants after renal transplantation, but they show stable post-transplant results as stable patients with immunosuppressants. We analyzed differently expressed mRNAs and proteins by targeting immune genes to single cells in patients with rejection, stable, and tolerance after kidney transplantation to see if the post-kidney transplantation stability could be distinguished from genetic signatures.
Methods: This experiment was conducted with peripheral blood mononuclear cells (PBMC) of four post-transplant rejection patients, four post-transplant stable patients, and five post-transplant tolerance patients. Through targeted multi-omic analysis, 10,180 (rejection group), 7,180 (stable group), and 16,784 (tolerance group) single-cell transcriptomes were analyzed. We added 20 different types of ab-seq to the targeted panel to complement for the relationship between proteins and transcripts.
Results: We found 17 subclusters in the PBMC samples of three groups and confirmed the expression of mRNA and protein targeted by the immune panel among the subpopulations. We found the difference in the expression level of each group of NK cells, CD4 T cells, CD8 T cells, B cells, Treg cells, B memory cells and B naive cell populations. In 420 target genes including 20 Ab-seq, 70 transcripts and proteins were expressed differently in rejection and stable, 45 in stable and tolerance, and 96 differently in rejection and tolerance. Compared with the other two groups of patients, in tolerance patients, CD56(Ab) was highly expressed in B cells, CD4 T cells, and Treg cells, and CD196(Ab) was highly expressed in B memory cells and B naive cells. CD8(Ab) was highly expressed in NK cells.
Conclusions: Analysis of transcript expression at the single cell level characterizes the phenotype of cells and defines their functional properties. We found that the operational tolerance group expressed markers that differed from the rejection and stable group.

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Combination therapy of low-dose cidofovir and leflunomide in a kidney transplant recipient with BK virus nephropathy: a case report

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Background: BK virus frequently results in allograft loss or permanent dysfunction in kidney transplant recipients. It is a challenge to treat BK virus nephropathy (BKVN) because the reduction of immunosuppression for the treatment of BKVN can increase. Thus the treatment of BKVN has been not well established. Cidofovir is a nucleotide analog against various DNA viruses and was approved for the treatment of cytomegalovirus retinitis in AIDS. The main side effect of cidofovir is nephrotoxicity and it is dose dependent. Several cases have been reported that combination of cidofovir and leflunomide was used for refractory BKVN. However it remains as a dilemma for BKVN treatment because of the nephrotoxicity of cidofovir. Thus we report a case that refractory BKVN to reduction of immunosuppression was successfully treated by combination therapy of low-dose cidofovir and leflunomide in a kidney transplant recipient.
Case report: A 63-year-old male receiving kidney transplant before 6 months was hospitalized due to elevated serum creatinine. He was taking immunosuppressive agents; tacrolimus, mycophenolate mofetil and prednisolone. At 6 months of post transplantation, serum creatinine increased to 2.7 mg/dL. Allograft biopsy was performed and it was compatible with BKVN. BK viral loads (DNA) at admission were 291,250 copies/mL in blood and 195,498,400 copies/mL in urine. Tacrolimus and mycophenolate mofetil were switched to leflunomide (40 mg/day). However, serum creatinine continuously elevated to 4.2 mg/dL with increase of viral loads (546,000 in blood and 785,000,000 copies/mL in urine). Low-dose of cidofovir 0.25 mg/kg was intravenously administered weekly for 4 weeks. At 4 weeks with combination therapy of low-dose of cidofovir and leflunomide, viral load decreased to 4,915 copies/mL in blood and 70,000,000 copies/mL in urine and serum creatinine decreased to 2.2 mg/dL.
Conclusions: Combination therapy of low-dose cidofovir and leflunomide can be considered in a kidney transplant recipient with BKVN.

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Effects of platelet rich plasma on ureteroneocystostomy in rabbits

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Background: The aim of this study is to study the role of platelet-rich plasma (PRP) on the healing of ureteroneocystostomy (UCA) in a rabbit model.
Methods: A total of 14 adult male New Zealand rabbits (*Oryctolagus cuniculus*) were divided into two groups: group I (n=7), standard anastomosis without PRP; group II (n=7), standard anastomosis with PRP. The animals were observed for 7 days, then killed. The parameters of the study were complications of anastomosis, evaluation of hydroxyproline and histopathological evaluation of anastomoses.
Results: The level of hydroxyproline was statistically higher in the PRP group than in the control group (P<0.05). Histological evaluation of the anastomoses showed almost complete healing in all animals. The average histological parameters of the animals in the groups did not differ.
Conclusions: According to our results, we assume that the use of PRP improves the healing of the anastomosis due to the level of hydroxyproline and a decrease in the inflammatory response. Further clinical studies are needed to confirm our hypothesis.

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Uremic cardiomyopathy may improve with kidney transplantation: a case report

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Background: In patients with chronic kidney disease (CKD), left ventricular (LV) hypertrophy with impaired LV systolic function, which is called uremic cardiomyopathy is often observed. In recent studies, CKD may cause and aggravate uremic cardiomyopathy in patients without coronary artery disease. We report a case of improvement of severe uremic cardiomyopathy without coronary artery disease after kidney transplantation (KT).
Case report: A 43-year-old male, who received deceased donor kidney transplantation in 25th January, 2019. Time on dialysis before KT was 73 months. The cause of CKD was IgA nephropathy. At the time of admission, an echocardiogram revealed a LV ejection fraction (LVEF) of 8%, severe global hypokinesia, and an enlarged bilateral chamber. A coronary angiogram demonstrated normal coronary arteries. He underwent a deceased donor kidney transplantation from marginal donor and produced urine soon after the transplantation. He was treated with the immunosuppression regimen, which included prednisone, mycophenolate mofetil and tacrolimus. Patients were also receiving other medicines than immunosuppressants such as antihypertensive drugs, taken both before and after KT. Successful KT improved his cardiac symptoms and increased his LVEF to 16% at POD# 17. His LV function improved as his LVEF increased to 32%, which has been maintained along with a favorable renal allograft function for 4 months. Two years after KT, his LVEF was 60% and the blood creatinine level was maintained at 1.36 mg/dL.
Conclusions: This case demonstrates the patients with severely impaired cardiac function could be able to receive significant benefits after successful KT. KT should be considered for CKD patients with LV systolic dysfunction.

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Association of preoperative non-HLA antibodies with kidney allograft rejection

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Background: Non-human leukocyte antigen (HLA) antibodies are thought to have an impact on kidney allograft rejection. We analyzed the titers of non-HLA antibodies in kidney transplant recipients at the time of transplantation and screened which antibodies are associated with kidney allograft rejection.
Methods: The study included 400 preoperative sera from kidney transplant recipients with biopsy-proven antibody-mediated rejection (ABMR, n=47), T-cell mediated rejection (TCMR, n=200), and controls without rejection (n=153) at Seoul National University Hospital between 2015 and 2021. A total of 41 types of non-HLA antibodies were analyzed by Luminex method (Labscreen Autoantibody and Labscreen Mixed, One Lambda, USA) and enzyme immunoassay (EIA-AT1RX, One Lambda, USA). In multivariable logistic regression analysis, the effect of DSA and HLA mismatch are adjusted.
Results: In multivariable analysis, occurrence of ABMR was related to the increase of anti-collagen type I (≥75 percentile value provided by the manufacturer, odds ratio [OR], 10.6; P=0.001) and the increase of anti-collagen type IV antibody (OR, 2.3; P=0.033). The occurrence of ABMR was decreased with the increase of anti-ARHGDIB (OR, 0.4; P=0.007), anti-collagen II (OR, 0.3; P=0.001) and anti-LG3 (OR, 0.3; P=0.015). Meanwhile, the occurrence of TCMR was associated with the increase of anti-collagen II antibody (OR, 2.1; P=0.007).
Conclusions: The increase of anti-collagen type I and type IV antibody titers at the time of transplantation was related to ABMR of kidney allografts. The increase of anti-ARHGDIB, anti-collagen II, and anti-LG3 antibody titers was related to the decreased occurrence of ABMR. Anti-collagen II antibody was related to the occurrence of TCMR. Further researches are needed on the mechanism by which each antibody acts in the rejection of kidney allografts.

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Development of hypertension after live kidney donation

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Background: Hypertension is a common comorbidity and also a risk factor for end-stage kidney disease in living kidney donors. Herein, we aimed to evaluate the impact of exposure to overweight after donation on the development of new-onset hypertension.

Methods: Subjects took national health check-up ≥2 times during 2001–2018 were included. After matching with multiple variables, controls were randomly extracted. Exposure to overweight and obesity was defined by body mass index ≥23 kg/m^2 and ≥25 kg/m^2 during follow-up period. Overweight/obesity status was divided into four groups; persistently no exposure, exposure at only last health check-up, persistently exposure in two times of health check-up, and recovered from exposure at last health check-up. We used a multivariate logistic regression model to identify risk factors for new-onset hypertension.

Results: A total of 1,642 donors and 3,655 controls were finally included in the study. During 7.6±3.1 years, there were 142 (8.6%) and 253 (6.9%) subjects newly diagnosed with hypertension, respectively. Kidney donation significantly increased risk for new-onset hypertension (adjusted odds ratio [aOR], 1.53; 95% confidence interval [CI], 1.21–1.93). Persistent overweight significantly increased risk for new-onset hypertension (aOR, 3.53; 95% CI, 2.07–6.35 vs. aOR, 1.69; 95% CI, 1.19–2.43), whereas recovered from overweight did not increase risk (aOR, 1.61; 95% CI, 0.36–5.1 vs. aOR, 0.87; 95% CI, 0.35–1.87) in kidney donor and controls, respectively. Exposure to persistent obesity significantly increased the risk for hypertension in both groups, but recovered from obesity still increased the risk in kidney donors (aOR, 2.51; 95% CI, 1.03–5.45) in contrary to the control (aOR, 1.60; 95% CI, 0.88–2.76).

Conclusions: Both exposures to overweight or obesity increased the risk for new-onset hypertension, but recovered from overweight or obesity showed different results in donors. Physicians need to be focused on counseling for reducing the modifiable risk factor such as for overweight after donation.

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Incidental renal cell carcinoma in a native kidney of patient with autosomal dominant polycystic kidney disease for renal transplantation: a case report

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Background: Autosomal dominant polycystic kidney disease (ADPKD) is an important cause of end-stage renal disease. Pre-transplant native nephrectomy is performed to create space in the pelvis, to decrease compression by the enlarged polycystic kidney, and to prevent development of various symptoms.
Case report: A 63-year-old male with end-stage kidney disease due to ADPKD planned to deceased donor kidney transplantation. Because of massive enlarged kidneys, he underwent a bilateral nephrectomy. The diameter of the right kidney was 22×17 cm and left kidney 22×16 cm. Pathology indicated multifocal renal cell carcinoma in both kidney with Fuhrman nuclear grade 3/4 and no lymphovascular invasion.
Conclusions: This case reinforces the importance of considering the possibility of an occult malignancy in the native kidneys of patients with ADPKD. we present a case of incidental renal cell carcinoma in a patient with ADPKD who underwent bilateral native nephrectomy for deceased donor renal transplantation.

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Eculizumab as rescue therapy in a renal transplant recipient with atypical hemolytic uremic syndrome: a case report

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Background: Atypical hemolytic uremic syndrome (aHUS) after kidney transplantation (KT) can cause irreversible graft failure by over-activation of the alternative complement pathway. Eculizumab is a humanized monoclonal antibody against the human complement component C5 and has been used to treat aHUS. Herein, we report a case of a KT recipient with aHUS, which was salvaged with eculizumab.

Case report: A 61-year-old female with end-stage renal disease received a KT from a deceased donor. The surgery was performed successfully and serum creatinine (sCr) level decreased to 0.74 mg/dL without acute rejection episodes. The patient received tacrolimus, mycophenolate mofetil and methylprednisolone as maintenance immunosuppressants. Four months after the KT, the patient complained of general weakness and diarrhea. Her sCr level increased to 1.50 mg/dL. The hemoglobin and platelet count decreased to 7.0 g/dL and 20,000/μL, respectively. In addition, LDH increased to 3,207 IU/L. The kidney biopsy showed severe glomerular thrombotic microangiopathy. Under a diagnosis of aHUS, intense plasmapheresis was initiated. However, sCr level increased to 4.32 mg/dL and anuria did not resolve for more than 10 days. Eculizumab was initiated as per usual protocol (900 mg weekly for 4 weeks followed by 1,200 mg every other week) at admission day 11. Anti-meningococcal vaccination was administered before the first dose of eculizumab. Four weeks after eculizumab treatment, platelet count normalized to 236,000/μL and sCr level declined to 2.05 mg/dL. There were no significant side effects except for urinary tract infection controlled with antibiotics. Eculizumab was discontinued 3 months after treatment. Currently, 12 months after the presentation, renal allograft function has remained stable and there has been no evidence of aHUS recurrence.

Conclusions: Since aHUS after KT is associated with a high rate of allograft failure, prompt use of eculizumab along with plasmapheresis can be a valuable treatment to save renal allograft.

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Ginsenoside Rg3 attenuates ischemia reperfusion induced renal injury in mice via induction of autophagy flux

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Background: Ginsenoside Rg3 (Rg3) has been shown as protective effects via various mechanism. However, the reno-protective effect and the role of autophagy are not clearly evaluated. This study investigate Rg3 induces autophagy flux and reduces renal cell death in renal ischemia reperfusion injury (IRI).
Methods: C57Bl/6 mice were divided into the following groups: sham; Rg3 treated sham; saline treated IRI mice; Rg3 treated IRI mice. Kidneys and blood were collected 24 hours after operation of mice (sham and IR operation). Renal function, kidney histology, and the protein expression of autophagy signals were evaluated.
Results: In IRI mice, the levels of blood urea nitrogen (BUN) and serum creatinine (SCr) were increased, compared to sham. The Rg3 treatment decreased the BUN and SCr in IRI mice. In addition, Rg3 treatment decreased the renal injury score including the renal tubular cell detachment and necrosis in IRI mice. Rg3 treated IRI mice showed significantly less oxidative stress and autophagy impairment, greater amounts of LC3 and Beclin-1, lower amounts of p62, and higher levels of renal ATP6E compared to saline treated IRI mice. Rg3 treatment also increased phosphorylation of AMPK in IRI mice kidney.
Conclusions: Rg3 has renoprotection against renal IR injury via enhancement of autophagy flux.

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Light chain deposition disease in kidney transplantation: a case report

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Background: The light chain deposition disease (LCDD) is a range from normal glomerular morphology to mesangioproliferative to mesangiocapillary to nodular sclerosing patterns. Due to the inconsistencies treatment and the poor graft outcome of LCDD, it is important to investigate for clinching this diagnosis.
Case report: A 53-year-old male was diagnosed end-stage renal disease due to chronic glomerulonephritis and underwent a live unrelated kidney transplantation in 20 years ago. Serum creatinine level gradually increased to 2.41 mg/dL and sub-nephrotic range proteinuria was observed. A kidney biopsy was performed, there are 9 glomeruli, which 3 glomeruli show global sclerosis and remain 6 glomeruli show segmental sclerosis with luminal hyalinosis and hyaline thickening of capillaries. There is no evidence of prominent tubulitis in non-atrophic tubules, vasculitis and capillaries.
Conclusions: Electron microscopic examination showed the characteristic intramembranous, subendothelial and paramesangial granular deposits and detached podocytes and diffuse effacement of foot processes 80%. The spectrum of LCDD has a wide range of differential diagnosis and resulting in potential underdiagnosis.

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Successful treatment of chronic active T-cell-mediated rejection after high-dose immunoglobulin administration in BK virus nephropathy not responding to immunosuppressant reduction: a case report

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Background: BK virus nephropathy, which occurred after a kidney transplant, has not yet established a clear treatment. In the absence of a specialized antiviral drug for BK virus, there is a concern of a concurrent rejection reaction when immunoglobulin is administered to reduce or neutralize immunosuppressants. The authors report that they have experienced successful treatment of the chronic active T-cell-mediated rejection, which occurred four months after administering high dose immunoglobulin to BK virus nephropathy, which deteriorates in the reduction and modification of immunosuppressants.
Case report: A 28-year-old male patient with end-stage renal disease was hospitalized three months after receiving a deceased donor kidney transplant with elevated serum creatinine. A biopsy of the transplanted kidney was diagnosed as BK virus nephropathy stage A (Banff score: i1 ci1 ct1 ah2 i IF/TA2 ti2 as3). At the time of diagnosis, the BK viral load was 6 log copies/mL in serum, and 9 log copies/mL in urine. Immediately, mycophenolate was discontinued, and tacrolimus was changed to sirolimus. After 1 month, the patient's serum creatinine continued to increase, and high-dose immunoglobulin (2 g/kg) was administered, and a gradual decrease in serum creatinine was observed. After 2 months of immunoglobulin administration, serum BK virus DNA polymerase chain reaction was negative and showed improvement clinically. Two months later, he was hospitalized due to elevated serum creatinine, and a graft biopsy was performed again. Graft kidney biopsy showed chronic active T-cell-mediated rejection, grade 1B (Banff i0 t3 ci3 ct3 ptc1 i IF/TA3). Sirolimus was changed back to tacrolimus, mycophenolate was added again, and steroid pulse treatment was performed.
Conclusions: After that, a gradual decrease in serum creatinine was observed over 1 year, and it has now decreased to a normal level. The patient is currently under observation at the outpatient clinic.

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Safety and metabolic advantages of steroid withdrawal after 6-months post-transplant in *de novo* kidney transplantation: 1-year prospective cohort study

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Background: This prospective multicenter study aimed at investigating the safety and metabolic advantages of steroid withdrawal therapy in kidney transplant recipients with tacrolimus-MMF based immunosuppression.
Methods: We analyzed 179 recipients who received kidney transplantation from March 2016 and September 2018. In 179 recipients, 114 patients maintained immunosuppressive regimen including steroid (SC group). The remaining 65 patients were determined to withdraw steroid therapy after 6 months post-transplant (SW group), who satisfied steroid withdrawal protocol consisted of stable serum creatinine, absence of rejection and no proteinuria. During study period, oral glucose tolerance tests (OGTTs) were performed every 3 month to evaluate the change of glucose metabolism.
Results: The estimated glomerular filtration rates at 12 months post-transplant were 67.29±20.29 mL/min/1.73 m^2 in SC group and 73.72±17.57 mL/min/1.73 m^2 in SW group (P<0.001). The acute rejection occurred to 15 recipients in SC group (13.2%) and no acute rejection occurred to SW group recipients. After 6-months post-transplant, OGTT revealed that recipients in SW group was improved in glucose metabolism. Additionally, total cholesterol, high-density lipoprotein, low-density lipoprotein and blood pressure decreased after withdrawal of steroid in SW group.
Conclusions: Six-month withdrawal of steroid in recipients with low immunological risk and stable graft function can be safely conducted and result in improvement of metabolic profiles. The stable recipients without acute rejection and proteinuria can safely withdraw steroid out of maintenance immunosuppressive regimen after 6 months post-transplant.

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Clinical characteristics of antibody-mediated rejections with C1q-binding and without C1-binding donor-specific antibodies

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Background: Donor-specific antibodies (DSAs) increase the risk of rejection and graft loss in kidney transplant (KT) recipients. However, all DSAs are not clinically relevant. Therefore, the C1q assay has been recently used to detect complement-binding DSAs, but its clinical meaning and usefulness should be investigated more.
Methods: This paper studied the clinical characteristics of KT recipients who had antibody-mediated rejection with C1q-binding and without C1q-binding DSA. Among the 5,097 patients who received KT in a center between 2000 and 2020, 21 had C1q assay test results with DSA when antibody-mediated rejection was diagnosed. Clinical and pathologic data were compared between 16 and five patients with C1q-binding DSA (C1q[+] DSA group) and without C1q-binding DSA (C1q[−] DSA group), respectively.
Results: All patients in both groups had human leukocyte antigen (HLA) class II. The peak mean fluorescence intensity of HLA class II DSA was significantly higher in the C1q(+) compared with the C1q(−) DSA group (13,744±5,512 vs. 6,378±3,039; P=0.011). No significant difference in pathologic findings was noted between the two groups. However, no patient in the C1q(−) DSA group showed a peritubular capillary C4d stain score of ≥2, although a significant difference between the two groups was not shown (37.5% vs. 0%, P=0.262). Moreover, the C1q test results were changed in the clinical course in two patients in the C1q(−) DSA group who had follow-up C1q test results. Furthermore, graft survival was not significantly different between the two groups (P=0.512 by log-rank test).
Conclusions: Antibody-mediated rejection with C1q(+) and C1q(−) DSA may have different clinical characteristics. However, C1q positivity can change and may overlap in the clinical course. Thus, further studies are necessary to identify underlying mechanisms and clinical application of the C1q assay.

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Graft lymphoma in a kidney transplant recipient: a case report

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Background: Post-transplant lymphoproliferative disorders (PTLDs) are significant complications in solid organ recipients, with various lymphoid and/or plasmacytic proliferations due to immunosuppression. Here, we present the case of pathologically confirmed lymphoma after nephrectomy in a KT recipient with allograft dysfunction showing symptoms like urinary tract infection.
Case report: A 37-year-old female was admitted with an abrupt 39℃ fever. She went on continuous ambulatory peritoneal dialysis 6 months after graft failure. Eight years ago, she underwent deceased donor kidney transplantation for end-stage renal disease due to immunoglobulin A (IgA) nephropathy. The immunosuppressants she was taking included tacrolimus, mycophenolate mofetil, and prednisolone. No episodes of acute rejection occurred. However, a graft biopsy was performed 4 years after the kidney transplant due to decreased kidney function and showed recurrent IgA nephropathy. The patient complained of intermittent gross hematuria, mild graft discomfort, and general weakness. On admission, laboratory investigations revealed hemoglobin (5.5 g/dL), lactate dehydrogenase (1,453 IU/L), and high-sensitivity C-reactive protein (187 mg/L). Physical examination demonstrated tenderness in the graft area. Enhanced computed tomography showed graft swelling with soft tissue infiltration, and we immediately started treatment with antibiotics. Nevertheless, her fever did not come down, and she became weaker than before hospitalization. Finally, we performed a graft nephrectomy as it was considered a graft intolerance syndrome. The histologic findings showed atypical lymphoid cells infiltrating diffusely between the sclerotic glomerulus and atrophic renal tubules. In addition, the patient was also positive for CD20 and Epstein-Barr virus (EBV)-encoded small nuclear RNAs in situ hybridization, suggesting EBV-positive diffuse large B cell lymphoma.
Conclusions: In this case, graft lymphoma manifested as persistent severe anemia and an abruptly high fever. Therefore, even though transplant recipients return to dialysis after graft failure, PTLDs should be included as a differential diagnosis from infection with a high index of suspicion.

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The most influential articles on kidney transplantation: a bibliometric and visualized analysis

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Background: Kidney transplantation has become common in the treatment of end-stage renal disease. However, to date, there has been no bibliometric analysis of kidney transplantation research to identify the most influential articles. The purpose of this research was to identify and characterize the 100 most cited articles that focused on kidney transplantation and to clarify the trends in the accomplishments in this field.
Methods: We searched the Thomson Reuters Web of Science citation indexing database and used keyword mapping of VOSviewer. The top 100 most cited manuscripts were analyzed based on the title, author, institution, country of origin, year of publication, and topic.
Results: *The New England Journal of Medicine* published the most manuscripts on kidney transplantation (n=26) and was the most cited journal (n=15,642). The United States had the highest number of publications (n=61). Kashika was the corresponding author with the most published papers (n=5; 2,892 citations). The most common topics of publication were immunosuppressant (n=34), clinical outcome (n=26), and pathology (n=22). Keywords related to immunosuppressant were the most common in keyword mapping with VOSviewer.
Conclusions: This bibliometric analysis of kidney transplantation research provides the research characteristics and publication trends.

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Paragonimiasis mimicking ureter stone in living kidney donor: a case report

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Background: Extrapulmonary paragonimiasis mainly involve pleural, subcutaneous, cerebral, and spinal infection. Other extrapulmonary paragonimiasis has been reported in hepatic, splenic, abdominal, urinary, and gynecologic organs.
Case report: We report a case of paragonimiasis mimicking ureter stone in living kidney donor. We decided kidney transplantation between the married couple. The living donor was 61-year-old male, and his computed tomography angio abdomen scan showed about 0.6 cm stone at left proximal ureter, and small size periureteral low density lesion at the left proximal ureter. In operation, we found of a lump of soft tissue in periureter, measuring 4.5×4×2.5 cm, yellowish adipose tissue-like appearance. Frozen specimen cut surface showed cystic appearance filled with yellowish necrosis like material, and was diagnosed as parasite infection, morphologically paragonimiasis. Kidney transplantation was done steadily, and postoperative course progressed smoothly. Donor showed positive in P. westermani Ab and Cysticercus Ab, but recipient showed negative. After further interview, he had history of paragonimiasis and taking praziquantel 15 years ago. We prescribed to her praziquantel 1,800 mg for 3 days. In post-transplant 3 month, her serum creatinine increased from 0.95 mg/dL to 1.57 mg/dL, and sonogram showed hydronephrosis. We decided double J stent insertion through percutaneous nephrostomy, and followed up for 8 months cautiously. Even though waiting, proximal ureter stricture was incurred, and she has been regular double J stent exchange under general anesthesia.
Conclusions: Even if extrapulmonary paragonimiasis involving ureter is very uncommon, the meticulous history taking and examination would be needed in transplantation work up. We would better consider divers diseases for differential diagnosis.

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Non-invasive diagnosis for acute rejection using blood mRNA signature reflecting allograft status in kidney transplantation

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Background: Despite improvements in immunosuppressive therapy over the years, acute rejection (AR) episodes that required treatment are still a significant risk factor for poor graft outcomes. Monitoring renal graft status through peripheral blood (PB) rather than invasive biopsy could reduce bleeding risk and costs.
Methods: Blood gene biomarker panels were discovered by microarrays and subsequently validated and cross-validated by qPCR. A total of 112 human PB samples, each paired with a graft biopsy, were analyzed (58 AR, 42 stable, and 12 other causes of graft injury). The differentially expressed genes by microarray, Q-PCR analysis of a four gene-set (GRB10, LGALS3BP, OLR1, and RNASE2) classified AR.
Results: We developed AR prediction model with the blood mRNAs by a binary logistic regression, and the AUC of the model was 0.76 in the training set. In addition, the decision curve analysis indicated a range of reasonable threshold probabilities for biopsy.
Conclusions: Therefore, we suggest blood mRNA signature may serve as a non-invasive monitoring tool of AR for a clinical application and can assist with deciding whether to perform a biopsy in a recipient with a rise in creatinine and probably justifies a biopsy.

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Acute T cell-mediated rejection after administration of the BNT162b2 mRNA COVID-19 vaccine in a kidney transplant recipient without a history of acute rejection for 13 years: a case report

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Background: Kidney transplant recipients have significantly high risks of mortality and morbidity after severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, suggesting the need for earlier administration of coronavirus disease 2019 (COVID-19) vaccines in these individuals. However, there is limited data on the humoral and cellular responses after COVID-19 vaccination.

Case report: We report the case of a 78-year-old kidney transplant recipient who experienced acute T cell-mediated rejection (TCMR) after receiving the second dose of the BNT162b2 mRNA COVID-19 vaccine (Pfizer-BioNTech). The recipient underwent deceased donor kidney transplantation for hypertension 13 years ago, and had not experienced any adverse event after transplantation. Her maintenance immunosuppressants were tacrolimus, azathioprine, and low-dose steroid. The latest level of serum creatinine 1 month before the vaccination was 0.61 mg/dL and the trough level of tacrolimus was maintained at 4–5 ng/mL. Fifteen days after receiving the second dose of the BNT162b2 vaccine, the recipient visited our center with a mild headache and fever. The level of serum creatinine was elevated to 4.95 mg/dL, and there was considerable swelling of the transplanted kidney on non-enhanced computerized tomography. On kidney biopsy, acute TCMR (grade IB) was diagnosed with no pathologic evidence of antibody-mediated rejection. Luminex single-antigen flow beads assay did not reveal donor-specific anti-HLA antibodies. Anti-SARS-CoV-2 spike IgG and IgM antibodies (S1-IgG and S1-IgM) were measured by enzyme-linked immunosorbent assay (ELISA) on the day of the kidney biopsy (18 days after the second vaccination), which revealed that the levels of S1-IgG and S1-IgM were 2.80 (weak positive) and 0.16 (negative), respectively. The recipient was administered with steroid pulses (500 mg/day) for 5 days. One month after the steroid pulse therapy, her serum creatinine level had decreased to 2.47 mg/mL.

Conclusions: This report shows that kidney transplant recipients may be at risk for acute rejection after COVID-19 vaccination despite having low levels of S1-IgG and S1-IgM.

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Optimized antithymocyte globulin dose in high risk kidney transplantation

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Background: Antithymocyte globulin (ATG) induction therapy is important for graft survival in high-risk recipients of kidney transplantation. However, the optimal dose of ATG is controversial. The purpose of our study was to analyze the optimal dose of ATG in high-risk kidney transplantation.
Methods: This retrospective study included 801 consecutive patients from a prospectively registered database who underwent kidney transplantation at Seoul St. Mary's Hospital, South Korea, between January 1, 2019, and December 30, 2020. Receiver operating characteristic (ROC) curve analysis was used to confirm the optimized cut-off dose associated with graft survival. Comparison analysis between the two ATG dose groups was performed. Death-censored graft loss and mortality were analyzed using the Kaplan-Meier method.
Results: A total of 771 patients were enrolled in the study (mean age, 48.7±11.5 years; range, 16–75 years). Of these, 445 patients (57.7%) was male and 326 (42.3%) was female; 157 patients (20.4%) underwent ABO incompatible kidney transplantation and 196 (25.4%) underwent deceased donor kidney transplantation. Using ROC curve analysis, the optimized total ATG dose associated with graft survival was found to be 287.76 mg (AUC, 0.644; P=0.027; Youden index, 0.309).
Conclusions: In our study, it was suggested that the use of more than 4.78 mg/kg total dose ATG was associated with good graft survival in high-risk kidney transplantation recipients. Therefore, appropriate ATG administration is required for these patients.

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Robot-assisted laparoscopic versus retroperitoneal endoscopic donor nephrectomy: a matching analysis

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Background: This study aims to assess safety and efficacy of introducing robotic-assisted laparoscopic donor nephrectomy (RALDN) to the standard retroperitoneal endoscopic living donor nephrectomy (RELDN).
Methods: Data were collected prospectively from 124 consecutive living kidney donors (93 for RELDN subgroup and 31 for RALDN subgroup) from February 2018 to December 2020. Donor baseline demographics, perioperative outcomes and recipient outcomes were recorded, and these parameters were compared between the two subgroups before and after propensity-score matching.
Results: For the entire group, mean age was 51.1±9.1 years; 42.7% were males; mean body mass index was 22.7±2.4 kg/m^2; and there were 109 left kidneys (88%). The following data of RELDN and RALDN was respectively recorded: operative time (213±43 vs. 216±39 minutes, P=0.721), warm ischemic time (4.7±1.2 vs. 4.9±1.4 minutes, P=0.399), postoperative complications (5.4% vs. 6.5%, P=1), hemoglobin (g/L) drop (9.4±7.2 vs. 9.7±6.6, P=0.836), donor blood creatinine at 1 month (1.17±0.25 vs. 1.12±0.25 mg/dL, P=0.325) and at 6 month (1.15±0.23 vs. 1.13±0.24 mg/dL, P=0.734). In post-propensity score matched analyses, there was significant differences between the two groups including opioid use after surgery (48.4% vs. 16.1%, P=0.014) and postoperative hospital stays (2.7±1.5 vs. 3.8±2.2 day, P=0.02).
Conclusions: RALDN could be safely introduced into a living donor program experienced in laparoscopic donor nephrectomy.

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The worth emphasizing surgical technique: ureteropyelostomy to manage urinary tract complications in renal transplantation: two case reports

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Background: Ureteric stricture after renal transplantation can lead to allograft kidney damage, prompt treatment is necessary. The ureteropyelostomy using the recipient's ipsilateral native ureter is the best choice of several treatments that can salvage an allograft kidney. The aim of this report proves that the ureteropyelostomy using a native ureter is the surgical technique to be feasible management of urinary tract complications after renal transplantation. Two patients who failed conservative treatment of urinary stenosis after renal transplantation were reviewed using electronic medical records, radiologic images, and surgery.
Case reports: (Case 1) A 41-year-old male undergone 2nd renal transplantation in 2017. Initial transplantation was performed in 1992, with allograft in the right iliac fossa. At the postoperative 18 days, he presented an abdominal pain with oozing on the surgical incision site. On computed tomography, there was a ureteral rupture and perirenal hematoma of the allograft. The ureteropyelostomy using a native ipsilateral ureter was performed successfully without any complications such as ureteral necrosis, urinary leakage, and urinary stricture. After 3 years of follow-up, he had a well-functioning allograft with a serum creatinine level of 1.59 mg/dL. (Case 2) A 52-year-old male underwent renal transplantation in March 2018. At 5 months after surgery, oliguria and hydronephrosis occurred due to the ureter stone of the graft. The patient underwent percutaneous nephrostomy and ureterolithotomy, and the double-J catheter was inserted. In November 2020, because of urinary tract infection and aggravated stricture of the ureter, ureteropyelostomy using a native ureter was performed successfully except for minor tearing of the renal artery. After 3 weeks of follow-up, he had a well-functioning allograft with a serum creatinine level of 0.98 mg/dL.
Conclusions: The ureteropyelostomy using a native ipsilateral ureter can be a safe and feasible surgical technique that treated urinary complications after renal transplantation and resulted in good graft and patient survival.

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ABO-incompatibility and donor-specific antibodies existence effect on antibody-mediated rejection in kidney transplantation

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Background: The aim of this study was to identify the incidence of antibody-mediated rejection (ABMR), which was confirmed in postoperative 10-day biopsy depending on the presence or absence of donor-specific antibody (DSA) prior to surgery, in the case of ABO incompatible recipient in kidney transplantation.
Methods: From January 2010 to November 2019, a retrospective study was conducted on patients with ABO incompatible and/or DSA positive among patients who received kidney transplantation at Seoul National University Hospital.
Results: Of the 175 patients identified as ABOi, 17 were DSA(+) patients and 158 were DSA(–) patients. The age of recipient and donor was not much different, and the proportion of women in recipient was higher than that of ABOi DSA(–) in the ABOi DSA(+) group. (76.5% vs 35.4%, P=0.001) Also the proportion of women in the donor was higher than that of ABOi DSA(+) in the ABOi DSA(–) group. (60.8% vs 23.5%, P=0.003) Definitely, the preoperative PRA-1 and PRA-2 positive rates were higher than ABOi DSA(–) in the ABOi DSA(+) group (PRA-1: 58.8% vs. 15.8%, P=0.000 and PRA-2: 76.5% vs. 17.1%, P=0.000). And preoperative PRA-MFI max values were high in the ABOi DSA(+) group, with 6,407±1,377, 1,306±277 and P=0.002, respectively. On the 10th day after surgery, the biopsy results showed that ABMR or ABMR+TCMR were 29.4% in ABOi DSA(+) group and 13.3% in ABOi DSA(–) group. The graft survival of these two groups showed no statistically significant results, and the graft survival of the preoperative antibody titer showed no difference between the two groups.
Conclusions: Our data show that ABOi DSA(+) patients and ABOi DSA(–) donors had a large number of women, and the higher the PRA max. value, the higher the positive PRA-1,2, the higher the incidence of ABMR in postoperative biopsies, while there was no significant difference in the preoperative antibody titer.

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Experience of starting ABO incompatible kidney transplantation in Bangladesh: report of seven cases

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Background: ABO incompatible kidney transplantations (ABOiKT) are increasingly being practiced worldwide. Currently, living kidney donation is the only viable option for transplantation in Bangladesh which is further restricted due to ABO compatibility issue. We started ABOiKT in Bangladesh since 2018. Here we report our experience of seven ABOiKT cases.
Methods: The desensitization protocol included low-dose Rituximab (100 mg/body single dose), then plasma exchange. The replacement fluid used was fresh frozen plasma. Each plasma exchange was followed by intravenous immunoglobulin 5 gm/dose. The immunosuppression consisted of Tacrolimus (0.1 mg/kg/day), Mycophenolate Mofetil (1,500 mg/day) and Prednisolone (0.5 mg/kg/day). All patients received basiliximab as induction therapy.
Results: Graft survival for our seven cases is 100% over a mean duration of 22 months. Mean creatinine was 204.6±47.4 μmol/L. Two patients received intravenous methylprednisolone due to suspected acute cellular rejection. One patient required haemodialysis post-transplant due to delayed graft function and the graft function recovered subsequently. Two patients developed accelerated hypertension post transplantation. Two patients developed gastrointestinal disorders. One patient developed ST elevation myocardial infarction after plasma exchange which was managed conservatively and transplantation was performed 3 weeks later which was uneventful and post-transplant graft function was satisfactory. Infection was the major complication in our ABOiKT patients. Four out of seven patients (57%) developed infection despite having prophylactic antibiotics and two patients (28.6%) died with a functioning graft; one patient developed cytomegalovirus pneumonia and another patient developed pneumonia of unknown aetiology.
Conclusions: The start of ABOiKT in Bangladesh will substantially expand the living kidney donor pool and bring hope to a large number of end-stage renal disease patients who do not have ABO compatible donor; hence reduce economic and health impact of long term dialysis therapy. However, Bangladesh is a high infection risk area and infection remains the major challenge in managing these patients.

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Meta-analysis of association between TCF7L2 rs7903146 and risk of new-onset diabetes after transplantation

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Background: Single nucleotide polymorphisms may influence the risk of development of new-onset diabetes after transplantation (NODAT), a post-transplant clinical complication that is often implicated in allograft rejection and mortality. We performed a meta-analysis of association between TCF7L2 rs7903146 and risk of post-transplant diabetes mellitus.
Methods: A systematic search was conducted using PubMed and ScienceDirect electronic databases for studies published between January 2001 to January 2021. Case-control or cohort studies reporting association between NODAT (diagnosis based on American Diabetes Association criteria) and TCF7L2 rs7903146 were included. MetaGenyo was used for meta-analysis (random effects model). Pooled odds ratios with 95% confidence intervals were reported to evaluate the strengths of association.
Results: Two reviewers independently screened for articles. A total of six case-control studies were included for full-text review and quantitative analysis after screening for eligibility. Genotypic distributions were in Hardy-Weinberg equilibrium for included studies. All papers reported statistically significant association of TCF7L2 rs7903146 for risk of NODAT, except for one study. There was moderate heterogeneity among studies (I^2=60.6%). Pooled analysis revealed 51% odds of developing NODAT with TCF7L2 rs7903146 T allele (allele contrast model: odds ratio, 1.51; 95% confidence interval, 1.13–2.02; adjusted P=0.03).
Conclusions: The present meta-analysis demonstrated association between TCF7L2 variant rs7903146 and risk of developing NODAT. This finding may have clinical implications for individuals undergoing kidney transplantation.

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Circulating prophagocytic calreticulin and anti-phagocytic CD47 in renal transplant recipients: relation to allograft function

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Background: Chronic allograft dysfunction (CAD) is considered the leading cause of late allograft loss. Programmed cell removal is a process by which damaged or unwanted cells are recognized and phagocytosed and involves the expression of pro-phagocytic signals like calreticulin (CRT) on target cells, which is counterbalanced by anti-phagocytic signal CD47. The present study was conducted to assess circulating CRT and CD47 levels in renal transplant recipients (RTR) and their relation to allograft function.

Methods: Thirty RTR for more than 6 months (15 RTR with stable renal function and 15 RTR with CAD) and 15 healthy controls were enrolled in the study. Renal function was evaluated by serum creatinine, estimated glomerular filtration rate, and urinary alkaline phosphatase (u.ALP; a marker for tubular function). Serum levels of CRT, CD47 and high-sensitivity C-reactive protein (hsCRP; marker of systemic inflammation) were estimated using enzyme-linked immunosorbent assay. Renal interstitial fibrosis (IF) was graded in renal biopsies of CAD.

Results: Serum CRT, hsCRP and u.ALP levels showed significant increases and serum CD47 levels showed a significant decrease in RTR with CAD compared with RTR with stable renal function and healthy controls ($P<0.01$), while the differences were not statistically significant between the latter two groups ($P>0.05$). Serum CRT and CD47 levels were positively correlated with serum levels of creatinine and hsCRP and u.ALP in RTR and with the degree of renal IF in RTR with CAD ($P<0.05$). Serum CRT and CD47 showed high diagnostic accuracy in discriminating RTR with CAD from RTR with stable renal function (area under the curve, 0.842; $P=0.001$ and area under the curve, 0.824, $P=0.002$, respectively).

Conclusions: Alterations in circulating CRT and CD47 levels are associated with the development of CAD after renal transplantation and could be potential biomarkers for post-transplant outcome. Modulation of phagocytosis through CRT/CD47 pathway might be a therapeutic target for allograft dysfunction.

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Pressure natriuresis and diuresis are differentially regulated depending on age and sex

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Background: The renal capacity for handling salt and water is linked to hypertension. This study aimed to clarify the sex- and age-related natriuretic and diuretic differences that occur in blood pressure (BP) regulation.
Methods: We analyzed two datasets: one representing 235 patients with nondiabetic chronic kidney disease from the E-SPECIAL trial, which evaluated the effect of a low-salt diet (LSD) on olmesartan for lowering albuminuria, and one representing 4,937 participants enrolled in the Korean Genome and Epidemiology Study (KoGES).
Results: In the E-SPECIAL trial, BP was lower in premenopausal women (PRE) than in younger men (YM), whereas no BP difference was evident between postmenopausal women (POST) and older men (OLD). LSD with olmesartan decreased urine sodium in YM, POST, and OLD but not PRE. A positive correlation between BP and urine sodium was observed in only the younger groups (PRE, YM). Urine volume was greater in PRE than in YM, and urine concentration was reciprocally lower in PRE than in YM. Urine volume was positively correlated with BP in PRE but negatively associated with BP in YM. Urine volume and urine sodium were the most decisive predictors of BP in PRE. In the KoGES, BP was lowest in PRE. Urine sodium was higher in PRE than POST, whereas it was higher in OLD than in YM. The correlation between BP and urine sodium was augmented in the younger groups.
Conclusions: Pressure-natriuretic and pressure-diuretic responses were well conserved in PRE and mitigated in POST. Augmented natriuresis and diuresis might contribute to lower BP in PRE.

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Prevalence and risk factors of hyperkalemia early period after kidney transplantation

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Background: Electrolyte abnormality after kidney transplantation (KT) is common complications owing to immunosuppressive agents, prophylactic antibiotics, anti-hypertensive agents and uncontrolled diabetes. Hyperkalemia is a fatal electrolyte abnormality that often leads to arrhythmia and sudden cardiac arrest. However, there are few studies on incidence and factors related to hyperkalemia after KT. We evaluated the prevalence of hyperkalemia and related factors for early period after transplantation.
Methods: We analyzed database of patients who conducted KT in our institute from April 2019 to January 2021. Among 26 kidney transplant recipients (KTRs), 11 patients (42.3%) had experienced hyperkalemia for 6 months after KT. We divided into two groups of normokalemic KTRs group (n=15) and hyperkalemia KTRs group (n=11) according to hyperkalemia. Hyperkalemia was defined as serum potassium over 5.1 mmol/L or use of potassium lowering agent owing to hyperkalemia. We compared clinical data between the two groups.
Results: The mean age of the patients was 52.0±9.5 years with 15 patients (57.7%) for male sex. Dialysis modality before transplantation was hemodialysis (n=23, 88.5%) in the most patients. A major cause of KT was diabetes (n=11, 42.3%), then followed to hypertension (n=8, 30.8%) and chronic glomerulonephritis (n=3, 11.5%). The hyperkalemic KTRs group compared with the normokalemia KTRs group was older age (56.3 years vs. 48.9 years, P=0.045), longer dialysis vintage (61.5 months vs. 29.6 months, P=0.045), more deceased donor KT (81.8% vs. 26.7%, P=0.005) and more acute rejection (54.5% vs. 93.3%, P=0.05).
Conclusions: KTRs with older age and longer dialysis vintage need more stringent surveillance for hyperkalemia, especially if they received a transplant from deceased donor and treated acute rejection.

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Retrograde reperfusion of renal graft to reduce ischemia-reperfusion injury

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Background: Ischemic reperfusion injury (IRP) of a kidney graft is still a current problem in transplantology. To study the effect of retrograde renal transplant reperfusion on the reduction of IRP during kidney transplantation.
Methods: There are seven kidney transplantations from a living donor were performed using retrograde transplant reperfusion. After the standard laparoscopic donors' nephrectomy, the renal graft was washed with a solution of "NTK" with heparin. After applying an end-to-side venous anastomosis, arterial anastomosis was applied. At the same time, retrograde reperfusion of the graft with venous blood was performed, then a typical antegrade reperfusion followed. Immunosuppression was a three-component: CNI+MMF+steroid with Basiliximab induction. Blood perfusate from the artery was analyzed for blood gas analysis; creatinine and urea were analyzed on the 1st, 3rd, 7th, 14th, and 30th days after surgery.
Results: In all cases, the graft function was satisfactory. There were no vascular complications, there were no reanastomosis during the operation. Significant changes in pH, PO_2, BEecf, HCO_3–, Lac, K+, and Ca^{2+} values were observed in retrograde blood. Normalization of serum creatinine and urea levels was observed on average on the 4th day after surgery. There were no indications for diagnostic biopsy of a kidney graft.
Conclusions: The results of the initial experience of kidney transplantation using retrograde reperfusion show an improvement in the function of the kidney transplant. In the future, an increase in the cohort of patients is required to study the effect of retrograde reperfusion.

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Intra-patient variability in tacrolimus trough levels over 2 years affects long-term allograft outcomes of kidney transplantation

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Background: The current study aimed to determine the impact of tacrolimus (TAC) trough level (C0) intra-patient variability (IPV) over 2 years after kidney transplantation (KT) on allograft outcomes.
Methods: In total, 1,143 patients with low immunologic risk were enrolled. The time-weighted coefficient variability (TWCV) of TAC-C0 was calculated, and patients were divided into tertile groups (T1: <24.6%, T2: 24.6%–33.7%, T3: ≥33.7%) according to TAC-C0-TWCV until post-transplant 1st year. Moreover, they were classified into the low/low, low/high, high/low, and high/high groups based on a TAC-C0-TWCV value of 33.7% during post-transplant 0–1st and 1st–2nd years. We compared the allograft outcomes among the three tertile and four TAC-C0-TWCV groups.
Results: The T3 group had the highest rate of death-censored allograft loss (DCGL), and T3 itself was an independent risk factor for DCGL (adjusted hazard ratio [HR], 1.853; P=0.029). In addition, sustained TWCV ≥33.7% until 2 years after KT showed the highest risk for DCGL (HR, 2.395; P=0.013). Moreover, the changes in TWCV during the 1st–2nd post-transplant year significantly affect to DCGL occurrence (HR of low/high 2.086, P=0.045; HR of high/low 1.813, P=0.021). Patients with an average TAC-C0 of ≥5 ng/mL in the high/high group were at highest risk for DCGL as well.
Conclusions: TAC-IPV is an important factor that can significantly affect comprehensive allograft outcomes. TAC-IPV after 1st year of KT was also considered an important factor for allograft outcomes. Moreover, TAC-IPV can significantly affect allograft outcomes even with a high average TAC-C0.

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Correlation of allograft size versus body mass index to the incidence of hyperfiltration injury among kidney transplant recipients

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Background: Mismatch of donor and recipient factors, particular renal size relative to recipient body mass index, were identified as risk factors of hyperfiltration injury. This study correlated the allograft size versus body mass index (BMI) to the incidence of hyperfiltration injury.
Methods: A retrospective records analysis of 150 transplant recipients. Kidney volume was computed based on computed tomography angiogram using the ellipsoidal formula, which was then correlated with recipients BMI. The observation points from the time of kidney transplantation, was on the day of discharge, at 3 months and one year after transplantation with estimated glomerular filtration rate, serum creatinine, and proteinuria as surrogate markers for hyperfiltration injury. Pearson correlation and Kendall's tau-b correlation were used to determine the relationship of the BMI and kidney volume.
Results: The 150 kidney transplant patients has a mean age of 30.7 years (range, 18–60 years) with male predominance (66% vs. 34%). There was no sufficient evidence to show the correlation of kidney volume and BMI on discharge, at 3 months and 1 year follow-up with Kendall's tau-b correlation of 0.008 (P=0.910), –0.422 (P=0.082), and –0.502 (P=0.049), respectively.
Conclusions: The findings suggested that kidney size and recipients BMI are independent factors in determining kidney function up to 1 year follow-up. However, contradicting to other literature, a more longer follow-up may be needed before a direct conclusions be made.

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Analysis of 300 ABO incompatible kidney transplantations in a single center

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Background: Kidney transplant (KT) is the optimal renal replacement therapy for patients with end-stage renal disease. However, the demand for kidneys continues to exceed the supply. To overcome this problem, efforts to extend the donor pool by including ABO-incompatible kidney transplantation (ABOi-KT) has been increased. The aim of this article was to retrospectively review data on recipients, donor profiles, and clinical outcome in 300 cases of ABOi compatible KT in a single center.
Methods: This is a retrospective, observational study using data extracted from medical records. A total of 300 consecutive patients who underwent ABOi-KT at our institution from May 2009 to Nov 2020 were included in this study.
Results: From a Kaplan-Meier analysis, overall patient survival after ABOi KT at 1, 3, 5 years were 98.3%, 97.6%, and 97.0%, respectively. The death censored graft survival rates after ABOi KT at 1, 3, and 5 years were 97.2%, 91.4%, and 86.4%, respectively. Our analysis suggested that overall patient survival, death-censored graft survival, and rejection free graft survival in ABOi KT showed no significant differences in comparison with ABO-compatible KT (P=0.34, P=0.41, and P=0.88 for each). Interestingly, BK viremia was more commonly observed in ABOi KT compared to ABOc KT (17.0% vs. 9.6%, P=0.005). Furthermore, in multivariable analysis, ABO-incompatibility itself increased the risk of BK viremia significantly compared to control (hazard ratio, 1.40; P=0.03).
Conclusions: The outcomes of ABOi KTs continually improved during the study period, while the annual number of KTs increased. ABO incompatible KT can be performed safely with successful graft outcomes.

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Impact of kidney donation on changing in physical, emotional, and socioeconomic status

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Background: Kidney donation induces not only a physical burden but also an emotional, socioeconomic burden in living kidney donors. Composed to the substantial interest for major clinical outcomes such as mortality and end-stage kidney disease, subjective conditions including physical, emotional, and socioeconomic status were disregarded for exploring.
Methods: A total of 429 donors were recruited for the survey in two tertiary hospitals in Korea between February and November 2020. The survey was conducted by divided into pre-donation and post-donation. The survey was composed of baseline characteristics, questions for quality of life, including subjective health score, 36-Item Short Form Survey, Patient Health Questionnaire-9, and socioeconomic status. We used McNemar's test and paired t-test for comparing the characteristics between the pre- and post-donation.
Results: There were 130 and 299 donors who answered pre- and post-donation surveillance, respectively. The main reason to decide donation was the willingness to recipients' health and happiness (59.1%) or families' benefit and happiness (52.3%). Also, the main concern to hesitate to donate was physical problems such as the potential risk of surgical complications (22.6%) and kidney failure (20.8%). The subjective health score was significantly decreased from 100 to 36.3 after donation. All categories in SF-36 showed worse change, and the score for depressive mood was also significantly increased after donation. Nevertheless, most donors (84.4%) answered they would donate again if they can go back to before donation. Most employed donors experienced vacation for more than 2 months include unpaid vacation. Payment for kidney donation was performed by donors (40.8%), recipients (35.4%), and divided (17.5%). There were 25.8% of donors who unaware of the refund system after donation.
Conclusions: Although donation raised multifarious burdens, most donors had a willingness to donate for altruistic reasons. Multiplicative supports comprise of social and medical aspects would be essential to encourage affirmative donation with considering both aspects of donors and recipients.

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Patient and graft outcome of kidney transplantation during COVID-19 pandemic: a single center experience

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Background: Kidney transplantation (KT) rate is reduced globally due to the COVID pandemic. Although there have been reports on patients transplanted during the beginning of COVID-19, little is known about risk of doing KT in the Philippines during this pandemic, presentation and outcomes of COVID-19 infection among recipients immediately post-KT and how it will impact transplant outcomes. This study will aid clinicians in planning and management of KT during this pandemic. The objective of this study is to describe the patient and renal outcomes of Filipino patients who underwent KT in National Kidney and Transplant Institute during the period of COVID-19 pandemic.
Methods: A descriptive study of 147 patients aged >18 years old who underwent KT from June 1, 2020, to May 31, 2021. Peri-operative complications, graft and patient outcomes were noted during the study period.
Results: The median age was 43 years with 64% male and 59.2% with chronic glomerulonephritis as primary renal disease. It is notable that 12.9% were pre-emptive KT, 6.1% high immunologic risk and 49.7% given lymphocyte-depleting induction therapy. Around 98.6% were from living kidney donors with 1.4% deceased donor KT. Nine (6.12%) had COVID pre-KT with median interval period from the last (+) rt-PCR COVID swab to KT of 150 days (range, 30–343 days). Infection rate post-KT was 14.2%; majority was due to urinary tract infection. Around 2.7% had COVID infection post-KT with median interval period of 5 months post-KT (range, 1–8) with no mortality noted. The 6-month acute rejection rate was 6% with graft and patient survival rate of 96.4% and 98.2%, respectively.
Conclusions: COVID-19 pandemic has been challenging for our KT program, but our graft and patient outcomes are similar pre-COVID. Further patient follow-up is needed to ascertain the outcome.

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Role of surgery in encapsulated peritoneal sclerosis with refractory ascites after renal transplantation

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Background: Peritoneal dialysis (PD) is a widely used renal replacement therapy allowing end stage renal disease patients. A major complication of PD is the progressive transformation of the peritoneum with long-term PD. Signs of peritoneal fibrosis are detected in 50%–80% of patients within 1 to 2 years on PD. In severe case, a critical and life-threating complication may develop known as encapsulating peritoneal sclerosis (EPS). EPS is a rare clinical syndrome characterized by an acquired inflammatory fibro-collagenous membrane encasing the small intestine, resulting in symptoms of bowel obstruction. It is defined as "a syndrome continuously, intermittently, or repeatedly presenting with symptoms of intestinal obstruction caused by adhesions of a diffusely thickened peritoneum". It can be divided into primary (idiopathic) and secondary. The secondary EPS, a local or systemic factor can be identified as triggering peritoneal inflammation.
Methods: A 61-year-old male presented history of hypertension and end stage renal disease under peritoneal dialysis since May 2010. He received cadaveric renal transplantation on November 2, 2020. Although his post-transplant kidney function was quite well, he sustained persistent perinephric fluid accumulation and progressive ascites followed by ileus. Early sign of image picture was noted in plain X-ray and computed tomography. Laparoscopic surgery helped for early diagnosis and early urgent intervention and appropriate drug treatment. He also got infected ascites repeatedly and appropriate medical treatment was given with some improvement. Tamoxifen was added as important medication to immunosuppressants.
Results: He is now in 11 months after transplantation with good functioning kidney and still trying to struggle with this particular disease which may be a cause of poor prognosis after these renal replacement therapy.
Conclusions: In this conference, we will discuss an EPS case with ileus and intractable ascites after cadaveric renal transplantation and review the literature.

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Changing patterns of T lymphocyte subsets after kidney transplantation according to induction immunosuppressant: single center prospective observational study

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Background: The aim of this study is to investigate the changing patterns of T cell subsets during early post-transplant period according to the type of induction therapy (anti-thymocyte globulin [ATG] vs. basiliximab).
Methods: We conducted prospective observational study for 157 patients who underwent kidney transplantation (KT) in Seoul St. Mary's Hospital from May 2018 to November 2020. A baseline blood sample was collected within 5 days before the kidney transplant, and additional blood samples were collected and analyzed at 4 and 12 weeks after the kidney transplant. We compared the change of each T cell subsets between patients who took ATG (n=62) and basiliximab (n=95) using flow cytometric study of peripheral blood mononuclear cells.
Results: At baseline, all of the CD4+ and CD8+ T cell subsets did not show significant differences. However, changing pattern of T cell subsets showed significant difference according to the type of induction therapy at 4 weeks and 12 weeks after KT. In the ATG group, a significant decrease in CD4+ T cells was observed from week 4 and continued until week 12. CD8+ T cells showed no change until week 4, but increased at week 12. A significant increase in the CD4+CD161+ and CD8+CCR7-CD45RA+ T cell subsets was observed at 4 and 12 weeks in the ATG group, and CD8+CCR7+ T cell subset decreased. CD8+CD28nullCD57+ T cell was decreased at 4 weeks and recovered to baseline levels at 12 weeks. In basiliximab group, CD8+CCR7+ T cell expression was decreased and CD8+CCR7-CD45RA+ T cell expression was increased at 12 weeks compared to baseline.
Conclusions: In this study, we observed CD4+CD161+ and CD8+CCR7-CD45RA+ T cells activation in patients with ATG induction in comparison with basiliximab. The correlation between T cell subset changes and clinical outcome could not be confirmed in our study.

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Comparison of the impact between peak mean fluorescent intensity versus sum of mean fluorescent intensity value of donor specific anti-human leukocyte antigen antibody on the post-transplant clinical outcomes

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Background: In this study, we investigated to verify which of the peak value of donor-specific human leukocyte antigen antibodies (DSA) mean fluorescent intensity (MFI) and sum of MFI had higher predictive value for antibody-mediated rejection (ABMR) in kidney transplant recipients (KTR).
Methods: Analysis was performed on 1,322 KTR in Seoul St. Mary's Hospital between 2009 and 2018. Of these, 511 patients did not require desensitization (control group) and 317 patients without DSA underwent desensitization for reasons such as positive crossmatch or PRA (no DSA group). There were 42 patients with one DSA (DSA 1 group) and 35 patients with two or more DSA (DSA 2 group). The effect of the DSA MFI value on ABMR was analyzed by cox proportional hazards analysis.
Results: The incidence of ABMR was 4.5% in control group, 9.15% in no DSA group, 19.05% in DSA 1 group, and 37.1% in DSA 2 group (P=0.001). T cell-mediated rejection, BKV nephropathy, CNI toxicity and graft failure did not differ significantly between groups. Sum of MFI's area under the receiver operating characteristic curve (AUC-ROC curve) for ABMR was 0.624, and peak MFI's AUC-ROC curve was 0.623 (P=0.152). Compared with patients with both sum MFI and peak MFI were less than 1,000, the hazard ratio for ABMR of patients with sum MFI >5,000 was 2.79, and the hazard ratio of patients with peak MFI >5,000 was 3.62 (P=0.0016, P=0.0008, respectively). However, when comparing the risk of ABMR between patients with sum MFI >5,000 and peak MFI >5,000, there was no significant difference. In DSA 2 group, ABMR occurred in three out of four patients with sum MFI >5,000 and peak MFI <5,000, whereas eight out of 17 patients with peak MFI >5,000 developed ABMR.
Conclusions: In KTR with multiple DSA, both sum of MFI and peak MFI values over 5,000 showed increased risk of ABMR.

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Monitored recurrent glomerular disease after kidney transplantation in adult patient in Mongolia

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Background: Mean cause of end-stage renal disease in Mongolia is chronic glomerulonephritis (CGN). Statistic data of 2019 Health Developing Center in Mongolia showed 65% of dialysis patients, 69% of kidney transplantation (KT) patients diagnosed CGN. The reported rate of recurrence of C3 glomerulonephritis (C3GN) after transplantation is over 50%. Aim of our study is to study RGN after KT in adult patient and make recommendation to prevent recurrent glomerulonephritis (RGN) in Mongolia.
Methods: This study included 69% (n=239) of adult patients who received in Mongolia and in abroad KT with CGN diagnosis with and without native and graft kidney biopsy, and excluded child and retransplanted patients. We monitored the clinical examination and risk factors of the patients last 5 years (2016–2021): age, sex, body mass index (BMI), body pressure, duration time in dialysis, hematuria, proteinuria, lipid, dysproteinemia, glomerular filtration rate, donor type, human leukocyte antigen mismatch, panel reactive antibody, pre- and post-KT kidney biopsy. Study was retrospective review on Microsoft Excel and eHealth program.
Results: Mean age was 36.2±9.9 years (18–63), 78% are males; mean BMI was 26±8.5 kg/m^2, 56% are hypertensive; in immunological risk factor, 51% are low risk, 26% are middle risk. Living donor kidney transplant are 79% and deceased donor kidney transplant are 21%; 89% are hematuria, 84% proteinuria, 59% hyperlipidemia; mean estimated glomerullar filtration rate was 2.6±1.8 mL/min/1.73 m^2; graft loss from RGN was 8; patient loss was 2. Native kidney biopsy was done only on eight patients and showed five cases of IgA, two cases of MPGN, and one case of focal and segmental glomerulosclerosis. From total 38 graft kidney biopsy, RGN was diagnosed eight cases of IgA and two cases of membranoproliferative glomerulonephritis.
Conclusions: As a result, clinical expertise, early diagnosis, and intervention will help identify recurrent disease and facilitate prompt treatment, thus minimizing graft loss, resulting in improved outcomes. In this review, we highlight the clinic pathological characteristics of certain glomerular diseases that recur in the renal allograft and differentiate from another cause of GN such as virus infection. To decrease the risk factors of RGN in Mongolia, a change of lifestyle is recommended.

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Outcome of living donor kidney transplant and deceased donor kidney transplant: a retrospective cohort study at national kidney and transplant institute

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Background: A number of studies had been done in the Philippines on the outcome of deceased donor (DD) kidney transplantation but the studies comparing its outcome to the living donor (LD) kidney transplantation is still lacking. This study aims to determine the outcome of LD kidney transplantation and DD kidney transplantation in National Kidney and Transplant Institute.
Methods: This is a retrospective cohort study in a single tertiary training institution in the Philippines from January 2013 to December 2017. The graft function and graft and patient survival ratios at 6 months, 1 year, 2 years and 3 years were followed up. The DD and LD were compared using descriptive and logistic regression analysis to measure the association of the factors with graft and patient survival.
Results: There were 787 kidney donors, 154 DD and 633 LD. The mean age of donors were 31.1 years (9.5) while recipients were 42.3 years (12.2). There were 129 male DD (83.7%) and 387 male LD (61.1%). Three-year graft survival was 135 allografts (87.7%) in DD and 599 allografts (94.8%) in LD (odds ratio [OR], 0.39; 95% confidence interval [CI], 0.21–0.71; P<0.001). Three-year patient survival was 139 patients (90.2%) in DD and 612 patients (96.8%) in LD with 76% decrease of mortality (OR, 0.30; 95% CI, 0.15–0.61; P<0.001).
Conclusions: There is a significant difference in patient and graft survival rates between the DD and LD. The 3-year graft survival and patient survival of DD kidney transplantation were lower compared to LD kidney transplantation. Despite the significant difference in the survival, the patient and graft survival were still high in both deceased and living donors and we still support the use of deceased donors for kidney transplant recipients.

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The optimal dosage of rituximab for ABO-incompatible kidney transplantation: comparative analysis of efficacy and safety

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Background: Rituximab is an essential induction drug for ABO-incompatible (ABOi) kidney transplantation (KT). However, the optimal dosage of rituximab in ABOi KT remains unclear. Therefore, we evaluated the efficacy and safety of 100 mg/body rituximab compared to 200 mg/body rituximab protocol in ABOi KT.
Methods: A total of 196 patients who received ABOi KT in the period from July 2017 to December 2019 at Asan Medical Center were divided into rituximab 100 group (n=122, 61.6%) and rituximab 200 group (n=76, 38.4%).
Results: The overall graft survival showed no significant differences in both groups (P=0.37). The 3-year graft survival rate for rituximab 100 and rituximab 200 were 96.5% and 96.6%, respectively. The rejection-free graft survival rates (RFGS) were also similar in both groups (P=0.67). The 3-year RFGS for rituximab 100 and rituximab 200 were 87.3% and 89.0%, respectively. The incidence of *de novo* donor-specific antibody showed no significant difference between two groups (rituximab 100 vs. 200; n=8, 6.6% vs. n=9, 11.8%) (P=0.20). Infectious complications, including cytomegalovirus, BK virus, urinary tract infection, and pneumonia also showed no differences in both groups.
Conclusions: Our study demonstrated that 100 mg/body rituximab protocol in ABOi KT afforded comparable graft survival and RFGS. These findings suggest that low-dose rituximab (100 mg) is a treatment option that provides successful desensitization for ABOi KT.

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Kidney transplant outcomes in single center of Mongolia

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Background: Kidney transplantation (KT) is the optimal treatment for patients with end-stage renal disease (ESRD). Living donor (LD) KT had the superior results for the recipient, but in recent years, the number of patients for deceased donor (DD) KT is increasing worldwide. This study was carried out to determine survival outcomes between the recipients in LDKT and DDKT.
Methods: Data were collected retrospectively for 128 KT recipients including 101 LDKT and 27 DDKT recipients, performed from 2016 to 2021 in the organ transplant center of First Central Hospital of Mongolia. Demographics, delayed graft function (DGF), 1- and 5-year patient and KT survival for the LD group were compared to the DD group using one way analysis of variance and Kaplan-Meier tests. DGF was defined as the need for at least one dialysis session in the first week after KT.
Results: Mean age of the recipients was 37.4±10.4 years and male gender was dominant among them. Mean age of the donors was 42.8±10.1 years and donor gender ratio was 1:1. The main primary disease for ESRD was glomerulonephritis (87.5%). Mean hemoglobin of the recipients was 10.5±1.5 g/dL, albumin 39.7±5.3 g/L, total protein 64.4±9.8 g/L, and serum C reactive protein 8.2±11.9 mg/dL. The incidence of DGF in LD and DD group were 3 (2.9 %) and 8 (29.6 %), respectively (P<0.001). Human leukocyte antigen mismatches (4–6) in LD and DD group were 19 (27.9%) and 10 (55.6%), respectively (P<0.05). One- and 5-year overall KT survival were 94% and 81%, and overall patient survival were 98% and 88%, respectively. KT 1- and 5-year survival for LDKT were 95% and 81%, for DDKT were 88% and 72%, respectively (P=0.148). One- and 5-year patient survival for LDKT were 100% and 87%, for DDKT were 88% and 88%, respectively (P=0.136).
Conclusions: We need to further study influencing factors on kidney transplant outcome and its relationship.

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COVID-19 in chronic rejection allograft kidney transplant: a case report

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Background: The world is facing a global pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Kidney transplant recipients at increased risk for COVID-19 infection due to prolonged use of immunosuppressants. Recommendations have been made by different countries for prevention and contingency against COVID-19 in kidney patients, including kidney transplant patients.
Case report: A 60-year-old male was admitted with dyspnea, fever, and cough. The result of thorax rontgen showed bronchopneumonia, meanwhile his renal ultrasound showed chronic pyelonephritis. Laboratory result was hemoglobin 8.1 g/dL, blood sugar 286 g/dL, D-dimer 800 ng/mL, blood urea nitrogen 123 mg/dL, creatinine 4.8 mg/dL. He has history of diabetic and kidney transplant 14 years ago. He was genetically confirmed as COVID-19 by swab polymerase chain reaction (PCR) testing. The patient was confirmed to the diagnosis of severe case of COVID-19, chronic rejected allograft kidney transplant with comorbid disease of stage II hypertension, diabetes, pneumonia and anemia. During hospitalization, remdesivir therapy 200 mg IV per 12 hours, heparin 5,000 units per 8 hours, meropenem 1 g per 12 hours, and methylprednisolone 20 mg per day was given, while other immunosuppressant were being hold. After 10 days of hospitalization, clinical condition improved and PCR test converted negative then immunosuppressant were being continued, dialysis therapy has not been done because urine output is still good.
Conclusions: Reduction immunosuppression to maintain host defense mechanisms is problematic, especially in patients with immune-mediated kidney disease, disease relapse or transplant rejection. ERA-EDTA DESCARTES expert opinion suggests reducing or stopping AZA/MPA/mTORi (if on triple therapy) for asymptomatic COVID-19 patients and discontinue all immunosuppressive drugs and increase or start steroids for more severe transplant patients with COVID-19.

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Kidney transplantation during the COVID-19 pandemic period: a single center experience

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Background: When the COVID-19 pandemic has started, it had the immediate effect of severely reducing organ donation and transplantation activity worldwide. Our early experience showed that neither hemodialysis nor transplant patients have got infected with COVID-19 higher than the normal population. While it seems obvious that life-saving transplant activity should not be stopped, it should be tailored with careful selection of both donors and recipients within transparency and considering ethical and legal aspects.
Methods: Despite many studies have indicated that elective transplantations should be postponed during pandemic period, we decided to continue our transplant activities in a controlled manner at our three centers. From March 1, 2020, to August 10, 2021, we performed 127 kidney transplants (112 adults, 15 pediatrics). All recipients were given a routine immunosuppressive protocol. We reviewed the medical records of both recipients and donors, polymerase chain reaction tests have been carried out twice before transplantation, and they were screened with thoracic computed tomography.
Results: Kidney transplants were performed from 121 living related and six deceased donors with an average length of hospital stay 9.4 days. Mean serum creatinine values of the recipients were 0.94 mg/dL, 0.82 mg/dL, and 0.74 mg/dL at postoperative day 7, 30 and 90, respectively and all recipients were discharged successfully. Out of 106 kidney transplants, 105 patients are alive with normal kidney function and one patient died to due to cardiac problem.
Conclusions: When precautions are taken, transplant does not pose a risk to patients during the pandemic period. The safety and success of our transplantation activities lies in our newly developed protocol in response to the COVID-19 pandemic.

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Long term clinical benefits of pancreas-transplantation after kidney transplantation in patients with diabetes who had received kidney transplantation

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Background: The purpose of this study is to prove long term clinical benefits of pancreas-transplantation after kidney transplantation (PAK) in patients with diabetes who had received kidney transplantation.
Methods: Data from patients who had kidney transplantation from January 2009 through July 2020 at Asan Medical Center were retrospectively analyzed. Of 1,042 consecutive patients, 21 patients underwent PAK. Kidney graft failure, biopsy-proven acute rejection of kidney, and patient survival were compared between the two groups (PAK vs. non-PAK).
Results: There was no significant difference in baseline characteristics between the two groups. During 10-year follow-up, biopsy proven acute rejection rate in the PAK group was significantly higher compared with the control group (P=0.006). There was no difference in the incidences of kidney graft failure and patient survival between two groups.
Conclusions: It seems that there is a higher risk of biopsy-proven acute rejection of kidney graft in recipients who received PAK.

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Infectious diseases in the first year after kidney transplantation in Vietnamese: a single-center cohort study

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Background: Kidney recipients experience a high burden of infections throughout the first year post-transplantation, with opportunistic pathogens and predominance of viral and bacteria.
Methods: In this prospective study, all clinically relevant infections were identified by physicians in kidney transplant patients between December 2016 and June 2021 in 108 Military Central Hospital, Vietnam. The viral infections were identified by blood and urine samples. Among 87 kidney recipients, 71 patients with at least 12 months of follow-up were identified.
Results: Sixty-seven patients (94.4%) suffered viral and/or bacterial infections during the first year post-transplantation. Bacteria were responsible for 27 infections (38.0%) prevailing throughout the year, with 23.9% as urinary tract infection, 8.4% as respiratory pathogens, and 5.6% as digestive tract pathogens. Bacterial infections were highest in the first-month post-transplantation (22.5%). Among 67 viral infections, BK and JC polyomavirus (62.0 and 56.3%), cytomegalovirus (66.2%), Epstein-Barr virus (12.7%), herpes simplex virus (4.2%), and both B19 and hepatitis C (2.8%) in kidney transplant recipients. The prevalence of viral infection found via blood samples is lower than via urine samples (77.5% and 87.3%) over 12 months across all kidney recipients. The highest viral infection was found in the sixth month post-transplantation, 35.2% and 53.5% via blood and urine samples, respectively.
Conclusions: The burden of post-transplant infections is high in the current study. Multiple methods should be used to identify infectious diseases after kidney transplantation.

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Long-term follow-up of over 600 living-related kidney donors: single center experience

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Background: The number of deceased donors is inadequate. Therefore, living kidney donations are increasing day by day. However, long term complications after donation are still unclear. We aimed to determine the long-term results of living-related kidney donors.
Methods: Since 1986 we performed 2,188 kidney transplant in our centers, and 1,788 of them were living-related kidney transplant (LRKT). Before donation all donor candidates were evaluated according to the Baskent University criteria. Out of 607 donors, 236 donors were evaluated in the outpatient clinic and the rest were evaluated by teleconference method. We performed obtaining detailed anamnesis clinical examination, blood tests and ultrasonogram evaluations to donors.
Results: We evaluated the long-term results of our 607 patients, of which 428 were female. The mean age of the donors was 52.03±11.54 years. Mean time after donation was 10.4±3.2 years. The estimated glomerular filtration rate was 77±16 mL/min in our donor population. None of our donors developed end-stage renal disease. Twenty-four donors (3.9%) are diagnosed with diabetes, 21 donors (3.4%) with thyroid disease, 64 donors (10.5%) with hypertension and 48 donors (8.8%) with atherosclerotic cardiovascular disease. One hundred and seventy-four donors (28.6%) developed mild to moderate obesity. Only five patients developed malignity and all of these were diagnosed at least 10 years after donation.
Conclusions: We showed that 28.6% of donors developed obesity that increased the risk of systemic disease and 26.6% of donors developed systemic disease in the long-term follow-up period. Also, the unrelated donors may be desperate if a family member needed donation in the future. Therefore, we recommend that deceased donor kidney transplant (DDKT) should be first choice. If DDKT is not possible, LRKT should be preferred.

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Recoverability of diabetic nephropathy of donor kidney after kidney transplantation

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Background: The effect of diabetic donors on the outcome of kidney transplantation (KT) is controversial. This study aimed to analyze the changes in pathologic lesions in the diabetic donor kidney after KT by performing biopsy at 2 weeks and 1 year after KT. Further, the difference in the change according to the recipient's diabetes mellitus (DM) status, glycemic control status, and severity of donor kidney diabetic nephropathy (DN) was also determined.
Methods: This retrospective study included 103 patients who underwent KT, with kidneys from donors with a history of DM, between 2013 and 2018 at Samsung Medical Center. Of these 103 patients, 37 underwent biopsy at 2 weeks and 1 year after KT, of which, the data of 34 patients were reviewed. Biopsy specimens were reviewed by light microscopy and electron microscopy. Glomerular basement membrane (GBM) thickness at 2 weeks and 1 year was compared using paired t-test and Wilcoxon signed-rank test. Statistical significance was set at $P<0.05$.
Results: Biopsy showed that DN occurred in 29 of the 34 patients. However, 17 (50%) of them were classified as having class I, a mild case with an increase in GBM thickness. Extremely small histological changes were observed in 22 patients (64.7%), including 5 patients who did not show DN. At 1 year after transplantation, there was no change in the DN histologic class in 26 patients (76.5%), and there was no statistically significant difference in the change in GBM thickness. This pattern was observed regardless of the recipient's DM or fasting blood sugar control status.
Conclusions: Donor DN was mostly stable for 1 year after KT, and this pattern did not depend on the recipient's DM or FBS control status. With this understanding, clinicians can easily use kidneys from DM donors, thereby reducing the kidney discard rate.

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The effect of steroid pulse therapy for the reduction of acute rejection episode in subclinical borderline changes: an open-label, randomized clinical trial

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Background: Subclinical rejection (SCR) has been correlated with subsequent chronic allograft nephropathy and allograft dysfunction. SCR is known to be effective in steroid pulse therapy (SPT) in other studies. However, there is controversy about borderline change. The purpose of this study is to investigate the effect of early SPT for the reduction of acute rejection episode during the first year after renal transplantation in the patients who will show subclinical borderline changes at 2-week protocol biopsy.
Methods: This study was a randomized clinical study in which 17 recipients with stable kidney graft function and borderline changes in the protocol biopsy at 2 weeks were enrolled. The recipients were divided into two groups depending on steroid pulse therapy. We investigated changes in Banff scores through protocol biopsy after 1 year.
Results: Recipients who underwent acute cellular rejection and borderline change within 1 year were four patients (50%) in the no SPT group and 6 patients (66.7%) in the SPT group, and there was no difference between the two groups (P=0.637). There was no difference between the two groups in the change of the Banff score between the 2 weeks and 1 year protocol biopsy. And there was no difference in the rates of opportunistic infections including cytomegalovirus (P=0.471) and BK polyomavirus (P=0.637). Also, there was no difference between the two groups with respect to creatinine and estimated glomerular filtration rate at 2 weeks to 3 years after surgery.
Conclusions: There was no difference in Banff score change, infection rate, and graft function between the two groups. In conclusion, we suggest that SPT is not essential in subclinical borderline change.

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Clinical significance of late onset antibody-mediated rejection without donor-specific anti-human leukocyte antigen antibodies in kidney transplantation

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Background: Late onset antibody-mediated rejection (AMR) is a leading cause of kidney allograft failure. Its diagnosis has been based on a combination of morphologic, immunohistologic findings, and presence of donor-specific anti-human leukocyte antigen antibodies (DSA). Although the presence of DSA is no longer required for AMR diagnosis, according to Banff 2017 classification, the clinical significance of late onset AMR without DSA remains unclear. Here we compared clinical outcomes of late onset AMR with and without DSA.

Methods: We analyzed 126 cases of late AMR (>6 months after transplant) that meet the Banff 2017 histologic criteria for AMR. All cases were diagnosed by for cause biopsy and grouped into DSA-positive (n=103) and DSA-negative (n=23) AMR groups. The estimated glomerular filtration rate (eGFR) was calculated using the Chronic Kidney Disease Epidemiology Collaboration equation.

Results: The histological picture did not differ between DSA-negative and DSA-positive AMR, with the exception of increased level of peritubular capillaritis in DSA-positive AMR. Median time from transplant to AMR diagnosis was 80 months (interquartile range, 39-118). At the time of AMR diagnosis, both groups had similar graft function (36.3±16.0 mL/min/1.73 m^2 for DSA-negative and 39.7±20.2 mL/min/1.73 m^2 for DSA-positive AMR; P=0.408). Mean eGFR after AMR were similar irrespective of the presence of DSA. There were 28 graft failures (26.2%) in the DSA-negative and eight graft failures (27.6%) in the DSA-positive AMR groups, which was not statistically different (P=0.981).

Conclusions: In late onset AMR, there was no significant difference between AMR with and without DSA in clinical outcomes.

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Impact of donor kidney weight to recipient body weight ratio on long-term graft outcomes in live donor kidney transplantation

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Background: Kidney weight has been suggested as a surrogate marker for nephron numbers and renal function. Small donor kidney sizes relative to recipient body size is an important contributor to short-term graft renal function, but the impact of size mismatching on long-term graft outcomes remains unknown. This study is aimed to evaluate the impact of the donor kidney weight to recipient body weight ratio (KW/BW) on long-term graft survival in live donor kidney transplantation.
Methods: We performed a longitudinal cohort study in 1,397 patients who underwent live donor kidney transplantation between 2000 and 2016 at a single center. Following cold perfusion and back table surgery, the kidney was weighted on the same electronic weighting scale by the surgeon. Patients were grouped into four groups according to KW/BW quartiles.
Results: During a median follow-up of 127 months, 245 graft loss occurred (172 graft failures and 73 patient deaths). The 10-year death-censored graft survival rates were 86.9% in the lowest quartile, 90.4% in the second quartile, 90.5% in the third quartile, and 92.4% in the highest quartile (P=0.002). Multivariable analysis revealed that the lowest KW/BW (hazard ratio [HR], 2.16; 95% confidence interval [CI], 1.33–3.48; P=0.002) and second lowest KW/BW (HR, 1.69; 95% CI, 1.06–2.70; P=0.029) groups were significantly associated with death-censored graft failure compared with the highest KW/BW group. Patients with lower KW/BW exhibited consistently lower estimated glomerular filtration rates than those with higher KW/BW.
Conclusions: Low KW/BW is significantly associated with long-term graft outcome in live donor kidney transplantation.

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Impact of tacrolimus trough level at discharge on acute rejection rate in sensitized renal transplant recipients: a national cohort study

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Background: Tacrolimus (TAC) is one of the most important maintenance immunosuppressants in kidney transplantation (KT) and maintaining the proper blood concentration is essential to prevent acute rejection. Several studies have been published on appropriate TAC blood concentrations, but the timing of measurement and the proposed blood concentrations vary from study to study. Moreover, an optimal TAC trough level is rarely presented in sensitized patients who are prone to rejection. This study was to analyze the association between TAC trough level at discharge and subsequent acute rejection rates.
Methods: We analyzed a total of 4,001 KTs collected in Korea Organ Transplantation Registry between April 2014 and December 2019. A total of 1,504 sensitized recipients (defined as crossmatch positive, panel reactive antibody ≥10%, or donor-specific human leukocyte antigen antibodies positive) were enrolled, and they were divided into low-level (≤5.9 ng/mL; less than 25th percentile), mid-level (>5.9 & ≤9.5 ng/mL) and high-level (>9.5 ng/mL; over 75th percentile) groups according to TAC trough level at discharge. Acute rejection rate within 1 year after KTs and graft function were evaluated.
Results: There was no statistical difference in baseline characteristics of the three groups. The incidence of biopsy-proven acute rejection (BPAR) was not significantly different between the three groups, although there was a tendency of increasing the rejection rates in lower TAC trough level groups compared with high-level group (9.1% vs. 7.3% vs. 6.3%; P=0.316). Estimated glomerular filtration rate at 1 year after KTs also was not significantly different between the groups.
Conclusions: This study suggests that maintaining a higher TAC trough level at the time of discharge in sensitized KT recipients might reduce the incidence of BPAR within 1 year after KTs.

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Perception regarding live kidney donation in the general population of South Korea

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Background: It is necessary to explore the general perception of live kidney donations for the public consensus on the social supporting systems for donors in Korea, where living donor kidney transplantations are more dominant than deceased donor kidney transplantations.
Methods: Subjects were the general population who were randomly extracted after proportional allocation by residence, gender, and age. The questionnaire included demographic information, socioeconomic and marital status, prior recognition of live donor kidney transplantation, expected changes after donation, and the need for social support after donor nephrectomy. A very detailed explanation regarding live donor kidney transplantation was provided for all participants, and the questionnaire was repeated to investigate whether there was any change in responses.
Results: A total of 1,000 general population responded to the web-based survey. Of the respondents, 81.1% were aware of live kidney donation, and 31.9% agreed that donation of the kidney is relatively safe. When asked if they were willing to donate their kidneys, 35.3% answered positively, and 51.1% said they were not sure. Participants were more likely to agree that the government should provide social and economic support to live kidney donors (Yes, 73.2%; No, 8.3%; Unsure, 18.5%). When asked about the type of government support, more than 70% of the respondents answered that they needed financial support including surgery and regular medical check-up costs. After reading the detailed description regarding kidney donations, the number of respondents who thought a kidney transplant was safe increased, however, there was no significant change in their willingness to donate. The positive response to the need for socioeconomic support increased with statistical significance.
Conclusions: Korean people regarded live kidney donation as that could be relatively safe but affect health status, which may let them think that social support for live kidney donors be needed.

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Clinical significance of delayed or slow graft function in kidney transplantation recipients

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Background: With increasing total number of patients who receive expanded criteria donor kidneys, it is important to maintain the function of kidney grafts.
Methods: Retrospective medical records of kidney transplantation (KT) recipients from 2010 to 2021 in three hospitals were reviewed and analyzed. Patients were divided into three groups according to the degree of kidney function recovery after KT. Delayed graft function (DGF), slow graft function (SGF), and immediate graft function (IGF) were defined as the need for dialysis, serum creatinine levels ≥2.0 mg/dL but no need for dialysis, and serum creatinine levels <2.0 mg/dL at 1 week after KT, respectively.
Results: Among a total of 1,899 KT recipients, 73 DGF (3.8%) and 137 SGF (7.2%) were shown. DGF and SGF were developed more common in older recipient. Also, they tended to occur in cases of older donor age, male, deceased donor KT, longer dialysis duration, and longer cold and warm ischemia time. Interestingly, DGF and SGF tended to increase recently. In the logistic regression analysis, older donor age, deceased donor, recent transplantation (since 2014) remained independent risk factors for both DGF and SGF compared with IGF. The most common cause of DGF was acute T-cell-mediated rejection and most of which were recovered after treatments such as rituximab, immunoglobulin and plasma exchange. During an average of 5 years of follow-up periods, 94 cases of graft failure and 40 cases of death were developed. DGF and IGF elevated graft failure risk as 3.0 (95% confidence interval [CI], 4.4–13.3; P=0.004) and 1.0 (95% CI, 0.53–1.9; P=0.983) times than IGF, respectively. There were no significant differences in mortality among three groups.
Conclusions: In this multicenter retrospective analysis, we found increasing tendency of DGF in KT recipients. Different from SGF, DGF showed worse graft outcomes than IGF although they shared several risk factors. Further clinical dissection should be warranted to improve graft outcomes because DGF seems to be more common in recent years.

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Comparison of 2-week and 1-year protocol renal allograft biopsies regarding technical feasibility and clinical outcomes

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Background: Renal allograft biopsy improves early detection and treatment of subclinical rejection. Still, there are rare reports about the outcomes of 2-week protocol biopsy. To compare 2-week and 1-year biopsies in terms of technical feasibility and clinical outcomes.
Methods: A total of 916 renal allograft biopsies were performed in adult recipients between 2012 and 2019. Two-week and 1-year biopsies were guided with ultrasound in 882 and 556 patients, respectively. These protocol biopsies were compared in terms of technical feasibility and clinical outcomes. Standard references were clinical-laboratory findings and biopsy examinations. Non-inferiority test and univariate analysis were used for statistical analysis.
Results: There were no significant differences regarding baseline characteristics between the 2-week and 1-year biopsies. All allograft biopsies were technically successful. Major complication (Clavien-Dindo grading III–IV) rates of 2-week and 1-year biopsies were 0.23% (2/882) and 0.18% (1/556) (P=0.645). On non-inferiority analysis, the major complication rate of 2-week biopsy was not inferior to that of 1-year biopsy. Univariate analysis showed that delayed graft function, pre-biopsy platelet <100K, pre-biopsy creatinine ≥2.0 mg/dL and pre-biopsy blood urea nitrogen (BUN) ≥40 mg/dL were associated with major complications in 2-week biopsy.
Conclusions: Two-week biopsy as well as 1-year biopsy is technically feasible and safe. Prior to biopsy, platelet, creatinine, and BUN should be carefully checked to predict major complication.

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Comparison of prognosis at different level of antithymocyte globulin in kidney transplantation

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Background: In high-risk recipients in kidney transplantation, antithymocyte globulin (ATG) induction therapy is important for prognosis. However, due to the complication such as pancytopenia, dose of ATG needs to be decreased sometimes. In this study, we compared prognosis including graft survival at different level of ATG.
Methods: This is a retrospective study including 771 patients who underwent kidney transplantation at Seoul St. Mary's Hospital, South Korea, between January 1, 2015, and December 30, 2019. Receiver operating characteristic curve analysis was used to compare the graft survival and overall patient survival of conventional dose of ATG group and decreased dose of ATG group. Comparison analysis between the two antithymocyte globulin dose groups was performed.
Results: A total of 771 patients were enrolled in the study with a mean age of 48.73±11.49 years (range, 16–75 years). There was significant difference in donation type (living or deceased, family or not) and graft failure in follow-up but no difference in other variants. By using Kaplan-Meier method, graft survival was significantly higher in conventional ATG dose group than that of using low dose ATG group (P=0.027). Otherwise, overall patient survival was not significantly different in two groups.
Conclusions: In this study, graft survival of patient group with conventional dose of ATG was significantly higher than those with low dose of ATG. Thus, if pancytopenia occurs, a major cause of reducing dose, it would be more advantageous to maintain conventional dose if possible after blood transfusion and medication.

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Risk factors for pneumocystis jirovecii pneumonia in liver transplantation recipients

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Background: Pneumocystis jirovecii pneumonia (PJP), a potentially life-threatening infection occurring in immunocompromised patients, has been rarely studied in liver transplant recipients in respect to its incidence and risk factors. The aim of this study was to evaluate risk factors for PJP after liver transplantation and to address high-risk group that can possibly benefit from prolonged prophylaxis.
Methods: This is a single center, retrospective study involving 860 patients who underwent liver transplantation at Severance Hospital between January 2009 and December 2019. The incidence, risk factors and outcome of PJP were retrospectively reviewed.
Results: Among 100 patients who did not receive trimethoprim/sulfamethoxazole (TMP/SMX), 15 patients (15%) were diagnosed with PJP, of which 80% occurred within 3 months after transplantation. Upon prescription of TMP/SMX, 25 of 760 (3.3%) suffered PJP. In multivariate analysis, old age (≥65) (hazard ratio [HR], 2.842; 95% confidence interval [CI],1.061–7.609; P=0.038), cytomegalovirus (CMV) viremia (HR, 3.410; 95% CI, 1.510–7.701; P=0.003), and use of everolimus (HR, 2.708; 95% CI, 1.206–6.078; P=0.016) were found as risk factors of diagnosis with PJP. PJP-related mortality was as high as 32% (8/25) in this subgroup.
Conclusions: Late onset PJP occurs even after 6 to 12 months of TMP/SMX prophylaxis. This study addresses that old age, CMV viremia and use of everolimus may be risk factors for late onset PJP in liver transplant recipients. Extended duration of prophylaxis targeting high-risk recipients may be a more cost-effective strategy.

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Impact of the introduction of the model for end-stage liver disease system on the low volume liver transplant centers: a multicenter study

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Background: The shortage of donor organs in transplantation is the biggest obstacle to organ transplantation. From June 1, 2016, the Korean organ transplant standard was converted to the model for end-stage liver disease (MELD) system. This study aims to clarify the differences in deceased donor liver transplantation (DDLT) before and after the introduction of the MELD system in three low volume centers in Gyeongin area.
Methods: From June 2013 to May 2019, the study was conducted retrospectively with adult patients undergoing deceased donor liver transplantation at Incheon St. Mary Hospital, Bucheon Soonchunhyang Hospital, and Incheon Gil Hospital.
Results: Of the 431 registered patients, a total of 87 patients who underwent DDLT were studied. Before June 2016 (before the MELD system) was designated as the Child-Turcotte-Pugh (CTP) group, and later as the MELD group. Finally, the CTP group was 39 patients, and the MELD group was 48 patients. There were no statistical differences in sex and age of recipients and donors. The primary disease was alcoholic liver disease in the MELD group. There was no statistical difference between transplant zone distribution and blood type. In outcome, the MELD group showed remarkably short transplant waiting time. There was no statistically difference in survival rates between the two groups.
Conclusions: After the introduction of the MELD system, alcoholic liver disease was the most common primary disease, and the waiting period for transplantation was shortened. There was no statistically significant difference in hospitalization period and survival rate between the two groups. On this study, the introduction of the MELD system can be considered the advantage of being more distributed to critical, severe patients.

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Renal replacement therapy is an alarm sign of survival outcome in pediatric liver transplantation

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Background: Research regarding the impact of renal replacement therapy (RRT) on long-term survival outcome in pediatric liver recipients are scarce.
Methods: Two hundred twenty-four patients under 18 years of age who received liver transplantation (LT) in Seoul National University Hospital were enrolled. Patients were divided into two groups: patients who underwent RRT (group R) and the others (group N). Primary end point was post-transplant patients' and grafts' survival outcome.
Results: Twenty-five patients (11.2%) received perioperative or sequential RRT, including nine patients (36.0%) who underwent kidney transplantation eventually. The most common indication of RRT was metabolic liver disease (44%) followed by hepatorenal syndrome (40%). RRT was initiated on preoperative period (48%) and postoperative period (early postoperative period [20%] and long-term follow-up period [32%]). In group R, age at the point of LT (71.6 months vs. 19.1 months) was older and pediatric end-stage liver disease (PELD) score was lower (9.9 vs. 21.2), post-transplant hospital stay day (41 days vs. 27 days) was longer and the rate of hepatic artery thrombosis (8% vs. 3.5%) was higher than group N ($P<0.05$). Compared with group N, group R had significantly lower patients' (60% vs. 93%, $P<0.001$) and grafts' survival rates (68% vs. 93%, $P<0.001$). Post-transplant RRT was one of the risk factors of patients' survival outcome as well as non-biliary atresia patients, hepatic artery thrombosis and re-transplantation. However, preoperative RRT was not a risk factor of survival outcome.
Conclusions: Post-transplant survival outcomes of children requiring RRT were significantly worse than children without RRT. Physicians should pay more attention to patients requiring post-LT RRT although they are older and have lower PELD score.

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Safety and efficacy of early corticosteroid withdrawal in liver transplant recipients: new-onset diabetes after liver transplantation randomized clinical trial

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Background: Standard practice for immunosuppressive therapy after liver transplantation (LT) is triple therapy, tacrolimus (TAC), mycophenolate mofetil, and corticosteroid triple therapy. Long-term steroid intake significantly increases cardiovascular risk factors with negative effects on patient outcome, especially post-transplantation diabetes associated with morbidity and mortality. In this trial, we examined the efficacy and safety parameters of early steroid withdrawal during the first year after LT.
Methods: In this open-label, multicenter, randomized controlled trial, we randomly assigned LT recipients in a 1:1 ratio to receive either early corticosteroid withdrawal at 2 weeks (group 1) or corticosteroid withdrawal at 3 months (group 2) after LT. The study was performed at four centers across Korea. Only participants between 20 and 70 years of age who were scheduled to receive a single-organ liver transplant from either a living donor or a deceased donor were considered for enrollment. The primary endpoint was the incidence of new-onset diabetes after liver transplantation (NODAT) at 12 months. All analyses were done by intention-to-treat. This trial is registered with ClinicalTrials.gov, number NCT02095418.
Results: Between November 2012 to August 2020, 115 patients were randomly assigned to group 1 (n=60) or group 2 (n=55). The incidence of NODAT in group 1 (32.4%) was increased compared to group 2 (10.0%) in the per-protocol set. Additionally, biopsy-proven acute rejection (BPAR), graft failure, and death were not developed; however, median TAC trough level/dose/weight in group 1 were generally higher than in group 2. Safety parameters such as infection or the incidence of hepatocellular carcinoma recurrence did not differ between the two groups.
Conclusions: Early steroid withdrawal at 2 weeks after LT shows higher NODAT development compared with steroid withdrawal at post-transplant 3 months because of generally high TAC exposure. However, early steroid withdrawal can be achieved without loss of efficacy including BPAR, graft loss, and death.

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Complete transition from open to laparoscopic living donor hepatectomy: 8-year experience with more than 500 laparoscopy cases

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Background: We designed this study to comprehensively review the laparoscopic living donor liver transplantation of our institution.
Methods: Living donor liver transplantation cases performed since the first laparoscopic living donor hepatectomy, until reaching 500th laparoscopic cases were reviewed. Laparoscopic cases were compared to open cases in a yearly basis, regarding the donor selection, donor morbidity, recipient morbidity and operation time.
Results: During the period of May 2013 to July 2021, 754 living donor liver transplantations, 506 laparoscopic, and 247 open cases were performed. Complete transition to laparoscopy was achieved in 2020, performing 112 transplantations laparoscopically. Variation of bile duct type of donor became similar in 2018 (P=1.000). There were no differences in the occurrence of grade III complication of donor and recipient throughout the study period. Mean donor operation time were significantly longer in the laparoscopy group which became similar since 2017 (P=0.313). There were no differences in the mean operation time of recipients throughout the study period. Regarding graft survival and overall survival of the recipient, there were no difference between the two group throughout the period.
Conclusions: In the initial period, donor selection existed especially for bile duct variation maintaining the safety of the donor and recipient. However, with accumulated experience, complete transition to laparoscopy became possible after 7 years of practice.

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The clinical implication of hepatic venous territory mapping in living donor liver transplantation using right liver graft

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Background: We designed this study to evaluate the clinical implication of hepatic venous territory mapping in living donor liver transplantation.
Methods: Living donor liver transplantation cases performed using right liver graft since 2017 were included. Hepatic venous mapping using volume viewer application in the AW server 3.2 (GE Healthcare, Chicago, IL, USA) was started since January 2019. Comparison between transplantation cases with venous mapping and cases without mapping were performed. Among patients with hepatic venous mapping, cut-off point for graft occlusion were analyzed.
Results: Among 754 patients included to the study, 213 patients underwent hepatic venous mapping. Inferior hepatic vein reconstruction rate and patency rate were similar between the no mapping group (25.2% vs. 28.8%; P=0.402) and mapping group (92.5% vs. 96.8%; P=0.412), respectively. While middle hepatic vein reconstruction rate was higher in the mapping group (67.3%) compared to the no mapping group (55.8%) (P=0.013). However, patency rate was higher in the no mapping group (63.5%) compared to the mapping group (51.1%) (P=0.041). In patients with V5 reconstruction, median volume (177 cm^3; interquartile range [IQR], 152–259 vs. 147 cm^3; IQR, 113–199) (P=0.006) and median percentage of V5 territory (22.3%; IQR, 17.1–29.7 vs. 18.4%; IQR, 14.9–21.8) (P=0.001) were higher in the patent graft compared to occluded graft. A cut-off point of 150cm^3 (sensitivity, 0.824; specificity, 0.533; area under the receiver operating characteristic [ROC] curve [AUC]=0.680; P=0.006) and 20.0% (sensitivity, 0.647; specificity, 0.711; AUC=0.716; P=0.001) were chosen based on Youden index in AUC-ROC analysis.
Conclusions: Hepatic venous mapping provided objective measure for performing venous outflow reconstruction in living donor liver transplantation using right liver graft with increased reconstruction rate of the middle hepatic vein territory.

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Long-term outcomes of liver transplantation using grafts from donors with active and chronic hepatitis B virus infection

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Background: Liver grafts from donors with hepatitis B infection (HBV) have been expanded the donor pool under the hepatitis B immunoglobulin (HBIG) and antiviral agents in the HBV endemic area. We report the long-term outcome of liver transplantation (LT) using grafts from donors with chronic HBV infection.
Methods: Among 2,260 LTs which were performed at Seoul National University (SNU) Hospital, SNU Bundang Hospital, and Seoul Metropolitan Government-SNU Boramae Hospital between January 2000 and April 2019, 26 cases (1.2%) of LT using grafts from donors with HBsAg(+), HBeAb(+) or HBV DNA(+) were analyzed retrospectively.
Results: Sixteen deceased donor LT were performed with HBsAg(+) grafts. Ten living donor LT were performed with inactive HBV infected grafts: eight HBsAg (–), HBcAb (+), and HBV DNA (+) cases; and two cases with chronic HBV carrier with seroconversion HBsAg (–), HBsAg (+), and HBeAg (+). Recipients' mean age was 59.0±10.3 years old and model for end-stage liver disease (MELD) score was 19.9±8.4. There were seven HBe-negative chronic hepatitis, 16 inactive HBV infections, two HBsAg seroconversion, and one HBV vaccinated state in recipients. Their mean follow-up period was 82.6±60.1 months. All 10 recipients of living donor LT survived and were in good condition during follow-up. When compared with the patients who got transplantation with non-HBV infected grafts, the mortality rate was 30.8% (8/26) vs. 18.6% (387/2,076). But there was no difference in patient survival (P=0.247; log-rank test). Cause of death was infection and cancer recurrence. All survived patients were in inactive or resolved status for HBV infection. No graft failure was observed. HBV infection was thought to be effectively controlled by HBIG and antiviral medication.
Conclusions: With careful patient selection and effective post-LT therapy, liver grafts from HBV infected donors can be used safely and give an opportunity to increase the donor pool in HBV endemic areas.

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Classification of intrahepatic biliary strictures and assessment of outcome in living donor liver transplantation

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Background: Biliary complications account for unsolved common complications after living donor liver transplantation (LDLT). However, intrahepatic biliary stricture (IHBS) after LDLT is not common but requires intensive care. The purpose of this study is to classify IHBS and to evaluate the prognosis of IHBS after LDLT.
Methods: From 2011 to 2018, 868 cases of the right liver LDLT were enrolled. According to cholangiographic appearance, types of biliary stricture were classified into four, based on level and number of involved branches: type 1 (anastomosis or the 1st order branch; single), type 2 (the 2nd order branch; a. single, b. double, c. extended to the 3rd order branch), type 3 (multifocal), type 4 (diffuse necrosis). IHBS was defined as type 2, 3 and 4. We evaluated biliary intervention free period more than 1 year after last intervention (IFY), intervention frequency per year and clinical relapse after IFY.
Results: The overall incidence of biliary stricture including IHBS was 23% (n=198); IHBS was 9% (n=76). The most common type of stricture was type 1 (n=122, 62%) followed by type 2 (n=66, 33%), 3 (n=6, 3%) and 4 (n=4, 2%). Incidence of type 2 sub-classification consisted of 2a (n=8, 4%), 2b (n=15, 8%), 2c (n=43, 22%). IFY was more common in type 1 (85%) and 2 (a, 88%; b, 87%; c, 72%) than type 3 (67%) and 4 (25%) (P<0.05). Intervention frequency per year was higher in type 4 (12) than others (type 1, 3; type 2a, 2; type 2b, 4; type 2c, 5; type 3, 7) (P<0.05). Clinical relapse after IFY was more common in type 4 (50%) and 3 (67%) than type 2 (33%) and 1 (37%) but it was not significantly different (P>0.05).
Conclusions: IHBS was not rare in right liver LDLT. Although multifocal stricture or diffuse necrosis of intrahepatic bile duct were uncommon, they required more interventions.

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Impact of the high baseline anti-A/B antibody titer on the clinical outcomes in ABO-incompatible living donor liver transplantation

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Background: Recently, advances in desensitization protocol have made ABO-incompatible (ABOi) living donor liver transplantation (LDLT) feasible option in the era of organ shortage. Although, multiple sessions of plasmapheresis can successfully reduce preformed anti-A/B titer prior to transplantation, the clinical significance of baseline anti-A/B antibody titers remains uncertain. The aim of this study is to investigate the clinical outcomes of ABOi LDLT in patients with a high baseline anti-A/B antibody titer.
Methods: A total of 50 patients who received ABOi LDLT from 2010 to 2020 at two tertiary hospitals were evaluated retrospectively. Two centers used a protocol composed of rituximab, plasmapheresis, and/or splenectomy. The patients were classified according to baseline anti-A/B titer (<1:256, n=88 or ≥1:256, n=62) and compared the clinical outcomes among these groups. Graft survival rates were calculated using the Kaplan-Meier methods according to the groups.
Results: In the high baseline titer group, the number of plasmaphereses required to reach the target titer (1:16) was significantly higher (4.4±2.2 sessions) than in the low baseline titer group (1.9±1.2 sessions, P<0.001). Fourteen patients (16.4%) in high baseline titer group and seven patients (9.2%) in low baseline titer group experienced postoperative titer rebound to ≥1:32, (P=0.014). The occurrence of both cellular rejection and antibody-mediated rejection did not show a significant difference (P=0.251 and P=0.147, respectively). The 1-, 3-, and 5-year graft survival was not different among groups (high titer vs. low titer; 94.2%, 83.3%, and 59.0% vs. 92.1%, 86.3%, and 79.5%; P=0.326). In multivariate analysis showed that high baseline anti-A/B titer and postoperative rebound titer did not adversely affect clinical outcomes after ABOi LDLT.
Conclusions: Although, the patients with high baseline anti-A/B titer showed the higher tendency of postoperative antibody rebound, the baseline and rebound anti-A/B titer may not be as important factors for clinical outcomes of ABOi LDLT if appropriate desensitization is performed.

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Favorable long-term renal outcome following pediatric liver transplantation

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Background: Renal dysfunction is one of the critical issues of long-term outcome after liver transplantation (LT). Post-transplant renal function in adult transplant patients is well described, however, little is known about its prevalence in pediatric transplant patients.
Methods: From March 1999 to May 2016, 225 recipients underwent pediatric LT in Seoul National University Hospital. Patients with follow-up period less than 3 months or preoperative chronic kidney disease (CKD) were excluded. Cumulative incidence of CKD (defined as a glomerular filtration rate of 60 mL/min/1.73 m^2 of body-surface area or less or the development of end-stage renal disease) was determined using a Kaplan-Meier method.
Results: The median age at LT was 2 years (range, 0.2–17 years). During a median follow-up of 150 months, CKD developed in nine patients (4.41%). Of these patients, three patients underwent renal transplantation. The 1-, 5-, 10-year renal survival with CKD as the event was 99%, 97.9%, and 96.1%, respectively. In the adult group who received LT during the same period, The 1-, 5-, 10-year renal survival was 96.2%, 85.6%, and 79.4%, respectively, which showed significant difference compared to pediatric group (P<0.001). In a multivariate Cox regression model, hepatic artery thrombosis (P<0.0001) and primary liver diseases with potential renal involvement (P=0.033) were associated with CKD.
Conclusions: Renal function can be highly preserved following pediatric LT even in the long-term period, which is distinct finding from adult LT patients. However, more attention should be paid to patients with hepatic artery thrombosis and primary liver diseases with potential renal involvement to better improve renal outcome after pediatric LT.

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Sclerosing encapsulating peritonitis after living donor liver transplantation: a case report

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Background: Sclerosing encapsulating peritonitis (SEP), or abdominal cocoon syndrome is a rare condition of unknown etiology in which intestinal obstruction results from encasement of variable lengths of bowel by a dense fibrocollagenous membrane. It is difficult to diagnose, and the prognosis is poor.
Case report: We report a case of SEP after living donor liver transplantation (LDLT) that was required surgical treatment. A 57-year-old male, that had undergone LDLT for alcoholic liver cirrhosis 15 months earlier, was admitted with intermittent abdominal pain and nausea. Computed tomography scan showed that large amount of ascites with peritoneal thickening and encasing small bowel loops. Symptoms have improved in conservative management. However, he was readmitted a week after discharge because the symptoms were occurred again. The patient underwent laparotomy 6 days after hospitalization. The surgical findings showed ascites, and encasement of whole bowels by a dense fibrocollagenous membrane. Adhesiolysis and surgical removal of the membrane were performed successfully. There was no complication during postoperative period, and he is healthy until now.
Conclusions: SEP occurs as consequence of persistent low-grade peritonitis and may complicated the postoperative course after LT. Long-term outcome is satisfactory after surgical removal of membrane, but perioperative mortality rates are significant.

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The outcomes of pure laparoscopic living donor hepatectomy at small volume center

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Background: Laparoscopic liver donor surgery is not only difficult to perform but is also known to be a high-level surgery that requires the safety of donors. Thus, it is evaluated as possible in an experienced transplant center. Even though our hospital is a small volume center with less than 20 liver transplants per, we have steadily prepared laparoscopic donor surgery. In this study, we would like to evaluate the outcomes of three pure laparoscopic right hemi-hepatectomy of living donors.
Methods: From May 2015 to March 2021, we performed 26 cases of deceased donor liver transplantation and 37 cases of living donor liver transplantation at our center. Among these, we reviewed the medical records of three pure laparoscopic right hemi-hepatectomy of living donor and their recipients, including their clinical demographic, operative outcomes.
Results: The three laparoscopic right hemi-hepatectomy of living donor took over 10 hours. Higher body mass index, anatomical variations, bigger graft caused pringle maneuver time, warm ischemic time, operative time to take longer. But there was not any significant problem during surgery and any critical complications in the subsequent recovery course. However, significant complications including septic shock, middle hepatic vein obstruction, postoperative bleeding, bile leak, and primary non-function have happened in the recipient. We managed and solved those complications including re-transplantation, and all three recipients were recovered and survived.
Conclusions: Small volume centers can take longer to overcome the running curve of laparoscopic donor surgery. However, constant effort to overcome that running curve will be able to shorten that time to perform successful laparoscopic surgery.

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Living donor liver transplantation for advanced hepatocellular carcinoma with portal vein tumor thrombosis after concurrent chemoradiation therapy

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Background: Locally advanced hepatocellular carcinoma (HCC) with portal vein thrombosis carries a 1-year survival rate <10%. Localized concurrent chemoradiotherapy (CCRT), followed by hepatic arterial infusion chemotherapy (HAIC), was recently introduced in this setting.
Methods: Here, we report our early experience with living donor liver transplantation (LDLT) in such patients after successful down-staging of HCC through CCRT and HAIC. Between December 2011 and December 2017, 19 patients with locally advanced HCC with portal vein tumor thrombosis (PVTT) at initial diagnosis were given CCRT, followed by HAIC, and underwent LDLT at the Severance Hospital, Seoul, Korea. CCRT (45 Gy over 5 weeks with 5-fluorouracil [5-FU] as HAIC) was followed by HAIC (5-FU/cisplatin combination every 4 weeks for 3–12 months), adjusted for tumor response.
Results: The 1-year overall survival and disease-free survival rate were 90.9% and 87.5%, respectively. The 3-year overall survival and disease-free survival rate were 72.7% and 49.0%, respectively. There were eight instances of post-transplantation tumor recurrence during follow-up monitoring (median, 46 months; range, 1–72 months). Median survival time from initial diagnosis was 33 months (range, 11–110 months).
Conclusions: Using an intensive tumor down-staging protocol of CCRT followed by HAIC and LDLT may be a therapeutic option for selected patients with locally advanced HCC and PVTT.

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Hemorrhagic pancreatic cyst in living donor liver transplantation: a case report

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Background: A 27-year-old male, a daily alcohol drinker, was admitted to our hospital for abdominal distension and jaundice that had occurred 1 month before admission.
Case report: In computed tomography (CT) imaging, the patient was alcoholic liver cirrhosis with uneven fatty liver and splenomegaly. He had a 2.6-cm sized cystic lesion with thick enhancing wall at peripancreatic space. After about 3 weeks, preoperative magnetic resonance imaging showed an enlarged cyst from 2.6 cm to 4.1 cm. Ten days later, he received living donor liver transplantation (LDLT) with a liver donor from his father, and the graft-to-recipient weight ratio was 0.75%, which was a concern for the small for size syndrome. Since liver function did not recover after liver transplantation, an early CT scan was performed. As a result of imaging, splenic artery steel syndrome was suspected. Angiography was immediately performed, and splenic artery embolization was performed. Also, this CT showed that the cyst in the tail of the pancreas increased significantly from 4.1 cm to 8.1 cm. Two weeks later, the patient complained of severe abdominal pain, and CT showed actively bleeding pseudocyst from pancreas tail, showing increased size (11.2 cm from 9.2 cm). Emergency re-operation was performed. Distal pancreatectomy with splenectomy and proximal gastrectomy surgery was performed. Even after surgery, the patient did not recover liver function and eventually expired.
Conclusions: Usually, pancreatic cysts before and after liver transplantation are known to be harmless. However, in view of the above case, close observation of pancreatic cyst during LT is considered necessary.

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ABO-incompatible living donor liver transplantation with a simplified desensitization and immunosuppression protocol: a single center retrospective study

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Background: New desensitization strategies have made ABO-incompatible living donor liver transplantation an attractive option for patients with end-stage liver disease. We aimed to report our experience with 20 consecutive patients who underwent ABO-incompatible living donor liver transplantation using a simple A1 desensitization and immunosuppression regimen.
Methods: We retrospectively analyzed 20 ABO-incompatible living donor liver transplantation cases (August 2015 to July 2019). The ABO-incompatible living donor liver transplantation protocol involved rituximab administration (375 mg/m^2 body surface area) at 2–3 weeks preoperatively, subsequent plasma exchanges (target isoagglutinin titer: ≤1:8), basiliximab administration (20 mg on the day of surgery and postoperative day 4), and intravenous immunoglobulin administration (2 g/day from the day of surgery to postoperative day 7). No graft local infusion therapy or splenectomy was performed.
Results: Living donor liver transplantation involved a modified right lobe graft for 18 patients and a right posterior segment graft for one patient. The most common reason for liver transplantation was hepatitis B virus-associated liver cirrhosis (16 patients), and 14 patients had hepatocellular carcinoma. The mean age was 55.4±6.3 years, mean model end-stage liver disease score was 14.7±7.7, and mean graft-to-recipient weight ratio was 1.07%±0.2%. The median initial anti-ABO antibody titers were 1:16 for immunoglobulin M (range, 1:2–1:256) and 1:48 for immunoglobulin G (range, 1:4–1:>2,048). The median number of plasma exchanges was 2 (range, 0–12). No cases involved biopsy-confirmed antibody-mediated rejection. No bacterial or fungal infections were observed. Biliary anastomotic stricture was observed in nine cases.
Conclusions: This ABO-incompatible living donor liver transplantation protocol with rituximab, plasma exchange, low-dose intravenous immunoglobulin, and immunosuppression (equivalent to ABO-compatible living donor liver transplantation) could be a safe and effective way to overcome antibody-mediated rejection and other complications.

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Biliary complication in living donor liver transplantation in single center, experience

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Background: A shortage of deceased donors has resulted in living donor liver transplantation (LDLT) becoming a major treatment strategy for end-stage liver disease, including hepatocellular carcinoma. LDLT has been accepted as an established treatment modality. Biliary complication (BC) is an Achilles in LDLT. The way to decrease BC is still being debated. The Daegu Catholic Medical Center (DCMC) review 2-year data for BC and evaluated risk factor to find the way to improved biliary complications.
Methods: From January 1, 2015, to December 31, 2016, 126 liver transplants were performed in DCMC. One hundred and six patients were performed living donor liver transplantation and 20 patients were performed deceased donor liver transplantation. There were no BC in patients with deceased donor liver transplantation (DDLT).
Results: For 2 years, 126 patient received LT (LDLT, 106; DDLT, 20). Among 106 cases of LDLT, a total of 19 patients suffered from BC (17.9%). Two patients suffered from bile leak and 16 patients suffered from biliary stricture and one patient suffered from both leakage and stricture. Compared to the BC group and non-BC groups, only ABO incomplete factor was significant. Interestingly, duct anastomosis, stent types, and duct size were not significant risk factors. The BC groups show lower 5-year graft survival than non-BC group but was not significant.
Conclusions: Still, BC incidence is major complication in LDLT. We must put effort to reduce BC. We should try prospective study design to decrease BC.

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Liver transplantation for azithromycin-induced severe liver injury: a case report

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Background: Drug-induced liver injury is the most common cause of acute liver failure in western countries by prescription drugs and herbal medications. Liver injury due to azithromycin has rarely been reported. This is a brief report of a patient administered azithromycin and who developed acute liver failure leading to liver transplantation.
Case report: We report the case of a 68-year-old female who developed jaundice 1 week after she started taking azithromycin. On the third day of hospitalization, her hepatic function rapidly deteriorated and level of consciousness decreased to drowsiness. The model for end-stage liver disease score was confirmed to be 33, and liver transplantation was considered. On the eighth day of hospitalization, she underwent emergency living donor liver transplantation, receiving a right lobe liver graft from a 35-year-old male donor, the patient's son. Currently, she is alive with good liver function after 25 months of transplant.
Conclusions: This case suggests that azithromycin my cause rare hepatitis with liver failure. Therefore, at the beginning of the azithromycin treatment, patients should visit the hospital immediately if symptoms such as jaundice and abdominal pain are experienced.

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Operation tolerance after liver transplantation

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Background: Advances in immunosuppressive therapy have improved clinical outcomes after liver transplantation (LT) over the years. On the other hand, there are serious risks associated with immune suppression such as opportunistic infections, *de novo* malignancies, cardiovascular disease, metabolic disorders, kidneys, and other complications. Minimization or withdrawal of immunosuppression may overcome these problems. This study aimed to identify the patients who were successful for immunosuppression minimization or withdrawal after LT.
Methods: All patients who underwent LT from May 1996 and December 2016 were retrospectively reviewed. The patients with immunosuppression withdrawal or minimization for monotherapy or dual therapy with minimum dose were included. And the patients with rejection episodes within the last 5 years and under 18 years of age at the time of LT were excluded.
Results: The 57 recipients were included by immunosuppression minimization, of which four (7.0%) were immunosuppression withdrawal. Living donor LT was 35 patients (61.4%). There were 41 patients (71.9%) immunosuppression minimizing with monotherapy and 16 patients (28.1%) immunosuppression minimizing with dual therapy. Immunosuppression minimization with a calcineurin inhibitor and mycophenolate mofetil was performed in 30 (52.6%) and 37 patients (64.9%), respectively, mostly monotherapy with these or dual therapy with this combination. The average graft-recipient weight ratio was 1.43, 1.13 for living donor LT and 2.31 for deceased donor LT. The median time to minimize immunosuppression was 5.2 years and the median follow-up period was 14.2 years.
Conclusions: Early immunosuppression minimization is feasible in selected liver recipients, while complete withdrawal is successful in only a small proportion.

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The impact of the multiple bile ducts on postoperative biliary complications in living donor liver transplantation: a single center experience

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Background: The multiple bile ducts in a living donor graft are a long standing troublesome. All transplant surgeons try to avoid this problem due to technical difficulty and relation with biliary complications. However, there have been many mixed reviews about the impact of multiple bile ducts on biliary complications. This study aimed to investigate correlations between the number of bile duct and biliary complications in patients undergoing living donor liver transplantation (LDLT).
Methods: We reviewed all LDLT patients in our hospital between July 2008 and December 2020. The patients were divided into two groups according to the number of bile duct in living donor graft (single duct [SD], multiple duct [MD]). Biliary complications were defined by endoscopic, interventional, or surgical treatment. Collected data included demographics of donor and recipient, surgical data about to biliary anastomosis (duct-to-duct, hepaticojejunostomy, and conjoined), perioperative and postoperative outcomes.
Results: All 70 patients were represented SD (n=48) and MD (n=22). Biliary complications occurred in 27 patients (38.6%) and were more common in MD group (54.5% vs. 31.3%). Although there were no statistic differences between two groups, multiple bile ducts was positively correlated with biliary complications (hazard ratio, 2.4). MD patients revealed longer operation time (1,052±251 vs. 910±215 minutes; P=0.019) and higher percentage of hepaticojejunostomy (31.8% vs. 8.3%; P=0.012). Donor age, graft-recipient weight ratio, cold ischemic time and amount of transfusion were not different between two groups. Twenty-one (77.7%) were fully recovered from biliary complications but three (4.3%) resulted in graft failure.
Conclusions: Biliary complications were common problems in LDLT despite overall good result. Multiple bile ducts can be a potent risk factor of biliary complications among other predisposing factors.

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The overcoming high pre-transplant isoagglutinin titers using intravenous immunoglobulin, booster rituximab, salvage plasmapheresis in ABO-incompatible living donor liver transplantation: a case report

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Background: ABO blood type incompatibility between donor and recipient represents a major hurdle given the high risk for antibody-mediated rejection (AMR). Incompatibility of ABO blood type between donor and recipient is one of the major barriers to transplantation. The prognosis of ABO incompatible (ABOi) living donor liver transplant (LDLT) has improved dramatically since the introduction of rituximab. However, pre-transplant high isoagglutinin (IA) titers are considered to be major risk factor of AMR. Nevertheless, several protocols have been applied to overcome high antibody titer. Here, we report a successful ABOi LDLT in high pre-transplant IA titer recipient.

Case report: The recipient was a 55-year-old male who had alcoholic liver cirrhosis with blood type O+. He received ABOi LDLT from his son of blood type B+. His initial IA immunoglobulin G (IgG) titer was 1:1,024. Rituximab of 375 mg/BSA was given before 2 weeks of expected transplantation. However, the antibody titer did not decease, so we postponed the transplantation. He received 11 times of plasma pheresis. His last IA IgG titer was 1:128. The right liver of 802 g was donated and graft to recipient weight ratio was 1.20. Booster rituximab 200 mg single dose was given at postoperation day (POD) 2. At POD 6, IA titer was raised to 1:64. We treated him with two times of plasma pheresis every other day. Subsequently bile has been well drained through external bile stent. We did not any more plasmapheresis even though IgG titer was over 1:32 after POD 13. Six months after the transplant, he has maintained stable liver function.

Conclusions: The most important factor for preventing AMR in recipients undergoing ABOi LDLT is the suppression of *de novo* antibodies. If the pre-transplant IA titer does not decease as low as the target, the protocols of well-combined with booster rituximab, high dose intravenous IG, and salvage plasmapheresis are considered to be able to overcome in ABOi LDLT.

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Impact of previous abdominal surgery on laparoscopic donor hepatectomy for living donor liver transplantation

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Background: Laparoscopic donor hepatectomy (LDH) has many advantages over open donor hepatectomy. However, previous abdominal surgical history can be considered to cause difficulties in laparoscopic surgery. Few studies have evaluated the impact of previous abdominal surgery (PAS) on LDH. Therefore, we studied the effect of PAS on LDH.
Methods: This study is a retrospective study conducted at a single center. We reviewed the data of 361 patients who underwent LDH at Samsung Medical Center from January 2017 to December 2020. These patients divided into 72 patients with PAS group and 289 patients with non-PAS group. Two groups were compared with respect to operation factors such as estimated blood loss, operation time, and intraoperative blood transfusion. Postoperative outcomes such as length of hospital stay, postoperative complications, aspartate transaminase (AST), alanine transaminase (ALT), and international normalized ratio (INR), albumin, and total bilirubin trends (preoperative, peak-postoperative, and after 1 month) were also compared.
Results: Seventy-two patients has previous abdominal surgical history (cholecystectomy, four; splenectomy, one; pyloromyotomy, one; cesarean section, 28; appendectomy, 19; uterine surgery, eight; ovarian surgery, seven; hernia repair, three; laparoscopic anterior resection, one). There was no statistical difference in estimated blood loss and operation time between the two groups. No donors received intraoperative blood transfusion. Complications occurred in seven patients (9.7%) in the PAS group and in 26 patients (9%) in the non-PAS group, and there was no statistical difference between the two groups. There were no significant differences in the changes in AST, ALT, INR, albumin, and total bilirubin (preoperative, postoperative and 1 month). All donors fully recovered and returned to their normal activities.
Conclusions: The outcomes of our study show the feasibility and safety of LDH in patients with previous abdominal surgical history. Therefore, even if there is a history of PAS, LDH can be performed safely enough, so it is not a contraindication.

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Delayed recurrence of hepatocellular carcinoma after liver transplantation: case series

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Background: Hepatocellular carcinoma (HCC) is the third leading cause of cancer deaths worldwide and liver transplant is the definite curative treatment option. However, 15%–20% of recipients will experience HCC recurrence even within stringent Milan criteria, mostly occurring within 2 years. Delayed HCC recurrence after post-transplant 3 years is not commonly observed. We aimed to report the clinical characteristics, risk factor profiles, and post-recurrence survival in patients with HCC recurrence more than 3 years after transplant.
Methods: Patients with HCC recurrence more than 3 years after transplant from February 1999 to December, 2020 in a tertiary university hospital were retrospectively chart-reviewed for underlying medical history, HCC status, treatment, and courses.
Results: Thirty-four out of 195 patients who received liver transplant for HCC had post-transplant HCC recurrence. Five cases occurred more than 3 years after liver transplant. The longest interval was nearly 18 years. For these five late recurrence cases, liver transplant surgeries were all performed in their 50s. The nontumor part of the liver was universally diagnosed with cirrhosis and viral hepatitis (three hepatitis B virus and two hepatitis C virus). Model for end-stage liver disease (MELD) scores were varied between 10–20. Three patients received local treatment (hepatectomy and ethanol injection) for HCC before transplant. Macroscopic or microscopic vascular invasion in explants at the time of liver transplant was noted in two patients. The site of recurrences included liver (3), bone (3), and lung (2); with extra-hepatic recurrence (2), intra-hepatic recurrence (1), and extra- and intra-hepatic recurrence (2). Three patients died in 1–2 years after recurrence. The other two patients are alive, but the follow-up periods are both less than 1 year after recurrence.
Conclusions: One-seventh of post-transplant HCC recurrence occurred more than 3 years after transplant in our series. Though the sample size is too small to reach a definite conclusion, the short post-recurrence survival warrants further clinical investigation.

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Medicinal importance and therapeutic potential of senegin in the medicine for the treatment of hepatitis: therapeutic role of superoxide dismutase, glutathione peroxidase and catalase in the liver disorders

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Background: Plants based natural products have been used in the medicine for the treatment of various forms of human disorders. Herbal medicine has been well known in the medicine for their therapeutic benefit and pharmacological activities. Herbal medicines have numerous pharmacological activities due to the presence of different phytoconstituents in the medicinal plants.
Methods: Numerous scientific databases have been searched and analyze to know the impact of inflammation in various forms of liver disorders including hepatitis. Medicinal importance and pharmacological activities of senegin in the medicine has been evaluated through literature data analysis of various scientific research works. Numerous literature databases have been searched and needed scientific information has been collected and analyzed in the present investigation. All the collected scientific information has been analyzed for the biological importance of senegin for their beneficial aspects against hepatitis and other liver disorders. Protective role of senegin against various form of hepatitis have been also investigated in the present work through literature data analysis of various scientific research work.
Results: Literature data analysis of various scientific research works revealed the biological importance and therapeutic benefit of senegin in the medicine. From the literature data analysis it was found that senegin has anti-inflammatory activity in the medicine. Further senegin were found to have hypoglycemic activities. Literature database analysis of various scientific research works revealed the biological importance of senegin for the treatment of various form of liver complication including Hepatic inflammation. Molecular study literature databases analysis signified the biological importance of superoxide dismutase, catalase and glutathione peroxidase in the human liver disorders.
Conclusions: Literature data analysis of various scientific research works signified the health beneficial role of senegin in the various form of inflammatory disorders including hepatitis.

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Biological importance of sciadopitysin on hepatic and renal toxicity: biological role in the medicine

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Background: More than 122 compounds used in the medicine for the treatment of human disorders were derived from plant sources. Nowadays, herbal based medicine in therapies has become popular which signified the rapidly increasing worldwide consumption of herbal drug and their derived herbal medicines.
Methods: Scientific research work revealed the presence of sciadopitysin in different medicinal plants of potential health benefit. Numerous scientific research work data has been collected in the present work and analyzed to know the health beneficial aspects of sciadopitysin in the medicine. Biological importance of sciadopitysin on hepatic and renal toxicity has been investigated through literature data analysis of various scientific research works.
Results: Literature data analysis revealed the biological importance of sciadopitysin in the medicine. Literature data analysis revealed that sciadopitysin reduced cell viability which signified the biological importance of sciadopitysin on hepatic and renal toxicity. Literature data analysis revealed acute renal failure induced by sciadopitysin in the literature. Other pharmacological data analysis signified the biological importance of sciadopitysin in the medicine.
Conclusions: Literature data analysis revealed the biological importance of sciadopitysin on Hepatic and renal toxicity.

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Metabolic syndrome and health-related quality of life among patients with liver transplantation

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Background: The purpose of this study was to determine whether characteristics of metabolic syndrome (MetS) and MetS management behaviors would be significantly associated with health-related quality of life (HRQOL) among patients with liver transplantation.
Methods: Ninety-four patients who underwent liver transplantation were recruited at an outpatient clinic from a university hospital in Seoul between December 2009 and June 2019. MetS was defined according to NCEP-ATP III. MetS management behaviors were measured by using the Evaluation Tool of a Lifestyle Habit for MetS Modification. HRQOL was measured by using the MOS SF-36 II and analyzed by categorizing physical QOL and mental QOL.
Results: The means of physical and mental QOLs were 82.3 and 82.8 scores, respectively. MetS prevalence was 68% and a mean of MetS management behaviors was 97.0. MetS prevalence was not significantly associated with either physical or mental QOLs. However, an increase in abdominal obesity was significantly and negatively associated with physical (β=–0.53, P=0.001) and mental QOLs (β=–0.41, P=0.005), respectively. Of the MetS management behaviors, diet control (β=0.59, P=0.021) and drinking & smoking control (β=2.18, P<0.001) were significantly associated with physical QOL. Physical activity (β=1.45, P=0.001), diet control (β=0.51, P=0.013), and drinking & smoking control (β=2.00, P<0.001) were significantly associated with mental QOL.
Conclusions: MetS may not associate with HRQOL directly but MetS management behaviors may associate with HRQOL among patients with liver transplantation. Therefore, nursing strategies for promoting MetS management behaviors should be enhanced to improve their HRQOL levels in outpatent clinics and community settings.

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First years of single-center experience in liver transplantation

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Background: Liver transplantation is one of the most effective treatments of end-stage benign liver diseases and early hepatocellular carcinoma within Milan criteria. An increasing pool of donor organs plays a major role in the treatment of more patients on the liver transplant waiting list. Currently, liver transplantation has been performed at our center with early satisfactory results.
Methods: A prospective cohort study was performed from June 2018 at University Medical Center at Ho Chi Minh City. Selective patients have been satisfied the criteria for liver transplantation.
Results: Overall survival rate after liver transplantation at 6 months, 12 months, 24 months, and 36 months is 82.4%, 47.1%, 23.5%, and 5.9%, respectively. The recurrent rate has been not recorded. Two cases died due to severe sepsis. Surgical complications have included hepatic arterial thrombosis (5.9%), portal stenosis (11.8%), middle hepatic venous thrombosis (23.6%), biliary leakage (5.9%), small intestinal perforation (5.9%), and splenic abscess after splenic arterial ligation (5.9%). In addition, internal matters have been recorded, such as graft rejection (11.8%), pneumonitis (11.8%), and renal failure (5.9%). All cases of graft rejection were responded with a high dose of corticosteroids. All cases considered, there were 16 cases of living donor liver transplantation and two cases of deceased donor liver transplantation. One of 16 cases of the living donor was suffered biliary leakage after hepatectomy and treated by endoscopic retrograde cholangiopancreatography with the stent. The mortality rate has not been recorded.
Conclusions: Results of liver transplantation show that satisfactory outcomes of overall survival, complications, morbidity, and mortality. In addition, living donor liver transplant procedure has brought in the safety of living donors and recipients based on the improving techniques of hepatectomy and more ability in the treatment of patients on the waiting list.

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Learning curve of graft bench operation in living donor liver transplantation: a cumulative sum analysis

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Background: The middle hepatic vein (MHV) reconstruction is a critical issue for successful living donor liver transplantation. we analyzed the learning curve of MHV reconstruction and described the factors affecting the learning curve, and the postoperative outcomes.
Methods: Data from donors undergoing bench surgery between January 2019 to May 2020 retrospectively reviewed. To overcome operator-dependent bias, data from procedures performed by only a single surgeon (JML) were included. The learning curve was evaluated using the cumulative sum (CUSUM) method based on operative time.
Results: A total of 111 bench surgery were evaluated. The mean operative time was 64.0±15.8 minutes, and the reconstructed MHV graft patency rate was 88.3% in recipient CT taken 7 days after liver transplantation. Portal vein stenosis occurred in three cases (2.7%). Hepatic artery complications were four (3.6%) and biliary complications were 18.1%, and no graft failure occurred during the study period. Univariable analysis showed that portal vein variation, presence of more than two factors of contributing difficulty were associated with a significantly higher risk of prolonged operative time. These factors are also significantly associated with prolonged operative time in multivariable analysis.
Conclusions: At least 10 cases of learning curve are required for successful bench surgery in routine case of living donor liver transplantation. Multiple portal vein orifice is related with longer operative time and learning curve for the bench operation.

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Long term protective level of hepatitis B antibody after revaccination in liver transplanted children: an open-label randomized control trial study

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Background: High prevalence of hepatitis B (HB)-antibody loss after liver transplantation (LT) was documented and reimmunization is merit. This study aims to evaluate the long-term protective level of HB surface antibody (anti-HBs) after HB revaccination in liver transplanted children.
Methods: Liver-transplanted children with previously immunization but anti-HBs after LT ≤100 mIU/mL were recruited and randomized to reimmunization with standard-3-dose (SD) and double-3-dose (DD) HB vaccine intramuscularly at 0-1-6 months. Participants with anti-HBs <100 mIU/mL after reimmunization was defined as antibody loss. Antibody loss rate was estimated using Kaplan-Meier method and the difference between antibody loss from SD and DD was compared using log-rank test. To assess the variable associated with antibody loss over time, multivariable Cox proportional hazard regression analysis was performed.
Results: From 2016 to 2020, 68 children were recruited. The rate of anti-HBs ≥100 mIU/mL after complete vaccination was 87.1% and 80% in SD and DD. After the median follow-up period of 2.21 years (1.34, 2.96) from enrollment, geometric mean titer of anti-HBS was 199.32 mIU/mL (101.37–391.93) and 129.80 mIU/mL (60.59–278.08) in SD and DD (P=0.419). There were 64.5% and 56.7% of participants with anti-HBs >100 mIU/mL in SD and DD (P=0.530). The median for antibody loss over time were 3.01 (95% confidence interval [CI], 2.865–3.155) and 2.69 (95% CI, 2.341–3.049) years for SD and DD. There was no significant antibody loss over time between both groups (P=0.156). On the univariate analysis, low anti-HBs level at the enrollment was the only factor associated with increased risk of antibody loss over time (median anti-HBs of 2.2 mIU/mL; hazard ratio, 3.403; 1.631–7.099; P<0.001).
Conclusions: SD and DD for HB reimmunization were highly effective to maintain the protective level of anti-HBs in liver-transplanted children after long-term follow-up. Moreover, early HB reimmunization should be scheduled for liver-transplanted children at the time that anti-HBs level is not too low.

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Pure laparoscopic versus open right hepatectomy in living liver donors: bench-surgery time and graft weight discrepancy

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Background: Recently, there have been several reports on pure laparoscopic donor right hepatectomy (PLDRH), but the affect of pure laparoscopy on bench-surgery has not been evaluated. This study aimed to compare bench-surgery time and the graft weight discrepancy between estimated- and actual weight of the liver graft in PLDRH in comparison with those of conventional donor right hepatectomy (CDRH).
Methods: Prospectively collected medical records of 758 live liver donors between January 2012 and December 2019 were retrospectively reviewed. We divided it into two groups: between January 2012 and September 2015 when CDRH was performed exclusively and between March 2016 and December 2016 when PLDRH was standardized. We excluded all other type of graft donor hepatectomy, laparoscopic assisted donor hepatectomy, and no data recorded cases.
Results: Two hundred sixty-seven donors were included in PLDRH period and were compared with 247 donors who underwent in a period during which CDRH was performed exclusively. Similar proportion of graft vasculature variations were observed in the two groups. The mean bench-surgery time was longer in the PLDRH group than the CDRH group (49.3±19.9 vs. 39.5±17.5 minutes; P<0.001). The correlation of actual graft weight (AGW) and estimated graft volume (EGV) were significantly linear in two groups (R=0.76, P<0.001 and R=0.80, P<0.001), but there was relatively higher linear correlation in PLDRH group.
Conclusions: The bench-surgery time takes longer in the PLDRH group regardless of reconstruction of vasculature or not. The correlation between EGV and AGW was more linear in PLDRH group.

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Transarterial Chemoembolization with radiotherapy for solitary hepatocellular carcinoma bone metastasis after living donor liver transplantation

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Background: Hepatocellular carcinoma (HCC) represents one of the most common causes of cancer-related deaths worldwide. Bone metastasis (BM) is a typical metastatic pattern in HCC patients. Although the treatment of HCC has improved in recent years, the prognosis of BM is poor, a median survival of HCC with BM is 1–2 months. However, the management of BM is palliative radiotherapy only. We present the cases, transarterial chemoembolization (TACE) with radiotherapy for solitary BM lesion.
Methods: Among 94 recipients who were received living donor liver transplantation due to HCC between December 2014 and July 2021, we had three cases of BM from HCC. They had solitary lesion and we performed the TACE with radiotherapy for curative treatment.
Results: Metastatic lesion was decreased or disappeared in radiologic finding after TACE, tumor marker was decreased in all cases. In spite of extremely poor prognosis of BM from HCC, patients have survived more than 6 months after the first recurrence event. There is no recurrence in other organ, except primary BM lesion.
Conclusions: BM in HCC is typical metastatic pattern, but the prognosis is poor. TACE with radiotherapy for solitary BM lesion could be a treatment option for the purpose of curative intend, compared to palliative radiotherapy.

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Living donor liver transplantation for huge polycystic liver disease with recipient liver splitting method: a case report

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Background: Polycystic liver disease (PLD) can progress to massive hepatomegaly resulting in impaired performance status and quality of life. In PLD patients with diffuse liver cysts with few areas of normal parenchyma, liver transplantation (LT) can be the only curable treatment. But LT can be extremely challenging due to the massiveness and hardness of the native liver, which makes difficulty in mobilization and access to vascular structures. We report our case of LT for massive hepatomegaly due to symptomatic PLD.
Case report: A 53-year-old male was diagnosed with autosomal dominant polycystic kidney disease in 1998. After 11 years, he was diagnosed also with PLD. He was firstly listed for a kidney transplantation due to proceeded with end-stage renal disease in 2011. While waiting for deceased donor, abdominal discomfort aggravated due to huge size of kidney. So, he underwent bilateral nephrectomy sequentially. In July 2020, due to an enlargement of liver cysts and massive hepatomegaly, the patient developed severe clinical symptoms; abdominal discomfort, dyspepsia, poor oral intake. He decided to proceed with living donor LT first in February 2021. At LT, the graft mobilization was too hard not only because of the size, weight, and hardness of the organ, but also because of inflammation and adhesion due to previous several operations. After hilar dissection and all the vasculatures were ligated, the inferior vena cava was exposed and could be dissected up to right hepatic vein. However, the hepatic veins were not able to be identified due to the huge liver. Liver parenchyma was resected by anterior approach and each hepatic veins were isolated. And the recipient's liver was weighed 10,134 g.
Conclusions: This case shows that even recipients with a massive liver weighing more than 10 kg can also undergo surgery successfully.

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Accurancy between estimated graft volume and actual graft weight in living donor liver transplant

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Background: In the living donor liver transplant (LDLT) one of the preoperative evaluation stage is the calculation of graft-recipient-weight ratio (GRWR) and remnant liver volume. According to the Başkent criteria, the remnant volume should be at least 40% and the GRWR should be at least 1% in order to minimize postoperative complications and achieve the highest graft functions. We aimed to determine the accuracy of pre-operative computed tomography (CT) graft measurements with actual graft weights in LDLTs in our centers.
Methods: Since 1988, 692 liver transplants have been performed by our team. Of these 692 liver transplants, 480 were LDLTs. Preoperative CT images and intraoperative graft weights were analyzed retrospectively.
Results: Two hundred seventy (56.3%) of 480 donors were female and 210 (43.7%) were male. The mean age of donors was 44±8.5 years. The mean weights of donors was 76±12.5 kg. Of the donor hepatectomies, 47.1% (n=226) were left hepatectomy, 31.7% (n=152) right hepatectomy and 21.2% (n=102) left lateral hepatectomy. The mean total liver volume of donors measured by CT was 1,555.41±235 cm^3. The mean graft volume was 519.41±250 cm^3 and the mean graft weight was 507.37±242 cm^3. When we measured the graft weights during surgery, we found that its ratio to the volume measurements made radiologically was 1.03. Remnant liver volume in donors was 64.28%±15.7% of the total volume.
Conclusions: Preoperative radiological assessment of the donor's liver is very important to prevent postoperative complications and to perform successfully living related liver transplant. Otherwise, small-for-size or large-for-size may occur in the recipient and liver failure in the donor.

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Baskent University long-term outcomes of liver transplant living donors

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Introductions: Living donor liver transplant (LDLT) is a life-saving surgical innovation. On the other hand exhaustive medical and psychological evaluations and a precise anatomical study of the liver should be performed to the safety of the donor and to provide good results for the recipient. The aim of this study was to evaluate the long-term results of living donors selected according to our criteria.

Methods: Since 1988, we have performed 692 liver transplants (480 LDLT and 212 deceased donor liver transplant) at our centers. Donors who could not come to our centers were asked questions about their demographic and current medical conditions. All donors who came to our centers, obtaining detailed anamnesis, physical examinations, laboratory tests and thoracoabdominal computer tomography (CT) scan with iv opaque were performed. All findings were compared with the pre-hepatectomy period.

Results: We reached 210 of these donors by phone. Sixty-five donors admitted to our centers for examination. Mean follow-up period was 10.99 years. In the postoperative early period, minor moderate and severe complications developed in 31, 19, and 1 donors, respectively. All donors' laboratory test results were in the normal range. In the control CT we saw that, the current total liver volume reached 97.3% of the volume before hepatectomy. In CT scan images, only two donors had minimal dilatation in the intrahepatic bile ducts, and two had incisional hernia.

Conclusions: LDLT can be safely performed in cases where the recipient does not have time to wait for a deceased donor, such as fulminant hepatic failure. However, considering the early or late complications that may develop after donor hepatectomy, it is absolutely necessary for the donors to be relatives with the recipient.

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Usability of intraoperative cine-portogram during liver transplantation in young pediatric patients with biliary atresia

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Background: Pediatric patients with biliary atresia (BA) often present liver cirrhosis-associated portal hypertension and portal vein hypoplasia. For successful liver transplantation (LT), maintenance of sufficient portal inflow is essential through stenosis-free portal vein reconstruction and effective ligation of collaterals. This study was intended to assess the clinical usability of intraoperative cine-portogram (IOCP) in young pediatric patients who underwent LT for BA.
Methods: Medical records of pediatric patients younger than 10 years who underwent primary LT for BA from 2018 to 2020 were reviewed.
Results: All 31 patients had undergone Kasai portoenterostomy soon after birth. Median ages at Kasai portoenterostomy and LT were 1 month and 11 months, respectively. Types of LT were living donor LT in 13, deceased split LT in 15, and deceased whole LT in three patients. Portal vein interposition using iliac vein homograft was performed in all 28 patients receiving partial liver graft. Side-to-side portal vein unification venoplasty was performed in all three patients of whole LT. All patients underwent ligation of collateral veins. IOCP was performed in six (19.4%). Four showed no or faint residual venous collaterals. Collateral vein embolization and endovascular stenting were performed in each one patient. Portal vein insufficiency-free survival rate was 100% at 1 year and 93.8% at 3 years. All patients are currently alive to date with a median follow-up period of 23 months.
Conclusions: IOCP can be a useful method for identification and embolization of the residual portosystemic collateral veins in young pediatric patients who undergo LT for BA.

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Indication and outcome of adult liver transplantation for post-Kasai biliary atresia

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Background: Some young adults who underwent Kasai portoenterostomy (KPE) for biliary atresia (BA) can live for long period with native liver, but a considerable proportion of patients require liver transplantation (LT). This study was intended to analyze the indications and outcomes of LT in young adult LT recipients who had survived long period with native liver after KPE.
Methods: We selected seven patients who were 18 years or older at the time of LT operation out of 116 BA patients who underwent primary LT from 2008 to 2019.
Results: The mean ages at KPE and LT were 2.1±0.9 months and 22.0±5.1 years, respectively. Mean serum total bilirubin level and model for end-stage liver disease score at LT was 7.91±7.22 mg/dL and 15.3±6.0, respectively. The main reasons for LT were liver cirrhosis and/or portal hypertension-associated complications in five and intractable cholangitis in two. Types of LT were living donor LT in five and deceased donor LT in two. All seven patients are currently alive during the mean follow-up period of 74.7±40.9 months. One patient suffered from outflow graft vein obstruction requiring endovascular stenting. One patient showed core antibody-positivity-induced *de novo* hepatitis B virus infection, which was well managed with antiviral therapy.
Conclusions: Young adult patients with BA are a unique group of patients requiring specialist care regarding transition from pediatric to adult services. The outcome of LT in young adult BA patients were excellent, thus LT should be considered in patients showing serious BA-associated complications.

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Liver transplantation in pediatric patients with progressive familial intrahepatic cholestasis: single center experience of seven cases

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Background: Progressive familial intrahepatic cholestasis (PFIC) is an autosomal recessive inherited disease requiring liver transplantation (LT). The objective of this study was to investigate the clinicopathological features and posttransplant courses of seven LT recipients with PFIC.
Methods: This was a retrospective single-center study of patients with PFIC who underwent LT from January 2013 to June 2020.
Results: Two and five patients were diagnosed with PFIC type 1 and type 2, respectively. For all seven patients, age at PFIC onset was at birth. Jaundice was present in all cases. Mean pretransplant total and direct bilirubin levels were 16.1±8.1 mg/dL and 12.4±6.2 mg/dL, respectively. Median patient age and body weight at LT were 10 months and 7 kg, respectively. Types of donors were mothers of patients in four and deceased donors in three. All five patients with PFIC type 2 recovered uneventfully. Each patient with PFIC type 1 underwent retransplantation due to graft failure or died due to multi-organ failure. Overall graft and patient survival rates at 5 years were 66.7% and 83.3%, respectively. Bile salt export pump immunohistochemical staining showed normal canalicular expression in two patients with PFIC type 1, focal loss in two patients with PFIC type 2, and total loss in three patients with PFIC type 2.
Conclusions: LT is currently the only effective treatment for PFIC-associated end-stage liver diseases. It is mandatory to perform regular follow-up due to the risk of complications including steatohepatitis, especially for patients with PFIC type 1.

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Dextroplantation of a reduced left lateral section graft in an infant undergoing living donor liver transplantation

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Background: Graft size matching is essential for successful liver transplantation in infant recipients.
Methods: We present our technique of graft dextroplantation used in an infant who underwent living donor liver transplantation (LDLT) using a reduced left lateral section (LLS) graft.
Results: The patient was an 11-month-old female infant weighing 7.8 kg with hepatoblastoma. She was partially responsive to systemic chemotherapy. Thus, LDLT was performed to treat the tumor. The living donor was a 34-year-old mother of the patient. After non-anatomical size reduction, the weight of the reduced LLS graft was 235 g, with a graft-to-recipient weight ratio of 3.0%. Recipient hepatectomy was performed according to the standard procedures of pediatric LDLT. At the beginning of graft implantation, the graft was temporarily placed at the abdomen to determine the implantation location. The graft portal vein was anastomosed with an interposed external iliac vein homograft. As the liver graft was not too large and it was partially accommodated in the right subphrenic fossa, thus the abdominal wall wound was primarily closed. The patient recovered uneventfully. An imaging study revealed deep accommodation of the graft within the right subphrenic fossa. The patient has been doing well for 6 months without any vascular complications.
Conclusions: This case suggests that dextroplantation of a reduced LLS graft can be a useful technical option for LDLT in infant patients.

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Prognosis of hepatic epithelioid hemangioendothelioma after living donor liver transplantation

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Background: Epithelioid hemangioendothelioma (EHE) is a rare borderline vascular tumor. Due to its rarity and protean behavior, the optimal treatment of hepatic EHE has not yet been standardized. This single-center study describes outcomes in patients with hepatic EHE who underwent living donor liver transplantation (LDLT).
Methods: The medical records of patients who underwent LDLT for hepatic EHE from 2007 to 2016 were reviewed.
Results: During 10-year period, four patients, one male and three females, of mean age 41.3±11.1 years, underwent LDLT for hepatic EHE. Based on imaging modalities, these patients were preoperatively diagnosed with EHE or hepatocellular carcinoma, with percutaneous liver biopsy confirming that all four had hepatic EHE. The tumors were multiple and scattered over entire liver, precluding liver resection. Blood tumor markers were not elevated, except that CA19-9 and des-γ-carboxy prothrombin was slightly elevated in one patient. Mean model for end-stage liver disease score was 10.8±5.7. All patients underwent LDLT using modified right liver grafts, with graft-recipient weight ratio of 1.11±0.19, and all recovered uneventfully after LDLT. One patient died due to tumor recurrence at 9 months, whereas the other three have done well without tumor recurrence, resulting in 5-year disease-free and overall patient survival rates of 75% each. The patient with tumor recurrence was classified as a high-risk patient based on the original and modified hepatic EHE-LT scoring systems.
Conclusions: LDLT can be an effective treatment for patients with unresectable hepatic EHEs that are confined within the liver and absence of macrovascular invasion and lymph node metastasis.

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Absence of influence of the Korean MELD score-based liver allocation system on pretransplant MELD score in patients undergoing living donor liver transplantation

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Background: Model for end-stage liver disease (MELD) score-based allocation system was started in 2016 in Korea. This study aimed to analyze the profiles of adult patients who underwent living donor liver transplantation (LDLT) in the pre- and post-MELD eras.
Methods: This study was a retrospective double-arm analysis using a single-institution LDLT cohort. We compared the LDLT recipient profiles by focusing on pretransplant MELD score for 4 years before and after the introduction of the MELD score-based allocation system. Patients without and with hepatocellular carcinoma (HCC) were categorized as groups A and B in the pre-MELD era and groups C and D in the post-MELD era, respectively.
Results: The number of patients in groups A, B, C and D was 615, 599, 704, and 713, respectively; and their MELD scores were 19.0±9.4, 11.2±5.6, 17.9±8.5, and 11.6±5.7, respectively. Clinical parameters of liver cirrhosis indicate that group A had worse general conditions than group C; and groups B and D had similar general conditions. The comparative analysis between groups A and C revealed the mean and median MELD scores as 19.0±9.4 and 17.9±8.5 (P=0.009), and 16 and 15 (P=0.077), respectively. The comparative analysis between groups B and D revealed the mean and median MELD scores as 11.2±5.6 and 11.6±5.7 (P=0.14), and 9 and 9 (P=0.14), respectively.
Conclusions: Median pretransplant MELD score was in the range of 15–16 in LDLT recipients without HCC and nine in those with HCC. Introduction of MELD score in deceased donor organ allocation system resulted in a marginal decrease in the pretransplant MELD score in patients undergoing LDLT without HCC, but no change in those with HCC.

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Prognostic impact of model for end-stage liver disease scores greater than 40 in deceased donor liver transplant recipients

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Background: Since 2016, Korean liver organ allocation system has been based on model for end-stage liver disease (MELD). Some patients on waiting list progressed to MELDs >40 due to serious shortage of donor organs. This study investigated prognosis of deceased donor liver transplantation (DDLT) recipients with MELD scores >40.
Methods: Data from adult patients with MELD scores ≥31 who underwent DDLT between June 2016 and November 2019 were retrospectively evaluated. Patients were categorized according to Korean Network for Organ Sharing (KONOS) status 3, 2, or MELD-over-40.
Results: During the study period, 168 DDLT operations were performed in 160 patients with KONOS status 3 in 77 (48.1%), status 2 in 65 (40.6%), and MELD-over-40 in 18 (11.3%). Graft survival rates of primary DDLT were 84.0% at 1 year and 70.7% at 3 years. Overall patient survival was 85.2% at 1 year and 70.7% at 3 years. The 3-year patient survival was 74.4%, 75.7%, and 52.7% in KONOS status 3, status 2, and MELD-over-40 groups (P=0.19). Pretransplant ventilator support was associated with inferior patient survival outcomes (P=0.043), but pretransplant renal replacement therapy showed no prognostic significance. Retransplantation showed a significant prognostic difference (P<0.001). Multivariate analysis for overall patient survival showed that pretransplant ventilator support and retransplantation were significant prognostic factors, but MELD score >40 was not seen to be an independent risk factor.
Conclusions: This analysis revealed that very high MELD scores >40 appear to confer additional risk in patients with KONOS status 2 although it was not an independent prognostic factor.

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Living donor liver transplantation in a pediatric patient with hepatic angiosarcoma: a case report

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Background: Hepatic angiosarcoma (HAS) is a rare malignant disease in pediatric patients. We report the case of a 3-year-old boy with HAS, which was treated with neoadjuvant chemotherapy and living donor liver transplantation (LDLT).
Case report: A previously healthy 3-year-old boy who presented with a firm mass in the upper quadrant of the abdomen was diagnosed with hepatoblastoma at a local general hospital and was referred to our institution. Percutaneous liver biopsy confirmed the diagnosis of HAS. The extent of the tumor was large, not allowing surgical resection; thus, neoadjuvant chemotherapy was performed. The size of the tumor was markedly reduced after two cycles of chemotherapy for 2 months; thus, LDLT was planned to remove the tumor completely. A left lateral section graft weighing 280 g was harvested from his 38-year-old father. The left lateral section graft was implanted according to the routine procedures of pediatric LDLT, including patch venoplasty of the recipient hepatic vein and portal vein. The explant liver showed a 9 cm-sized residual angiosarcoma with 60% regression. The patient recovered uneventfully and is doing well for 3 months with scheduled adjuvant chemotherapy.
Conclusions: Although there are only a few pediatric liver transplantation cases showing prolonged survival, liver transplantation appears to be a viable treatment option for long-term survival for pediatric patients with unresectable HAS.

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Pancreaticoduodenectomy for *de novo* ampulla of Vater cancer 15 years after living donor liver transplantation: a case report

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Background: *De novo* malignancy sporadically occurs in patients who undergo liver transplantation. We present a case of a 74-year-old patient who underwent pancreaticoduodenectomy (PD) for *de novo* ampulla of Vater cancer at 15 years after living donor liver transplantation (LDLT) for hepatitis B virus-associated liver cirrhosis.
Case report: At 15 years after LDLT, elevation of liver enzyme levels led to diagnosis of *de novo* ampulla of Vater mass. We performed pylorus-resecting PD with extended pancreatic transection. Roux-en-Y choledochojejunostomy was performed to the remnant recipient-side proximal bile duct because active back bleeding from the bile duct stump was identified. The patient recovered uneventfully without complications. The surgical specimen showed a 2 cm-sized moderately differentiated adenocarcinoma arising from a tubular adenoma of the intestinal subtype at the ampulla of Vater. The extent of the tumor was pT1bN0M0, thus being stage IB. Adjuvant chemotherapy was not performed. The patient has been doing well for 3 months. The immunosuppressive regimen was switched from mycophenolate mofetil monotherapy to everolimus monotherapy.
Conclusions: Our experience with this case suggests that PD can be eligibly performed after LDLT using duct-to-duct anastomosis.

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Comparison of skeletal muscle index-based formula and body surface area-based formula for calculating standard liver volume

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Background: Formula-derived standard liver volume (SLV) has been clinically used for living donor liver transplantation and hepatic resection. The majority of currently available SLV formulae are based on body surface area (BSA). However, they often show a wide range of error. Skeletal muscle index measured at the third lumbar vertebra level (L3SMI) appears to reflect lean body mass. The objective of this study was to compare the accuracy of L3SMI-based formula and BSA-based formula for calculating SLV.
Methods: The study cohort was 500 living liver donors who underwent surgery between January 2010 and December 2013. Computed tomography images were used for liver volumetry and skeletal muscle area measurement.
Results: The study cohort included 250 male and 250 female donors. Their age, BSA, L3SMI, and body mass index were 26.8±8.7 years, 1.68±0.16 m^2, 45.6±9.0 cm^2/m^2, and 21.7±2.5 kg/m^2, respectively. The BSA-based SLV formula was "SLV (mL)=−362.3+901.5×BSA (m^2) (r=0.71, r^2=0.50, P<0.001)". The L3SMI-based SLV formula was "SLV (mL)=471.9+14.9×L3SMI (cm^2/m^2) (r=0.65, r^2=0.42, P<0.001)". Correlation coefficients were similar in subgroup analyses with 250 male donors and 250 female donors. There was a crude correlation between L3SMI and body mass index (r=0.51, r^2=0.27, P<0.001).
Conclusions: The results of this study suggest that SLV calculation with L3SMI-based formula does not appear to be superior to the currently available BSA-based formulae.

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Salvage aorto-hepatic jump graft for hepatic artery thrombosis following living donor liver transplantation: a case report with 10-year follow-up

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Background: Hepatic artery thrombosis (HAT) following living donor liver transplantation (LDLT) is a lethal complication. We present the case of a patient who underwent salvage redo hepatic artery reconstruction using an aorto-hepatic jump graft because of HAT following LDLT.
Case report: A 64-year-old female patient diagnosed with hepatitis C virus-associated liver cirrhosis and hepatocellular carcinoma underwent salvage LDLT using a modified right liver graft. Partial graft infarct was identified at posttransplant day 4, and by day 9, it had spread. Celiac arteriography showed complete occlusion of the graft hepatic artery. We performed redo hepatic artery reconstruction using a fresh ilio-femoral artery homograft 10 days after the LDLT operation because such a vessel homograft was available at our institutional tissue bank. The infrarenal aorta was dissected and an ilio-femoral artery graft was anastomosed. Soon after hepatic artery revascularization, liver function progressively improved, and the infarct area at the liver graft was reduced. The patient has been doing well for 10 years without any vascular complications.
Conclusions: Our experience with this case suggests that salvage redo hepatic artery reconstruction using an aorto-hepatic jump graft is a feasible option to treat HAT following LDLT, as in deceased donor liver transplantation.

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The integrated nutrition therapies for children with liver transplantation: an experience from Vietnam

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Background: Undernourishment was associated with the high-risk factor of post-transplantation infection, mortality, mobility and length of hospital stay after pediatric liver transplant.
Methods: The study described the integrated nutrition therapies for the patient by phases of transplantation. The case study was a 14-year-old girl was with primary biliary cirrhosis and gastrointestinal bleeding, esophageal varices in 108 Military Central Hospital, Vietnam. Her nutritional status was assessed by small for gestational age (SGA), BMI-for-age (BAZ), and middle-upper-arm-circumference (MUAC).
Results: Before the transplant, the patient's SGA was C, BAZ –1.63 SD, and MUAC 18.5 cm. She loss of appetite and anorexia. Dietitian used a combination of enteral and parenteral feeding for the patient to achieve the recommended intake. Her weight was stable until the surgery day. In the early post-transplant period, dietitians used both enteral and parenteral nutrition. The liquid diet with rice and water was applied on day 2 and day 3, 6-time per day, 50 mL each. From day 4 to day 7, she had nausea, vomit, and appetite disorder. The sum of energy was 900 kcal, with 1.7 g/kg of protein. From day 8, she felt less anorexia and vomiting. The oral nutrition increased gradually with four meals with porridge, and two formulas enriched BCAA. The total energy was 1,582.7 kcal, and she received 1.6 g/kg protein. SGA was B-level. From day 14, the intake of protein increased to 2.3 g/kg, with sources from beans, poultry, egg, fish, and vegetables. The six-meal diet was maintained (soups, rice, and formulas). From day 21, the protein diet at 2.4 g/kg was maintained. Sixty days after transplant, the liver function improved, the patient gained 37.5 kg, SGA B, BAZ –1.56 SD, and MUAC 20.0 cm.
Conclusions: Nutrition management planning based on three stages of liver transplantation was essential for pediatric patients. The suitable diet with the patient's eating habits showed positive effects on liver function and improved the children's nutritional status.

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Stereotactic ablative body radiotherapy as a bridge to liver transplantation for hepatocellular carcinoma: preliminary results of Baskent University experience

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Background: Hepatocellular carcinoma (HCC) is the most common primary liver tumor. The only curative treatment options remain to be liver transplantation and resection. However approximately 20%–30% of the patients have substantial disease progression while still awaiting transplantation. Herein, we report our initial experience on stereotactic ablative body radiotherapy (SABR) as a bridge to liver transplantation for HCC.
Methods: Nine lesions of seven patients received SABR as a bridge treatment to transplantation. All the patients underwent radiofrequency ablation, transcatheter arterial chemoembolization or hepatic resection prior to SABR. Radiographic response was based on magnetic resonance imaging (MRI) evaluation at one month after SABR.
Results: The median age of the patients was 65 years (range, 63–71 years). The median dose was 45 Gy (range, 45–54 Gy) in 3 fractions. The median diameter of the lesions was 18 mm (range, 16–30 mm). All the patients received SABR for single lesion except for two patients. No patient developed gastrointestinal toxicity or radiation-induced liver disease (RILD). Acute toxicity was minimal; all patients completed the full course. RILD was evaluated using liver enzyme, bilirubin, and albumin levels; no significant change supervened after the completion of SABR, and a month after SABR. A month after the SABR response rates were evaluated with MRI. In two lesions complete responses obtained. There were two partial responses and two stable diseases.
Conclusions: Herein, we report initial results Baskent University's experience with the safety and efficacy of SABR as another treatment option for bridging therapy. SABR is an effective, safe and tolerable treatment option for bridging therapy. However, we obtained early response to SABR, the exact response rates will be encountered at least 3 months after SABR. Therefore, our finding should be clarified with further prospective studies with long-term follow-up period.

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Twenty-year longitudinal follow-up after liver transplantation: a single-center experience of 251 consecutive cases

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Background: The outcomes of liver transplantation (LT) has been improved, but the actual 20-year survival data are rarely presented.
Methods: A retrospective analysis of longitudinal follow-up data was performed to evaluate 20-year LT survivors. The institutional LT database was searched to identify patients who underwent primary LT during a 2-year period from January 2000 to December 2001. A study cohort of 251 patients was divided into three groups as adult living donor LT (LDLT; n=207), adult deceased donor LT (DDLT; n=22), and pediatric LT (n=22) groups.
Results: Common primary diseases were hepatitis B virus (HBV)-associated liver cirrhosis (n=177, 85.5%) and fulminant hepatic failure (n=14, 6.8%) in adult LDLT group; HBV-associated liver cirrhosis (n=19, 86.4%) in adult DDLT group; and biliary atresia (n=14, 63.6%) in pediatric LT group. The overall patient survival rates of adult LDLT cohort were 90.8% at 3 months, 86.0% at 1 year, 79.2% at 3 years, 77.3% at 5 years, 72.5% at 10 years, and 62.3% at 20 years, in which hepatocellular carcinoma recurrence, chronic rejection and *de novo* malignancy were the main cause of late patient death. The overall patient survival rates of adult DDLT cohort were 95.5% at 3 months, 86.4% at 1 year, 72.7% at 3 years, 72.7% at 5 years, 72.7% at 10 years, and 68.2% at 20 years. There was no statistical difference in overall patient survival rates between adult LDLT and DDLT groups (P=0.54). The overall patient survival rates of pediatric LT cohort were 95.5% at 3 months, 86.4% at 1 year, 86.4% at 3 years, 81.8% at 5 years, 81.8% at 10 years, and 77.3% at 20 years.
Conclusions: This is the first actual outcome of Korean single-center 20-year survival results of LT. It is necessary to analyze the causes of late graft failure in high-volume multicenter studies.

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Hepatitis B virus suppression predicts better recurrence-free survivals in liver transplant patients with hepatocellular carcinoma

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Background: High serum load of hepatitis B virus (HBV) deoxyribonucleic acid (DNA) is known to be a strong risk factor of hepatocellular carcinoma (HCC) development. The aim of study was to investigate the predictive role of HBV DNA levels in recurrence of HCC after liver transplantation (LT).
Methods: From June 2006 to May 2020, 729 recipients underwent LT for HBV-related HCC in Seoul National University Hospital. The risk factors for HCC recurrence after LT were analyzed including serum HBV DNA load.
Results: Recurrence-free survival at 1, 3, 5, and 10 years were 99.6%, 98%, 95.1%, and 87.8%, respectively. Detectable HBV DNA level (higher than 10 IU/mL) before transplant was significant predictors of HCC recurrence in univariate analysis (P=0.027). Further subgroup analysis was performed to demonstrate the significance of HBV DNA level according to the risk of HCC recurrence. Based on the score of the predicted survival after LT for HCC (SALT), patients were divided in three groups. In high-risk group of recurrence with SALT score more than 2.44, detectable HBV DNA level were significantly associated with recurrence free survival (57.9% vs. 78.7%, P<0.0001).
Conclusions: There is a close relationship between HBV DNA level and HCC recurrence after transplant. High HBV DNA levels before transplant are associated with HCC recurrence after transplant, especially in high recurrence risk group.

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The morphological mismatch changes and adapts after lung transplantation in the patient with Kartagener syndrome

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Background: Kartagener syndrome (KS) is a very rare disease with an incidence of one in 20,000 to 30,000 births. When progressing to end-stage KS, lung transplantation is the only treatment option. Because the patient with KS has anatomical abnormalities such as situs inversus totalis. Surgery should be performed with anatomical problem. We underwent lung transplantation in the patient with KS and observed the morphological adaptation for 6 months through computed tomography (CT) to find out how the morphological mismatch changes and adapts.
Methods: A 54-year-old male patient with KS underwent bilateral LT with donor's lungs from a 37-year-old female who died of non-traumatic cerebral hemorrhage. The chest CT was performed at 1 week and 6 months after surgery. Three-dimensional (3D) reconstruction was performed using chest image process (CIP, a 3D slicer extension program) for quantitative evaluation of volume and mass of lung.
Results: The volume and mass at postoperative 1 week CT accounted for 27.7%, 35.45% in the right lower lobe (RLL) and 29.79%, 27.04% in the right middle lobe (RML), respectively. Considering the datum of volume and mass, the right deviation of the heart by situs inversus totalis collapses the RLL and subsequently over-expands the RML in the early postoperative period. The mass ratio of chest CT was similar for 6 months, but the ratio of volume increased from 27.70% to 30.43% in the RLL and decreased from 29.70% to 26.80% in the RML. As time goes, the atelectasis in RLL disappeared and the volume of RLL was increased, but it did not increase to the normal size. And the hyper-expanded RML showed the tendency to change to the normal size as time goes on.
Conclusions: lung transplantation in patients with KS is considered a sufficiently challenging operation.

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The unique changes of lung microbiome in chronic lung allograft dysfunction

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Background: Both unique bacterial populations and longitudinal changes in the lung microbiome may play a critical role in the development of chronic lung allograft dysfunction (CLAD).
Methods: We evaluated the difference in lung microbiome associated with CLAD through the lung microbiome analysis of the donor's lung at the time of transplantation and after CLAD occurrence.
Results: A significant change of bacterial diversity was observed in the lung microbiomes of CLAD compared to at the time of transplantation. Depending on the severity of CLAD, the bacterial diversity tended to decrease. In all lung microbiomes, Actinobaceria, Fimicutes, and Proteobacteria were highly abundant and account for approximately 75% of the total bacterial community. *Pseudomonas, Xanthomonas, Bacillus, Pasteurella*, and *Rhodococcus* occupied a large proportion. Compared to the time of transplantation, more Klebsiella was observed in lung microbiomes of CLAD. Genera such as *Aerococcus, Caldiericum, Croceibacter, Leptolyngbya,* and *Pulveribacter* were uniquely identified in CLAD, whereas there were no taxa identified at time of transplantation. In particular, seven taxa including *Croceibacter atlanticus, Caldisericum exile, Dolichospermum compactum, Stappia* sp. ES.058, *kinetoplastibacterium sorsogonicusi, Pulveribacter suum* were identified uniquely in CLAD.
Conclusions: Compared to the point of transplantation, the change of bacterial diversity in the lung microbiomes of CLAD was observed, and the seven taxa were uniquely identified in CLAD.

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Prognostic factors of renal outcomes after heart transplantation: a nationwide retrospective study

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Background: Renal dysfunction after heart transplantation (HT) is associated with poor survival. Predicting renal outcome after HT is a substantial but difficult issue. We investigate the predictive factors of renal outcomes after HT using nationwide cohort data.

Methods: In this retrospective cohort study using the Korean Intensive Care Unit National Data registry of the Health Insurance Review and Assessment database, 654 patients who received HT between 2008 and 2016 and survived until discharge after HT were analyzed.

Results: The median (interquartile range) age was 52 years (40–60 years), and 68.1% were male. Perioperative renal replacement therapy (RRT) was administered to 27.8% of patients. During 2.8 years of median follow-up, end-stage kidney disease (ESKD) developed in 12 patients (1.8%). In a fully adjusted model, RRT >3 weeks (hazard ratio [HR], 8.64; 95% confidence interval [CI], 3.17–23.51) and the use of inotropes/vasopressors (HR, 6.98; 95% CI, 2.10–23.17) and angiotensin-converting enzyme inhibitor/angiotensin receptor blocker (HR, 0.24; 95% CI, 0.08–20.71) were associated with ESKD. Pre-existing renal disease tended to be associated with ESKD (HR, 3.19; 95% CI, 0.87–11.71). Among the 561 patients without pre-existing renal disease, 104 (18.5%) developed chronic kidney disease (CKD). Age (HR 1.03; 95% CI, 1.01–1.04), extracorporeal membrane oxygenation (HR, 1.53; 95% CI, 1.17–2.00), and RRT (RRT 1–21 days: HR, 1.76; 95% CI, 1.28–2.41 and RRT >21 days: HR, 3.69; 95% CI, 1.41–9.68) were associated with the development of CKD after HT.

Conclusions: Our nationwide cohort study demonstrated that perioperative RRT was a predictor of poor renal outcomes after HT. These results suggest that an active renoprotective strategy is required during the perioperative period.

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Long-read sequencing of 12 samples discovered novel variants within human leukocyte antigen region

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Background: The human leukocyte antigen (HLA) region is known as the most polymorphic region in the human. In clinical transplantation, increased HLA mismatch between donor and recipient were a well-known risk factor for graft survival. Despite its importance, variant discovery within HLA is not feasible due to its extreme genetic diversity and highly similar sequences. Recently, PacBio Sequel II provides high-fidelity (HiFi) long-read data of ~15 kb enabling us to accurately resolve highly complex genomic regions. Here, we used PacBio HiFi long-read sequencing to obtain novel HLA variants.
Methods: Five megabytes of HLA regions were targeted and 12 samples were sequenced using PacBio HiFi sequencing technology. Sequenced long-reads were mapped to the hg19 reference genome using minimap2. Variants within HLA regions were called using DeepVariant and GLnexus. Discovered HLA region variants were compared to those of gnomAD database and Han Chinese MHC reference panel (HanREF, n=10,689).
Results: Mean read length and read depth of HiFi sequencing were 4.8 kb and 77.7x, respectively. These results implied enhanced information compared to those of short-read sequencing data (e.g., HanREF with ~55x and 90 bp paired-end reads). In overall, 69,318 variants were discovered from 12 samples. Among them, about 50,000 variants were previously catalogued in gnomAD. However, long-read sequencing data produced three times more variants than those of HanREF (~18,000 overlapped variants).
Conclusions: Long-read sequencing provided numerous novel HLA variants. The discovered variants will be a valuable resource for constructing HLA reference panel and identifying novel HLA alleles. Since an accuracy of HiFi sequencing is relatively low compared to established genomic platforms, however, the novel variants should be validated using other genomic platforms.

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Willingness and attitude of the Arab world population towards solid organ

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Background: Organ transplantation is the most important treatment option for final stage organ disease and organ failures. Some studies found out that willingness of organ donation is multi-factorial. Religious and cultures factors are playing big role in influencing the decision of donation. There are also other factors like family influences, trust of health care system and the individual's knowledge and awareness of the organ donation process. This study aims to determine the willingness of organ donation among Arab regions.
Methods: Based on a review of the literature on organ donation, a cross sectional study was designed and online questionnaire with two forms of Arabic and English were distributed to citizens of Arab countries. Data entered in SPSS ver. 23.
Results: Our research illustrated that only 17% showed their willingness to donate in future and the most acceptable organs to be donated after death were kidneys (57.8%), followed by liver (45.1%). Those who experienced organ transplantation showed more tendency for organ donation compared to those who had not (P<0.0001). Additionally, being involved in charity works in the past was associated with the participants' willingness for organ donation as well. Past-transplantation experience donors tend more to accept paid organ donation with a P<0.0001. Nevertheless, neither monthly income (P=0.303) nor being participated in charity works in the past (P=0.053) are related to the acceptability of getting paid for organ donation.
Conclusions: The present research revealed the extent of willingness of the general population in the Arab world to donate solid organs generally and in special circumstances e.g., deceased donation, live donation and donation to relatives and non-relatives. It is clear that the need of solid organ donation overweighs the population acceptance, except in some special events where the acceptance was obviously higher.

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I-DTI: a second opinion platform between healthcare professionals related to organ donation and transplantation

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Background: Due to COVID-19 pandemic, organ donation and transplantation (ODT) rates have significantly decreased worldwide. Social and displacement restrictions, along with safety measures proved even more how necessary telematic communications are. Designed as a second opinion platform, I-DTI allows to share knowledge between healthcare professionals and internationally recognized experts related to ODT.
Methods: I-DTI is developed based on Medxat® app, accessible via www.i-dti.com and downloadable from digital stores for mobile devices. Database server is encrypted with RAS using cloud technologies. Information is sent through HTTPS (SSL/TLS) codified channels complying data protection laws. I-DTI main function is 24/7 consultancy, covering the following topics: organ donation, transplantation and follow-up, tissue donation and COVID-19. Also, with social network features like instant messaging, profile customization and finder. In order to develop, assess and validate I-DTI platform, from April to December 2020 a pilot phase was performed. I-DTI services, contents, accessibility, and other quality indexes were evaluated in participant hospitals from countries such as India, Philippines, Sri Lanka, Trinidad and Tobago. Workshops were arranged to display I-DTI and teach the basics to more than 60 professionals.
Results: During this period, an average of five consultancies per week were received and answered in less than 24 hours considering urgency and study deepness. COVID-19 related consultancies represented over 50% of total. All data compilated was anonymized and stored in library cases for academic purposes. In order to study quality indexes, satisfaction surveys were delivered to users, receiving an average score of 9.3/10.
Conclusions: I-DTI proved great value for knowledge sharing, international cooperation, and data compilation especially in developing countries. The specialization of I-DTI opens a way to develop new contents and to partner with technological entities to introduce technological solutions like artificial intelligence and chat bot. So far, more than 650 users from more than 20 countries (65% in developing) joined I-DTI.

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Deceased donor organ transplantation development in Mongolia

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Background: Mongolia's Donor Law was first adopted in 2000 and amended in 2012 and 2018 respectively. The regulatory department for cells, tissues and organ transplantation of Center for Health Development has been established in 2018.
Methods: There are two transplant hospitals, one kidney transplant team, two liver transplant teams, three cornea transplant teams, one bone marrow transplant team, and four donor hospitals in Mongolia. To date, a total of 152 liver, 240 kidney, and 22 bone marrow transplantation had been performed successfully. Of these, 23 kidneys and 14 livers transplanted from 19 deceased donors. Our department gets information daily from donor hospital's brain death diagnosis committee, if there is a donor with brain death, we approach family members to get a consent approval.
Results: From 2018 to date, 158 possible donors have been detected. A total of 45 meetings (100%) were held with possible donor families. Nineteen families (42.2%) agreed and 26 families (57.7%) refused. Of the 19 consent donors, 23 received a kidney and 14 liver transplants, saving 37 people's lives. As for the main reasons for 26 refusals, 14 families refused because of personal views, 10 families' religion and superstition, and inter-family issues-2.
Conclusions: We need to increase the number of donor hospitals and improve the knowledge of intensive care unit doctors and medical professionals. This will increase the detection of brain-dead donors and increase the number of organ transplants from brain-dead donors. In order to expand donor activities, we need to start organ transplantation from circulatory death donors. There is also a need to raise public awareness of donors and organize community-based activities.

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Analysis of the donor's serum creatinine timing appropriate for Kidney Donor Profile Index scoring to predict postoperative renal function in deceased donor renal transplant

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Background: The Kidney Donor Profile Index (KDPI) scoring system for deceased donors (DD) is widely used in the assessment of postoperative evaluation of graft function. In managing DDs, the renal function including serum creatinine (sCr) is constantly changing. There are no comments on when KDPI using sCr reflects postoperative graft function well.
Methods: Eighty-five DDs managed by donor management program between March 2012 and February 2019 were reviewed retrospectively. sCrs of DDs for KDPI score were selected at admission, peak and last (just before surgery). Recipient's data included slow graft function (SGF), delayed graft function (DGF) episodes, and sCr after postoperative 1 year (1Y). Correlations between KDPI score (admission, peak, last) and graft function (SGF, DGF, sCr 1Y) were analyzed with receiver operating characteristic (ROC) and Pearson correlation.
Results: The mean ages of DDs and recipients were 49.22±13.23 and 51.89±10.03 years and mean KDPI in admission, peak and last were 62.41±26.76, 67.24±25.77, and 63.95±27.40. After transplant, SGF in 26 recipients (18.9%) and DGF in 13 (14.4%) were noted. For SGF, the area under the ROC (AUROC) curves of KDPI admission, peak, last were 0.631 (95% confidence interval [CI], 0.503–0.758; P=0.056), 0.617 (95% CI, 0.491–0.743; P=0.087), and 0.641 (95% CI, 0.519–0.763; P=0.039). For DGF, the AUROC curves of KDPI admission, peak, last were 0.691 (95% CI, 0.526–0.856; P=0.029), 0.665 (95% CI, 0.498–0.831; P=0.060), and 0.686 (95% CI, 0.527–0.845; P=0.033). KDPI admission, peak and last correlated well with sCr 1Y (R=0.511, 0.489, 0.488).
Conclusions: KDPI last for predicting SGF and KDPI admission for DGF and sCr 1Y were more effective in DDs renal transplantation.

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Attitudes toward organ donation in Arab-based population: lack of will or knowledge?

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Background: Willingness toward organ donation may vary among younger and older adults. We aimed to assess and characterize awareness and attitudes about organ donation stratified by individuals age.
Methods: We conducted a cross-sectional random telephone survey with a representative sample of adults from all 13 regions in Saudi Arabia from February 12, 2021 and to March 14, 2021. The sample was stratified by individuals age (younger 18 to 35 years old and older ≥36 years old).
Results: A total of 3,120 respondents completed the survey (response rate 74%). We found that 57% of younger and 49% of older adults expressed support for organ transplantation, while 54% of the younger and 39% of older adults wanted to donate their organs. However, 3.6% of study participants had registered in the national donor database. Almost half (46% younger and 49% older) agreed with the primary view that it is very important for the donor and the family to agree on positions of organ donation. Physician or other healthcare worker was selected most frequently (59% younger and 57% older) as the information source most likely to influence attitudes toward organ donation and 49% wanted to learn more about organ donation.
Conclusions: While many younger and older adults support organ donation, there is a lack of knowledge about the organ donation system. Efforts are needed for adaptation and implementation of interventions to increase knowledge and support organ donation among younger and older adults.

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A situational analysis of reported brain deaths in Malaysia from 2018–2019

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Background: This study aims to describe barriers in diagnosing brain death by categorizing the data analyzed from the National Transplant Procurement Management Unit (NTPMU) registry.
Methods: Data records of the NTPMU registry from 2018–2019 were extracted. These data were analyzed to describe the following: (1) brain death proportion; (2) demographic characteristics; (3) admission and brain death test characteristics; (4) reason for brain death test not done; and (5) correlations.
Results: A total of 772 referrals were made, of which 322 were suspected for brain death. Out of this, 126 cases were confirmed for brain death, whereas 27 reported consent for organ donation. The proportion of confirmed brain deaths from the reported total deaths from 2018–2019 is 16.5%. Neurosurgical (57.5%) and intensive care (78.1%) units reported for the most referrals made. Severe traumatic brain injury (39.2%) and spontaneous intracranial hemorrhage (41.8%) are the two most frequent causes of admission with suspected brain death. Unable to correct parameters (34.7%), cardiac death before test was done (31.2%) and no clearance from family (21.2%) are the most frequently reported causes for brain death test not done. Selected variables showed no correlation with duration between first and second brain death tests.
Conclusions: The barriers in diagnosing brain death are divided into clinical and non-clinical. A sound understanding in clinical knowledge and awareness among healthcare workers, a well-structured brain death consensus statement, properly executed training to improve attitudes and a well-managed awareness campaigns directing to the public are critical in overcoming these barriers.

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Impacts of COVID-19 pandemic on organ donation and transplantation activities in Iran

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Background: COVID-19 pandemic has had a great impact on reducing organ transplantation activities. The aim of this study was to determine the donation and transplantation activities before and after COVID-19 era in Iran.
Methods: This was a retrospective study which compares two specific 9-month periods from March–December 2019–2018 and March–December 2020. The questionnaire included the number of brain death confirmation, number of family consent, number of organ recovery, number of transplanted solid organs. Questionnaire was sent by email to the chief executive of the organ procurement unit.
Results: A total of 15 organ procurement units responded to the survey. The largest reduction was seen in tissue transplantation (62.5%) during two-time intervals. Brain death due to head trauma was decreased significantly in two-time intervals and suicide increased by 14.44% during the COVID-19 pandemic compared to 2018–2019 period time. Significant reduction between median of donation (P=0.0187), median of potential donor (P=0.005), median of family consent (P=0.002), and median of eligible donor (P=0.009) during two time periods were observed.
Conclusions: In COVID-19 era significant reduction was shown in organ donation and transplantation. Working on protocols and establishing new strategies for evaluation of organ donation to ensure the safety of recipients and safety medical staff is necessary.

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Belt & road organ donation capacity improvement cooperation training project (BROAOD)

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Background: China shows a continuous improvement in the practice of organ donation (OD) and transplantation (OT); reaching 4.16 pmp in 2019. China Organ Transplantation Development Foundation (COTDF) in cooperation with the Donation and Transplantation Institute (DTI) Foundation have designed the BROAOD training program as a joint effort to grant intensive care doctors and other key donation professionals from China and Belt & Road (B&R) countries to international professional trainings.
Methods: Three training courses are scheduled to be performed online during the year. Interactive and dynamic sessions, including round tables, clinical cases, gaming, and small workgroups are design as course modality. The latest updates in the OD and OT field adapted to the needs of each of the participants countries will be used as educational materials. International models, detection, brain death, organ maintenance, family approach and organ evaluation are the main topics arrised. A questionnaire to evaluate the learning level is designed and distributed at the beginning and at the end of each course.
Results: Up to date, one edition of the course has been performed (May 2021); 55 participants have already been issued the BROAOD diploma. The expected total number of the trained professionals at the end of the course program will be more than 150 participants 75% from China and 25% form the B&R countries.
Conclusions: Promoting communication and cooperation between participants coming from different countries, exchange of the clinical experience and enhance the abilities of detecting and referring potential OD are the key elements to improve the OD and OT activities. This international cooperation initiative promoted by the COTDF and DTI Foundation is an excellent example of how to support the global community to reach self-sufficiency in OD and OT.

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Effects of the register to become an organ donor on the organ donation agreement rate

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Background: In order to increase the deceased donations, it is important to check whether person register to become an organ donor and then, inform their families of their pledges. In Korea, it has been possible to lawfully check the brain-dead persons' register to donate their organs since July 16, 2019. This study aims to analyze such a system to provide for some basic data useful to the activation of the organ donations.
Methods: The researcher sampled 3,284 deceased donor cases notified to Korea Organ Donation Agency for the period from July 16, 2019 until December 31, 2020, and thereby, selected, for a retrospective research, 2,648 cases where the deceased donor register to donate their organs could be confirmed.
Results: Among 2,648 cases where the pledges to donate the organs could be confirmed, the pledges had been registered in 95 cases (3.6%), while they were not registered in 2,553 cases (96.4%). Among the 95 pledges registered, 44 ones (46.3%) had been agreed to the donation by their guardians finally, and among them, 43 cases (45.3%) were donated finally. In 18 cases, their guardians refused the donation; other family members did not agree to the donation in seven cases (38.9%), while guardians wanted for an aggressive care, not accepting the reality of the brain dead in two cases (11.1%). Other reasons for refusal of the donation were 'Did Not Think about Donation' (2 cases; 11.0%), refusal of transfer of the body (1 cases; 5.6%), refusal of body destruction (1 cases; 5.6%), complicated process and procedures for organ donation (1 cases; 5.6%), religious reasons (1 cases; 5.6%), and others (3 cases; 16.7%). Among 2,553 cases where the donation pledges were not registered, final agreements to the donation were made in 724 cases (28.4%), and the donations were realized finally in 650 cases (25.5%). In this group, the guardians refused the organ donations in 1,050 cases. The major reasons for the refusal were 'desire for an aggressive care' (255 cases; 24.3%), 'Did Not Think about Donation' (185 cases; 17.6%), 'withdrawal of life-sustaining treatment' (143 cases; 13.6%), 'other family members refusal' (102 cases; 9.7%), and 'refusal of body destruction' (70 cases; 6.7%).
Conclusions: During the period, 693 brain-dead persons donated their organ. Forty-three person (6.2%) of them had registered to donate their organs, while 650 ones (93.8%) had not. In addition, 70.9% of those who had registered to become organ donor agreed to the donation, which was 30.2% higher than the rate of those who had not pledged for the donation (40.8%). Such a finding proves that it is important to register to become an organ donor to increase the number of deceased donors. To this end, it is essential for the government to increase the relevant budget, while enhancing people's perception of the organ donation though sustainable education and P. R. for more organ donation pledges.

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Effects of increase in organ donation through strengthening of social network service-based communication with medical staff

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Background: Due to the COVID-19 global pandemic in 2020, Korea Organ Donation Agency (KODA) coordinators' visits to hospitals were bound to decrease, thus as a counter measure, a social network service (SNS) has served as a window for the non-face-to-face communication between hospital medical staff and KODA coordinators, thereby sharing the effect.
Methods: Based on the four hospitals that used group chat rooms opened in SNS, this study investigated the number of brain-dead patients notified to the KODA, the number of contacts with guardians, the number of interviews, the number of completed donation, and the number of KODA coordinator's visits to the hospital retrospectively, from 2019 to 2020.
Results: Compared to 2019, the number of KODA coordinators' visits to four hospitals decreased by about 35%, from 604 to 393 cases in 2020, and the number of notifications on the patient occurrence brain-dead patients decreased by about 10%, from 200 to 180 cases. In addition, the number of "contact" in which KODA coordinators directly confirm the intention of guardians to interview decreased by about 17.3%, from 122 in 2019 to 101 in 2020. On the other hand, the number of interviews by KODA coordinators with the guardians increased by about 7.6%, from 66 in 2019 to 71 in 2020, and eventually organ donation increased by about 40.5%, from 32 in 2019 to 45 in 2020.
Conclusions: Despite the difficult times due to the COVID-19 pandemic, a new communication channel called non-face-to-face SNS has been established as an alternative, thereby enabling positive and proactive discussions about the optimal time for both medical staff and KODA coordinators to derive consent from guardians. It is considered that not only the interview rate but also the consent rate for organ donation was raised by conveying accurate information to guardians as a result of this active communication.

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Analysis of status and waiting period of heart and lung transplant recipients in single center

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Background: Heart and lung transplantation is not only a lifesaving method for end-stage heart and lung failure patients, but also a treatment method that improves the quality of life. As the survival rate of heart and lung transplantation improved, the number gradually increased, and by 2020, 1,887 heart transplants and 878 lung transplants were performed in Korea. In particular, as the number of transplants has increased rapidly since 2010, 173 heart transplants and 150 lung transplants were performed only in 2020. In the end of 2020, the number of heart and lung transplantation waiting list registered in Korean Network for Organ Sharing (KONOS) is continuously increasing to 774 and 323 respectively. In the case of heart and lung transplantation that is dependent on a deceased donor, the management of the waiting patient for transplantation is also becoming more important.
Methods: Since the establishment of KONOS in February 2000, the latest standard of transplant status level for heart and lung transplant recipients was revised in July of 2017 and August of 2018. By the end of June 2021, our center performed 815 heart and 179 lung transplants, after the first heart transplantation on November 11, 1992 and lung transplantation on October 29, 2008. In this study, the status level and waiting period of heart and lung transplant recipients were retrospectively investigated through KONOS network data and medical records.
Results: The sex of transplant recipients was 565 male (70%), 250 female (30%) with heart, 115 male (65%) and 64 female (35%) with lung. The average age at the time of transplantation was 45 years (range, 3 months–74 years) for heart and 47.6 years (range, 14 months–74 years) for lung. At the time of heart transplantation, the final status (S) and mean waiting period were S0(153 patients, 129 days), S1 (321 patients, 202 days), S2 (166 patients, 116 days), S3 (97 patients, 194 days), lungs were S0 (120 patients, 113 days), S1 (47 patients, 353 days), S2 (7 patients, 335 days), and S3 (3 patients, 91 days). After the status level was raised, the waiting period was heart/lung S0 (20/24 days), S1 (60/200 days), and S2 (72/292 days). The average waiting period of transplants nationwide compared to the hospital by year was 210/214 days (2016), 219/234 days (2017), 246/228 days (2018), 226/211 days (2019), lung was 112/116 days (2016), 107/116 days (2017), 167/147 days (2018), and 317/234 days (2019).
Conclusions: As the waiting period become longer, it is important to provide practical information about the average waiting time to heart and lung transplant patients and the maintenance of optimal health during the waiting period, and to care for the importance of rehabilitation. Due to the shortage of deceased-dead donors, efforts are being made to increase transplant surgery, such as expanded category deceased-donors or new techniques for living donor lung lobar transplantation. It can be used for basic data for transplant waiting management and education. It is necessary to supplement the Status Scoring System Standards comparing additional studies and advanced systems.

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Analysis of the willingness of DDKT candidates registered at a single center according to the Korean Kidney Donor Profile Index application

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Background: Kidney transplantation is the most ideal treatment method recommended for end-stage renal disease patients; since the establishment of Korean Network for Organ Sharing (KONOS) in 2000, the number of registered candidates on the waiting list for deceased donor kidney transplantation (DDKT) has grown to 27,062 as of December 2020, increasing by 9%–10% every year. Due to the shortage of deceased donor to meet the growing demand, however, only about 800 DDKTs are being performed each year; consequently, the waiting period for transplantation has been also increasing every year, and as of the end of 2019, it has reached 2,196 days, an average of more than 6 years. With the recent increase in deceased donors with advanced age and/or complex diseases, it has become necessary for extended criteria donor (ECD) to be clearly specified. In March 2021, KONOS has formally defined ECD as a donor with a Korean Kidney Donor Profile Index (K-KDPI) 70% or higher kidney in order to choose a suitable candidate of such in a more efficient manner. KONOS has also revised its guideline, in which, patients who do not consent to receive an ECD kidney to be removed from the list of candidates when matching an ECD kidney, effective September 15, 2021. Thus, the purpose of this study was to understand the willingness of DDKT candidates registered in a single center, and use the data as a basis of selection management of candidates when an ECD kidney becomes available.
Methods: We retrospectively studied 1,755 DDKT candidates registered at a single center as of March 15, 2021, via in-person and telephonic consultations, and online surveys from April to July 2021 to learn the willingness to accept a kidney from ECD.
Results: Of the 1,755 surveyed, 1,665 responded; the sex of respondents was 976 males (58.6%) and 689 females (41.4%); blood type was type A (573, 34.4%), type B (463, 27.8%), type O (454, 27.3%), and type AB (175, 10.5%); age was 0–9 years old (3, 0.2%), 10–19 years old (8, 0.5%), 20–29 years old (42, 2.5%), 30–39 years old (164, 39.9%), 40–49 years old (397, 23.8%), 50–59 years old (580, 34.8%), 60–69 years old (425, 25.5%), and over 70 years old (46, 2.8%). Three hundred and seven candidates (18.4%) were waiting for re-transplantation and six candidates (0.4%) were past kidney donors. Of the 749 candidates (45.3%) consented to accept an ECD kidney, 462 were males (61.7%) and 287 were females (38.3%); blood type of 253 patients (33.8%) was type A, 208 patients (27.8%) of type B, 213 patients (28.4%) of type O, 75 patients (10%) of type AB; 142 patients (19%) waiting for re-transplantation, and four patients (0.5%) of past kidney donor. The age group was 2 minors (0.3%), 18 (2.4%) people aged 20 to 29, 65 (8.7%) people aged 30 to 39, 159 (21.2%) people aged 40 to 49, 250 (33.4) people aged 50 to 59, 227 (30.3%) people aged 60 to 69, and 28 (3.7%) people aged 70 or older, with an average age of 53.5 years, a minimum age of 12 years, and a maximum age of 79.
Conclusions: 45.3% of those waiting for kidney transplants registered in a single center consented to accept an ECD kidney. It was confirmed that the patients with shorter waiting period and older age were more willing than the others. This result matched with the previous study done at this same center in 2020, in which willingness to accept a kidney from the elderly donors aged 60 or older with s-Cr>3.0 mg/dL or CRRT, or donors with Cr<1.5 mg/dL but have hypertension and diabetes. We expect this study to be an opportunity to provide waiting candidates with information and management prior to transplantation, and baseline data for medical staff to efficiently identify a suitable candidate when an ECD kidney becomes available.

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Current status and analysis of brain death organ donor's management through introduction of electronic notification system potential brain death donor

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Background: According to the Act on Transplantation of Organs, etc., the head of a medical institution that has treated a potential brain death donor is required to notify the head of the organ procurement institution. Pusan National University Hospital has a potential brain death donor inquiry system, but there is a problem in that it does not have an automatic notification function. So, there is a problem in that the notification of the potential brain death donor is omitted by the medical staff due to busy, or the notification of the potential brain death donor is omitted when it is outside of regular hours. Restrictions on access are increasing due to the strengthening of intensive care unit (ICU) visitor records and access management, and visits by the Korea Organ Donation Agency (KODA) coordinator to discover potential brain death donor are restricted due to infection problems such as COVID-19. Recognizing the need for an untact way for discovering and notifying potential brain death donor while minimizing the risk of infection, a new electronic notification system for potential brain death donor was introduced, and I would like to introduce the current situation.
Methods: A computer was developed to generate a pop-up window when the condition that potential brain death donor criterion lasts for more than 6 hours is satisfied through the information entered in the clinical record of the ICU. Text message are sent to the KODA call center and the Pusan National University Hospital Organ Transplant Center's cell phone on duty. The new electronic notification systems for potential brain death donor operate from February 22, 2021. (Potential brain death donor criterion: loss of consciousness, coma; light reflex, fixed; pupil size, 4 mm or more; ventilator mode, CMV mode).
Results: Compared with the same period in 2020, the number of notification of potential brain death donors from March to June 2021 was the same at 30. However, it can remind medical staff of potential brain death donor notification system, and the notification process is simple as it is a one-click process. And it helps to make quick decisions, increasing work efficiency and simplifying the overall work flow.
Conclusions: Although the operation period is relatively short, there is a limit to analyze the effect of the application of the electronic notification system for potential brain death donor, but the improvement of work efficiency is considered an advantage. As it is an early stage using the potential brain death donor management system, it is being operated only for patients in neurosurgery, trauma surgery, and emergency medicine, but it is planned to be applied to all clinical departments in the future. In the future, it is thought that it is necessary to study the effect of the newly applied electronic notification system for potential brain death donor from a long-term perspective.

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Analysis of organ procurement time data

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Background: Organ arrival time varies a lot depending on the location of donor hospital and allocation of organs. As cold ischemic time have great effect on the prognosis of transplantation, all transplantation team should share expected organ arrival time. We need some tools of organ arrival time. So, we make the tool and we examine the tool with our hospital data.
Methods: In the case of donation only the liver and kidneys, the time from the start of harvest surgery to the departure time of the donor hospital was set at 3 hours. Donation of heart or lungs added 1 hour, pancreas added 1 hour, and split liver added 2 hours. Also, we added 1 hour if both heart and lung were harvested. The transport time was set at 1 hour in Seoul, Gyeonggi-do, 2 hours in Chungcheong-do and Gangwon-do, and 3 hours in Gyeongsang-do, Jeolla-do, and Jeju-do.
Results: From August 2019 to August 2021, the average time difference between the expected organ arrival time and the actual organ arrival time of 110 cases was 36.4 minutes, with 19 cases over 1 hour difference and no case over 2 hours difference. The reasons for 19 cases over 1 hour difference were transportation & location of donor hospital (seven cases), organ discard (four cases) natural disaster such as heavy snow (two cases), additional biopsy such as r/o cancer (three cases), and difficult operation such as adhesion (three cases).
Conclusions: These days, due to the COVID 19 situation, the number of brain death donor is decreasing and the work intensity of transplantation team is increasing. With the tool of organ arrival time, communication is expected better and smoother. We wish this tool helps progress of transplantation in this situation.

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The influence of healthcare provider's autonomy support, autonomous motivation and competence on self-management in kidney transplant patients based on the self-determination theory

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Background: Continuous follow-ups and self-management are absolutely necessary for transplant patients, but the patients inevitably experience difficulties in carrying out self-management for a lifetime The self-determination theory appears to be very useful in explaining the self-management of transplant recipients, but only a few studies have applied the theory of self-determination to kidney transplant patients in Korea. Thus, this study aimed to confirm the influence of health professionals' autonomy support, renal transplant patients' autonomous motivation and competence on self-management based on the self-determination theory.
Methods: Data were collected from April 20 to August 20, 2020 using self-report questionnaires. The sample was 79 kidney transplant patients who visited outpatient clinics of one general hospital in Seoul, Korea and submitted written consents for voluntary participation in the study. The collected data were analyzed with SPSS ver. 22 for descriptive data analysis and multiple regression analysis.
Results: Self-management was associated with autonomy support of health care professionals, competence, and autonomous motivation. The influential factors on self-management behavior in kidney transplant patients were competence (β=0.377, P<0.01) and autonomous motivation (β=0.293, P<0.01), and the explanatory power of these variables were 30.1%.
Conclusions: This study confirmed the effects of autonomous motivation and competence of kidney transplant patients on self-management. Findings indicate that if health care professionals enhance competence and autonomous motivation of patients, self-management can be improved. Thus, health care professionals should improve therapeutic communication with the kidney transplant patients and maintain autonomy support. Various interventional programs by which health care professionals could enhance patients' autonomous motivation and competence should be developed.

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Meaningful Correlation between the donor registration rate and the number of organ donors by region

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Background: The number of registered organ donation candidates serves as the measure of the public perception of organ donation. This study was planned to investigate the correlation between the numbers of registered organ donation candidates and actual organ donors by region.
Methods: Using the data of the National Population Census by the Korean Statistical Information Service (KOSIS) and the annual statistical data of the Korean Network for Organ Sharing (KONOS) from January 2000 to December 2019, this study compared the numbers of residents and registered organ donation candidates of each region. In addition, based on the total number of organ donors in 2019, a comparison was performed on the numbers of actual organ donors pmp by region.
Results: The statistics over the study period were as follows. With a national population of 51,849,861 people and 1,534,145 registered organ donation candidates, the national rate of organ donation registration was 3.0%. In 2019, the number of organ donors totaled 450, with 8.7 organ donors pmp. A comparison by region was carried out for special and metropolitan cities (7) and provinces (8) according to the administrative classification system. As a result of the analysis, of the seven special and metropolitan cities, Gwangju Metropolitan City had the lowest organ donation registration rate (2.5%). The city also recorded the lowest pmp rate of actual organ donors (6.2 persons). Of the eight provinces, Gyeongsangbuk-do province showed the lowest organ donation registration rate (2.1%) as well as the lowest pmp rate of actual organ donors pmp (7.5 persons). The results of the comparison of the organ donation registration rates and the numbers of actual donors between the male and female population are as follows. The organ donation registration rate was higher in the female population, with 56.7% for women and 43.3% for men, while the number of actual donors pmp was higher in the male population, with 33.3% for women and 66.7% for men.
Conclusions: It was found that regions with lower organ donation rate also have lower number of actual donors. The organ donation registration rate reflects the public perception of organ donation. While the analysis results suggest that women have a more positive perception of organ donation, the actual number of donors was higher in men than in women. Therefore, it is necessary to review the proportion of women among those who consent to organ donation. In addition, in regions with low organ donation registration rate, policy support from the central and local governments is needed to promote the culture of organ donation.

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Experimental intestial transplant: a factor of successful introduction in human of Vietnam

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Background: Intestinal transplantation experiments is very important role in intestinal transplantation research. We conducted this study to find a model close to the human intestinal transplant model and observe some post-transplant results.
Methods: Including five pigs and five dogs to study the anatomy of the small intestine. Including eight pigs and 10 dogs to perform intestinal transplantation models and evaluate the results. The status of anastomosis, the condition of the intestines (12th hour) on a scale of 1 to 5: 1+ (good), 2+ (moderate), 3+ (bad), 4+ (necrosis). Outcome of survival and cause of failure.
Results: The anatomy of the small intestine of pigs is similar to that of humans. However, the intestines in dogs have many special differences in the arrangement of intestinal loops and colon. The source is the superior mesenteric artery, which feeds an intestinal length from 10 to 14 m, so it is usually taken from the ligament of Treitz about 2–4 m to ensure good vascularity after transplantation (model 1). The source of the supply is the inferior mesenteric artery, a segment of intestine about 1–2 m can also be taken (model 2). With the dog model, it is possible to create a model of a small intestine (model 3) or almost the entire small intestine (model 4). With the above intestinal transplant models performed. We evaluated at 12 hours post-transplant. With models 2 and 3, it is found that there is a higher success rate than in models 1 and 4. Attention should be paid to the spatial orientation of the small intestine after transplantation and the mesenteric artery pressure.
Conclusions: Performing pairs with many model changes found that pig intestine transplantation is appropriate and these initial successes are the scientific basis for the successful implementation of the first two intestinal transplants in Vietnam.

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Passenger lymphocyte syndrome presented as hemolytic anemia after small bowel transplantation: a case report

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Background: The passenger lymphocyte syndrome (PLS) induces hemolytic anemia after minor ABO mismatched organ transplantation. We experienced a case of PLS with hemolysis after small bowel transplantation.
Case report: A 65-year-old male underwent massive small bowel resection and right colectomy for superior mesenteric artery embolism in January 2021. Around 30 cm jejunum was left and he got end jejunostomy and was completely dependent on parenteral nutrition. He received small bowel from deceased donor on June 2021. His blood type was B Rh+ and donor was O Rh+. We used Simulect 20 mg, anti-thymocyte globulin (ATG) 1.5 mg/kg for 5 times and prednisolone 1,000 mg as an induction and then tacrolimus with trough level 13–15 ng/mL and reduced dose of prednisolone as a maintenance. Patient was stable and transfusion was not needed during the surgery. The hemoglobin level was decreased gradually from 10.4 mg/dL preoperatively to 5.6 mg/dL at POD #5. There wasn't any bleeding sign on physical exam and CT angiography. A platelet count was decreased together, 60 K at POD #5. We thought it might be ATG related bone marrow suppression and gave him RBCs and platelets with supportive care. The platelet count was low but sustained greater than 60 K and recovered over 100 K at POD #23 and last transfusion was POD #9. However, hemoglobin drop was repeated and transfusion was needed weekly till POD #27. In isoagglutinin test, anti-B IgG was detected at 1:8 titer. A haptoglobin was lower than 20 mg/dL and direct antibody test was positive for IgG and C3bd. We already used rituximab at POD #13 due to *de novo* antibody and CD19 and 20 was completely suppressed. At POD #36, there's no edema or ulcer and normal villi was observed on endoscopy. He is stable and on a diet program to reduce parenteral nutrition.
Conclusions: Most of PLS is self-limiting but often poor outcomes have been reported, awareness and suspicion are important.

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False positive T-cell Cytotoxicity crossmatch results suggestive of autoantibodies in Korean Network for Organ Sharing crossmatch tests for deceased donor organ transplantation

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Background: For deceased donor organ transplantations in Korea, Korean Network for Organ Sharing (KONOS) mandates negative results of preliminary T-cell crossmatch (XM) for kidney and pancreas allocation. XM methods vary among different laboratories performing KONOS XMs and our laboratory is using complement-dependent cytotoxicity (CDC) (NIH and anti-human globulin [AHG]) and flow cytometry methods. From our previous studies, we found autoantibodies usually show NIH+/AHG–/Flow– results, and less frequently NIH+/AHG+/Flow– results. We investigated the frequencies of false positive T-cell CDC XM results suggestive of autoantibodies among KONOS XM results.
Methods: From January 2017 to September 2018, we performed KONOS XMs for T-cells by NIH, AHG, and flow cytometry methods for 463 deceased donors and 9,244 transplant candidates. We analyzed results suggestive of autoantibodies showing CDC+ (NIH+/AHG– or NIH+/AHG+) and Flow– (or weak with mean fluorescence intensity ratio <5.0) results.
Results: A total of 82 (0.9%) of 9,244 XM cases revealed autoantibody features. Among these cases 64 (78.0%) and 18 (22.0%) showed NIH+/AHG– and NIH+/AHG+ results, respectively, and 68 (82.9%) showed Flow– results. Suggestive autoantibody positive rate varied among transplant candidates listed for different organs: kidney/kidney-pancreas 0.6% (44/7,218), lung 6.8% (23/338), and heart 1.3% (15/1,155). Some candidates showed positive results against two or more different donors: two kidney candidates, 2–4 donors; six lung candidates, 2–5 donors; three heart candidates, 2–4 donors. In two transplant candidates showing positive results against three or more donors, IgM autoantibody nature was confirmed by negative conversion of CDC XMs on dithiothreitol-treated sera.
Conclusions: Although less than 1% of the transplant candidates listed for deceased donor transplantation show false positive CDC XM results due to autoantibodies, they may be repeatedly excluded from transplantation. For accurate interpretation of autoantibody nature in these cases, difficulties are expected when performing CDC XM only and performing both CDC and flow XMs would be of help.

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Technical factors that minimize the occurrence of early graft failure in pancreas transplantation

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Background: Pancreas transplantation is the only treatment in insulin-dependent diabetes that can result in long-term euglycemia without external insulin. However, pancreatic transplant has become debatable following the improvements in the results of islet transplantation and artificial pancreas, which are evolving rapidly. Therefore, surgeons who perform pancreas transplant require the best surgical technique that can minimize technical failure in such transplantations. This study aimed to report our experiences with pancreatic transplantations.
Methods: We transplanted 65 pancreatic grafts between 2015 and 2020 (simultaneous pancreas and kidney transplant, n=12; pancreas transplant after kidney, n=16; pancreas transplant alone, n=37). Except for one death that occurred due to hypoxic brain damage immediately after the surgery, we did not observe postoperative technical failure. At our center, we commonly performed duodeno-duodenal anastomosis in the retroperitoneal space.
Results: There was no incidence of leakage from the duodenum even after immunologic graft failure. In order to prevent venous thrombosis, which is the most common cause of technical failure, we always used the inferior vena cava for anastomosis and added a special procedure to the bench procedure; subsequently, there were no cases of technical failure due to thrombosis post-transplantation. Therefore, the 1-year graft survival (insulin-free) rate was more than 95%.
Conclusions: Islet transplantation and artificial pancreas still cannot be expected to be as successful as pancreatic transplantation. Therefore, improving the surgical technique will maintain pancreatic transplantation as the best treatment in insulin-dependent diabetes.

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Low effectiveness of inducing beta cell mass destruction as a model of type 1 diabetes on murine model by Streptozotocin infusion

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Background: Type 1 diabetes (T1D) is an autoimmune disease leading to the loss of over 90% of the β-cells mass. Studies to assess the effectiveness of potential therapies are often conducted in a mouse model with chemically induced T1D. Predominantly, streptozotocin (STZ) is employed for this purpose. It is selective for β-cells and causes preferential accumulation in β-cells after entry through the GLUT 2 receptor and destruction of cells. This study aims to determine whether this model of T1D leads to the destruction of over 90% of β-cells when using different STZ induction protocols.
Methods: The studies were carried out on BALB/c mice. Groups differed in the STZ dose or the method of administration. Dosages ranging from 140–400 mg kg-1 have been tested. Controls were performed for 21 days. Immunohistochemical staining of pancreatic, kidneys and liver were performed and the body weight of animals was monitored.
Results: Dose <300 mg kg-1 cannot effectively destroy over 90% of the beta-cells mass. Despite high glucose levels, C-peptide levels were high. There were only two variants of STZ administration where animals were the destruction of beta-cell mass was considered as over 90%. STZ dose of 300 and 400 mg kg-1 reduced concentration of C-peptide to the values <0.6 ng/mL. Unfortunately, mortality in those groups was 100% within 2 weeks after induction of diabetes. Histological analysis showed damage of pancreatic islets and changes both in the glomeruli and liver tissue.
Conclusions: STZ is not an efficient method for induction of diabetes with over 90% destruction of beta cells in the murine model. C-peptide concentration should be considered as the most reliable indicator for diabetes diagnosis. 100% mortality in high-STZ groups is due to general inflammation of internal organs but not due to high glucose levels.

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The anatomic characteristics of uterine and novel transplantation model: the experimental research

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Background: Infertility affects 10%–15% of couples of reproductive age. In this population, one in 500 women has absolute uterine infertility. This study was conducted to verify the uterine anatomy and a new living donor of uterine transplantation model on dog.
Methods: Anatomical study: The vascular structure of uterus was carefully dissected under magnification with surgical loupes. New uterine transplant model: We intended to examine the possibility of a living donor uterine transplantation. The uterine artery and vein were transected after the branch suppling to bladder. This plastic step was done with four segments of subcutaneous vein anastomosed to both side of uterine artery and vein with 9-0 interrupted suture. First, the vagina then the vascular component of the graft was reconnected with those on the recipient with 9-0 non absorbable suture in end to end fashion under 10x microscopic lens. The transplanted uterus was monitored in 3 hours. The histological examination of transplanted uterus was checked for signs of injury.
Results: The uterus consists of a short cervix and body and two long horns. There were two arteries on both side which supplied with blood for the uterine body and horn. The uterine artery was cranial branch of the vaginal artery. The diameter of uterine vascular pedicle was small in diameter (1–1.5 mm for arteries and 1.2–2.0 for veins) which need to be manipulated under microscope. The ovarian arteries because of extremely small size which was only 0.3–0.5 mm. Animals living after transplantation with the rate of 100%. Macro morphology of uterus after reperfusion, micro-assessment (under microscope) and histology of transplanted uterus: Uterus after transplantation has a good survival rate of 86.7%. Only one case of vascular occlusion and one case of low blood pressure.
Conclusions: The living donor uterine transplantation model was feasible with the survival of transplanted uterus recognized in most cases (13/15).

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Delayed and prolonged time for donor management including brain death determination

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Background: Delayed brain death determination or prolonged time for donor management cause increasing number of donor death, withdrawal of family's consent for donation, and increasing the expenditure for intensive care. In order to minimize the donation failure, the understanding time required for each step of organ donation is urgent.
Methods: From January 2016 to December 2018, we reviewed KODA statistical data of reported potential brain death and investigated the time intervals that take to complete each process of brain death management retrospectively. Organ donation procedures were divided into five steps. The first step started from the end of the first brain death examination to the end of the second examination, the second step was from end the second brain death examination until we got the flat electroencephalography (EEG), the third stage was from end EEG test to the declaration of brain death by brain death committee, and the fourth stage was from end of committee to entrance to operating room and the fifth step was from the operating room entrance to the completion of organ procurement.
Results: During the study period, 1,633 cases of potential brain death were managed for organ donation, and we analyzed 1,594 cases excluding donors under age of 6. The average time spent on organ donation procedure was 33 hours and 16 minutes. The time required for each step was 11 hours 28 minutes for step 1, 5 hours 15 minutes for step 2, 5 hours 58 minutes for step 3, 6 hours 38 minutes for step 4, and 3 hours 42 minutes for step 5. Among the analyzed cases, 119 cases spent more than 48 hours from step 1 to 4, and 63 cases those included holidays in the donation process took an average of 71 hours and 5 minutes. Ninety-one cases were discontinued during the donation procedure and their causes of interruption were as follows: poor organ quality 15 cases, patient death in 15, failure in brain death judgement in 19, and withdrawal of donation consent in six. The time of interruption of donation procedures were as follows: 45 cases were at step 1 and 2, and the total time spent for step 1 and 2 were 16 hours and 43 minutes which accounting for half of all brain death donation procedures. In particular, the first step took average 11 hours and 28 minutes, almost twice as long as the 6-hour legal inspection interval. The third step took an average of 6 hours, which is unnecessary in foreign countries without brain death judgment committee.
Conclusions: Brain death determination procedures should be accurate without any delay. Among the measures to reduce the time, improvement of the execution of the first and second brain death examinations, prompt EEG examination, and careful approach for abolishing the brain death judgment committee are necessary. The shortage of manpower for brain death organ transplantation needs careful governmental based policy revision and social consensus.

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In-depth analysis of potential tissue donors in Korea

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Background: In Korea, there are fewer cases of tissue donations compared to organ donations from brain-death (BD). Thus, this paper hopes to explore means to increase and stimulate tissue donation based on an analysis of donors who consented to become potential human tissue donors between 2018 and 2020, but discontinued.
Methods: Among a group of 538 people who consented to donate their tissue from January 1, 2018, to December 31, 2020, this paper analyzed 208 people who discontinued and 38 people whose tissue was collected but subsequently disposed of.
Results: Over a 3-year period, 7,393 patients were registered as potential donors at the Korea Organ Donation Agency. Five hundred thirty-eight patients (27%) of the 7,393 agreed to donate tissue—consent rate was 11.9% (BD 9.7%; circulatory death [CD] 2.2%). Among them, 330 patients (61%, 250 men, 80 women) donated tissue, 208 patients stopped tissue donation and the tissue collected from 38 patients (12%) were discarded tissue processing. Most of the reasons for stopping tissue donation were the possibility of infection (139 patients; BD 111, CD 28) and herpes simplex (24 patients; BD 22, CD 2). Most of the reasons for disposal are identification of bacteria in blood and tissues (27 patient; BD 11, CD 16).
Conclusions: Along with in-depth research in order to reduce the discontinuation of tissue donations and the rate of discarded tissue upon collection, we must provide precise standards for assessing potential infection and also focus on installing an aseptic culture system. Moreover, we must develop a guideline for evaluating the suitability of tissue donation in Korea with accurate physical assessments and verification of medical records.

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Patient profiles and outcomes of lymphoma patients who underwent autologous stem cell transplant in National Kidney and Transplant Institute: a single-center analysis

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Background: Autologous stem cell transplantation (ASCT) is the standard of care for relapsed or refractory lymphoma for over 50 years and is associated with better overall survival compared to those who received chemotherapy alone. In the Philippines, no study has been done among lymphoma patients who received ASCT and their corresponding outcomes. The National Kidney and Transplant Institute (NKTI) pioneered stem cell transplantation in the Philippines in 1990; however, transplantation in lymphoma started only in 2019. This is the first local study to review ASCT outcomes among lymphoma patients.
Methods: This is a retrospective review in a single-institution of adult lymphoma patients who underwent ASCT from February 2019 to December 2020 in NKTI.
Results: There were eight adult lymphoma patients who received ASCT from February 2019 to December 2020. Most patients (seven of eight) were diagnosed with Hodgkin lymphoma and all had relapsed/refractory disease with at least two lines of treatment received prior. All patients received BeEAM (bendamustine, etoposide, cytarabine, melphalan) protocol as conditioning regimen. Neutrophil engraftment was observed after an average of 11.4 days and patients were discharged on an average 16.2 days after transplantation. One patient died during admission, one patient still has not yet been re-evaluated, one patient relapsed, and five patients remained in remission, the longest duration being 2 years.
Conclusions: ASCT can be safely and successfully performed in this institution. Immediate outcomes are comparable to global data; however, longer-term follow-up is recommended to further determine its durability in terms of disease control and survival in the local setting.

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- When quoting from other sources, a reference number should be cited after the author's name or at the end of the quotation.

Manuscript preparation is different according to the publication type, including the original/special article, review, case report, study protocol, correspondence, and editorial. Other types are also negotiable with the editorial board.

Manuscript Type

- Original Articles are full-length manuscripts, which are expected to contain original scientific discovery. Section headings should include Abstract, Introduction, Methods, Results, Discussion, Acknowledgments, References, Tables, and Figure legends. Manuscript limitations are 3,500 words, 6 tables/figures, and 30 references. References, Tables, and Figure legends, are not counted as the manuscript word count.
- Special Articles highlight a topic of special relevance to the field of transplantation—for example, practice guidelines or national policy for transplantation. There is no limit to the length of each manuscript; however, if unnecessarily long, the author may be suggested to modify the length during the review process.
- Reviews give summarized overview of the existing literature on topics related to KJT readership. Both solicited or unsolicited reviews are considered for the publication.

Section headings should include Abstract, Introduction, Subheadings, Conclusions, Acknowledgments, References, Tables, and Figure legends. Manuscript limitations are 6,000 words and 200 references.

- Case Reports are expected to have clinical importance and novelty. Section heading should include Abstract, Introduction, Case Report(s), Discussion, Acknowledgments and References, Tables, and Figure legends. Manuscript limitations are 1,500 words, 6 tables/figures, and 15 references.
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- Editorials are an invited comment on a recently published manuscript. Editorial offers broader view of raised issues, balanced interpretation, and a link to further questions. Manuscript limitations are 800 words and 10 references.
- Symposium presentations are reports of the presentation from the annual meeting.

Table 1 shows the recommended maximums of manuscripts according to publication type; however, these requirements are negotiable with the editor. *Additions made during the review process are exceptional.

Table 1. Recommended maximums for articles submitted to KJT

Type of article	Abstract (word)	Text (word)[a)]	References	Tables & Figures
Original article	Structured, 250	3,500	30	6
Special article	200	NL	NL	NL
Review	200	6,000	200	NL
Case report	200	1,500	15	6
Study protocols	200	3,500	30	6
Editorial	-	800	10	2
Correspondence	-			
Letter to the editor	-	500	5	2
In reply	-	500	5	2

KJT, Journal of the Korean Society for Transplantation; NL, no limited. [a)]Maximum number of words is exclusive of the abstract, references, tables, and figure legends.

Title Page

Title page should have article title (200 characters limit including spaces), authors' name (include ORCID*), affiliation of authors, running title (50 characters limit including spaces), corresponding author's information (name, affiliation, address, phone, and e-mail address). All manuscripts, including Editorials, Reviews, and Letters to the Editors, should have a title page.

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Authors' Contributions

The work authors have conducted for the study should be described in this section. To qualify for authorship, all contributors must meet at least one of the 7 core contributions by CRediT (conceptualization, methodology, software, validation, formal analysis, investigation, data curation), as well as at least one of the writing contributions (original draft preparation, review, and editing). Authors may also satisfy the other contributions; however, these alone will not qualify them for authorship. Contributions will be published with the final article and they should accurately reflect contributions to the work. The submitting author is responsible for completing this information at submission, and it is expected that all authors will have reviewed, discussed, and agreed to their individual contributions ahead of this time. The information concerning sources of author contributions should be included in this section at the submission of the final version of the manuscript (at the first submission, this information should be included in the title page).

Examples of authors' contributions are as follows: Conceptualization: THK. Data curation: JHA. Formal analysis: TA, JHA. Funding acquisition: JMP. Methodology: JMP, JHA. Project administration: SL. Visualization: MHC, JH. Writing–original draft: IJY, THK, YIA. Writing–review & editing: all authors.

Highlights

All papers must include 3-5 short highlights presenting short summary or important findings in the next of title page. Each highlight includes less than 90 characters including space.

Abstract & Keywords

Abstracts for original articles are limited to 250 words and should be structured as followings: Backgound, Methods, Results, and Conclusions. Three to 6 keywords are listed below the abstract. MeSH (Medical Subject

Headings of Index Medicus) terminology is preferred for the keywords selection. Special article, review, case report, and study protocol have abstracts in a single paragraph whose structure is up to author's discretion. Editorial and Correspondence do not include abstract.

Main Text

Sections of original articles are divided as followings: Introduction, Methods, Results, and Discussion. The Introduction is a concise explanation of hypothesis or study aims. Introduction does not hold subheadings. The Methods section should thoroughly cover the methodological details. In the Results and Discussion, subheadings may be used to organize contents. For a case report, sections consist of introduction, case report(s), and discussion.

- Studies performed using clinical samples or data, and those involving animals, must include information on the IRB approval or waiver and informed consent. An example is shown below. "We conducted this study in compliance with the principles of the Declaration of Helsinki. The study's protocol was reviewed and approved by the Institutional Review Board of OO (IRB No. OO). Written informed consent was obtained / Informed consent was waived."
- Description of participants: Ensure correct use of the terms sex (when reporting biological factors) and gender (identity, psychosocial or cultural factors), and, unless inappropriate, report the sex and/or gender of study participants, the sex of animals or cells, and describe the methods used to determine sex and gender. If the study was done involving an exclusive population, for example in only 1 sex, authors should justify why, except in obvious cases (e.g., prostate cancer). Authors should define how they determined race or ethnicity and justify their relevance.

References

In the text, references should be cited with Arabic numerals in brackets (e.g., [1], [2,3], [4-6]), numbered in the order cited. In the references section, the references should be numbered and listed in order of appearance in the text. List all authors if there are less than or equal to 6 authors. List the first 6 authors followed by "et al." if there are more than 6 authors. If an article has been published online, but has not yet been given an issue or pages, the digital object identifier (DOI) should be supplied. References to unpublished material, such as personal communications and unpublished data, should be noted within the text and not cited in the References. Personal communications and unpublished data must include the individual's name, location, and date of communication. Journal titles should be abbreviated in the style used in Medline. Other types of references not described below should follow Citing Medicine: The NLM Style Guide for Authors, Editors, and Publishers (http://www.nlm.nih.gov/citingmedicine).

• Journal Articles

1. Hong YM, Cho M, Yoon KT, Ryu JH, Yang KH, Hwang TH. Preoperative blood neutrophil count predicts survival in hepatocellular carcinoma patients with living donor liver transplantation. Korean J Transplant 2020;34:92-9.
2. Kim MH, Kim YC, Lee JP, Kim H, Kim DK, Ryu DR, et al. Three-year income trends in Korean adults commencing haemodialysis: a prospective cohort. Nephrology (Carlton) 2017 Apr 25 [Epub]. https://doi.org/10.1111/nep.13065.
3. Badal SS, Danesh FR. New insights into molecular mechanisms of diabetic kidney disease. Am J Kidney Dis 2014:63(2 Suppl 2):S63-83.

• Books

4. Ponticelli C. Medical complicationsof kidney transplantation Abingdon, UK: Informa Healthcare; 2007.
5. Dean RH. Aneurysm of the carotid artery. In: Sabiston DC, ed. Textbook of surgery. 4th ed. Philadelphia, PA: W.B. Saunders; 1997. p.1560-1.

• Conference Proceeding

6. Kimura J, Shibasaki H, eds. Recent advances in clinical neurophysiology. Proceedings of the 10th International Congress of EEMG and Clinical Neurophysiology; 1995 0ct 15-19; Kyoto, Japan. Amsterdam: Elsevier; 1996.
7. Bengtsson S, Solheim BG. Enforcement of data protection, privacy and security in medical informatics. In: Lum KC, Degoulet P, Peiemme TE, Rienhoff O, eds. MEDINFO 92. Proceedings of the 7th World Congress on Medical Informatics; 1992 Sep 6-10; Geneva, Switzerland. Amsterdam: North-Holland; 1992. p.1561-5.

• Dissertation

8. Kim SY. Health promotion behavior and the quality of life in liver transplant patients [master's thesis]. Seoul, KR: The Catholic University of Korea; 2009.

• Website

9. Korean Network for Organ Sharing (KONOS). 2015 Annual data report [Internet]. Seoul: KONOS; 2016 [cited 2018 Aug 20]. Available from: http://konos.go.kr.

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For specific study designs, such as randomized control studies, studies of diagnostic accuracy, meta-analyses, observational studies, and nonrandomized studies, authors are encouraged to also consult the reporting guidelines relevant to their specific research design. A good source of reporting guidelines is the EQUATOR Network (https://www.equator-network.org/) and the NLM (https://www.nlm.nih.gov/services/research_report_guide.html).

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