rest 19 (2.3%) included 6 ileus lasting more than a week, 5 intra-abdominal abscess, 4 postoperative bleeding requiring transfusion, 3 intractable ascites, 1 ventral hernia. According to the classification of the severity of complication, the modified Clavian grade, grade I complication was recognized in 56 (67.5%) donors. Grade II, IIIa, IIIb complications was also emerged in 2 (2.4%), 15 (18.1%) and 10 (12.0%) donors, respectively. There was no grade IV or V event. Among donors with biliary complications, 5 (grade I) were treated conservatively and 1 (grade II) was cured by antibiotics without appropriate drainage. Interventional management was successful in 10 donors (grade IIIa), such as percutaneous/endoscopic biliary drainage, percutaneous peritoneal drain, and combination of balloon dilatation. Although overall complication did not have a link with any of donor characteristics, the incidence of biliary complication was correlated with donor age. As the donor age was young, the incidence of biliary complication was significant higher ($r=-0.237$, p-value=0.031<0.05).

Conclusion: This study demonstrated the safety of donor hepatectomy with less serious and easily controllable complications. Additionally, our results figured out that the incidence of biliary complication had a inverse correlation with donor age.

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Living Donor Liver Transplantation for Type II Citrullinemia in the Korean Patient

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Citrullinemia is an autosomal recessive disease caused by a deficiency of argininosuccinate synthetase.

Type II citrullinemia is clinically characterized by a sudden onset of consciousness disturbance, a high serum citrulline concentration, a slightly increased serum arginine concentration, and hyperammonemia. Although no effective treatment for type II citrullinemia have been available, liver transplantation was recently performed and proved to be effective in elimination of hyperammonemia and plasma amino acid abnormalities. Many cases of liver transplantation have been reported in the Japanese citrullinemia patient, but there is no report in the Korean citrullinemia patient. This is the first report of a Korean patient with living donor liver transplantation on citrullinemia type II. A 19-year-old male was referred to our hospital for altered mentality on April 24, 2010. He was first admitted to a hospital because of elevated aspartate aminotransferase and alanine aminotransferase on 2002. He had been healthy until 2001. At that time, urine amino acid analysis and tandem mass neonatal screening test revealed hyperammonemia and increased citrullinemia level. He was diagnosed as type II citrullinemia, and he was given a conservative treatment of sodium benzoate, arginine and a low protein diet. However, he suddenly went into a delirious state on April 23, 2010. He showed altered mentality and very high concentration of plasma ammonia and citrulline. So he referred to our hospital on April 24, 2010. We started intravenous infusion of arginine and branched amino acids, and he was given a low protein diet. A computed tomography scan revealed hepatosplenomegaly and small amount of ascites in pelvic cavity. Considering his liver and the poor prognosis with such conservative therapies, he was treated with living donor liver transplantation on June 9, 2010. The patient's whole liver was removed and part of his father's liver (the left lobe) was transplanted. Soon after surgery, the consciousness disturbance completely disappeared, accompanied by normalization of the ammonia. Over the subsequent 2-month follow-up, the patient's condition has remained fairly good.

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De novo Malignancy in Liver Transplant Recipients

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Purpose: De novo malignancy is a frequent compli-

cation after organ transplantation which requires immunosuppressive therapy. Posttransplant immunosuppressive medications result in decreased immune surveillance against malignant cells and increase the risk of malignancies mediated by various viruses. In this study, we tried to investigate the incidence patterns and treatments of de novo malignancy after liver transplantation (LT), especially mainly after living donor liver transplantation.

Methods: Between August 1992 to December 2008, 2174 LT were performed, living donor liver transplantation cases were 1879 and deceased donor liver transplantation cases were 295.

Results: Among them, 35 patients (1.6%) revealed de novo malignancies. In this single-center series, the incidence rate of de novo malignancy was rather low (1.6%). The patterns of de novo malignancy were also different from those in western countries. The common malignancies were stomach cancer and colon cancer in this series, but skin cancer, lymphoma and lung cancer were more common in western countries.

Conclusion: In our institution, posttransplant periodic checkup was done in every 1-year basis, especially focused on common malignancies in Korea. The periodic checkup list always includes gastrofiberscopy for early detection of stomach cancer. The common malignancies usually occur in transplant patients at an earlier age than in the general population. Thus yearly screening checkup may be beneficial regardless the age of liver recipients.

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Mechanical Ileus Associated Feeding Jejunostomy after Liver Transplantation

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Background: There are many complication associated with feeding jejunostomy with liver transplantation. Mechanical ileus is also often seen after the feeding jejunostomy after liver transplantation. Three different patterns of complication in the patients with mechanical ileus after the feeding jejunostomy after liver transplantation can be introduced.

Patients and Methods: We reviewed the cases of three patients; first a 62-year-old woman who presented with toxic hepatitis and received living liver transplantation, second a 68-year-old woman who presented with acute on chronic HBV hepatitis and received living liver transplantation emergently and, third a 16-year-old woman who presented with toxic hepatitis on the drug and received emergent cadaveric liver transplantation. Their medical records were retrospectively reviewed.

Results: One patient showed self limited recovery with hydration and restricting diet. The other patients required emergent operation. The performing of feeding jejunostomy during the liver transplantation must be considered seriously because of its urgent complication.

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Unusual Type of Hepatic Hemangioma Mimicking Hepatocellular Carcinoma: High-Flow Pattern on MRI

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Introduction: The hepatic hemangiomas could be distinguished with hepatocellular carcinoma (HCC) in the point of showing bright signal intensity on unenhanced T2-weighted imaging of MRI. However, some atypical hemangiomas, especially high-flow hemangiomas, can display rapid, intense homogeneous arterial enhancement and can show isointense or slightly hyperintense signal during the equilibrium phase of liver MRI using gadoxetic acid-enhancement MRI. Therefore, these early enhancing types of hemangiomas can mimic hypervascular hepatic tumors, such as HCC. We report the case of high-flow hepatic hemangioma confused with HCC.

Case: A 65-year-old male presented our hospital with liver mass detected by heath survey and he had no history of hepatitis and liver cirrhosis. Enhanced com-