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Quality of Life and Mental Health of Liver Transplant Live Donors

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Background: Shortage of organ limits liver transplantation. While 6000 liver transplantations are performed each year in the US, more than 2000 patients in the waiting list die before receiving a transplant. One way to increase the number of transplants is to use living donor. However, it may be associated with some complications. One of the important factors is quality of life of these people after donation.

Objective: To determine quality of life and mental health status in liver transplant living donors.

Methods: In a cross-sectional study, using SF-36 questionnaire for assessing quality of life, HADS questionnaire for assessing the level of anxiety and depression, and Sociodemographic questionnaire, all liver transplant living donors at Shiraz Organ Transplantation Center were studied.

Results: Of 161 donors, 100 accepted to participate in the study. There was no mortality. More than 75% of donors returned to work within 6 months of operation with no significant change in their quality of life. The incidence of anxiety disorders and depression was less than 10%. There was no significant difference between the type of surgery and quality of life.

Conclusion: Hepatectomy in large transplant centers by experienced hands is not associated with a significant change in quality of life and mental health status.

Transplantation of Cadaveric Pediatric Kidney to Adult Recipients

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Background: Renal transplantation is the best treatment for end-stage renal disease (ESRD). This causes a wide gap between the supply and demand for kidney donors. For expanding the donor pool, some studies investigated the efficacy of transplantation of pediatric cadaveric kidney into adult patients.

Objective: To evaluate the graft outcome of kidneys transplanted from pediatric donors into adult recipients.

Methods: 24 adults (13 women, 11 men) receiving kidney transplant from a pediatric donor (<14 years of age) were included in the study. The recipients underwent primary transplantation; there was no en-bloc kidney transplantation. The mean period of follow-up in was 48 (range: 1–72) months. The data were evaluated by Kaplan-Meier survival analysis.

Results: The mean donor and recipient age was 9.8 (range: 4–13) and 27.9 (range: 18–49) years, respec-

tively. Of the 24 recipients, 3 died and another lost the graft and returned to dialysis. The 1- and 5-year graft survival rates were 90%, and 90%, respectively. The 1- and 5-year patient's survival rates were 95%, and 79%, respectively.

Conclusion: Cadaveric pediatric kidneys can be transplanted to adult recipients with excellent results.

Small Bowel Autotransplantation for Locally Advanced Carcinoma of the Pancreas and Retroperitoneal Rhabdomyosarcoma: Our Experience In 7 Patients

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Background: Resection is the treatment of choice for adenocarcinoma of the pancreas and some other retroperitoneal tumors; however, once the mesenteric pedicle is involved by the tumor, it is impossible to perform a free margin resection. Total abdominal exenteration and ex-vivo resection of the tumor is a new technique for the treatment of these locally advanced tumors.

Methods: From August 2010 to April 2011, 6 patients with preoperative diagnosis of locally advanced pancreatic carcinoma and 1 patient with retroperitoneal rhabdomyosarcoma were treated with en-bloc resection of the tumor and small bowel autotransplantation following ex-vivo resection of the tumor. Immunosuppressive regimen consisted of low-dose tacrolimus for patients in whom venous allograft was used as an extension for vascular reconstruction.

Results: The first patient died of sepsis 8 months after transplantation. Another patient died of post-operative multi-organ failure in hospital. Other patients survived the procedure and were followed for 1–6 months.

Conclusion: Although small bowel autotransplantation following ex-vivo resection of the locally advanced pancreatic carcinomas and some retroperitoneal tumors may increase the resectability rate, the effect of this technique on the survival rate of the patients is not clear.

Stem Cell Transplantation in Shiraz, Iran

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Background: Stem cell transplantation can treat several disease conditions.

Objective: To evaluate the result of stem cell transplant in Nemazee Hospital, Shiraz, Iran.

Methods: From May 1993 to February 2012 allogeneic bone marrow transplant (BMT) or peripheral stem cell transplant (PSCT) and autologous PSCT was performed on 619 patients (allogeneic=350, autologous=269); 160 patients with transfusion-dependent thalassemia major, 178 patients with leukemia

(AML=123, ALL=46, CML=27), 142 patients with lymphoma (Hodgkin's=62 and non-Hodgkin's=77), 74 patients with multiple myeloma, 23 with severe aplastic anemia, and 23 patients with other diseases.

The median age of thalassemic patients was 11 (range: 2–22) years. 24 patients were in class I, 78 in class II, and 58 in class III Lucarelli risk group. The conditioning regimen consisted of busulfan (BU) 14–16 mg/kg orally, cyclophosphamide (CY) 200 mg/k IV, with or without horse antithymocyte globulin (ATG) IV 40–100 mg/kg. The prophylaxis against graft vs. host disease (GVHD) was with cyclosporine plus methylprednisolone. BMT was performed on 128 of the patients and PSCT on 32 of them. The donors were either HLA-identical siblings (n=124) or parents (n=23); there were also one to two HLA antigen-mismatched siblings (n=13). The second bone marrow infusion was done in 9 patients—3 of whom are still living with mixed chimerism. The second BMT was performed successfully on 4 of 6 patients with rejection; with BU 16 mg/kg, CY 200 mg/kg and ATG 100 mg/kg.

The median age of non-thalasssemic patients was 25 (range: 1–60) years. The conditioning regimen for allogeneic leukemia group consisted of BU 16 mg/kg and CY 120–200 mg/kg; for lymphoma group, it included fludarabine 150 mg/m^2, BU 8 mg/kg, CY 120 mg/kg, and ATG 40 mg/kg; and for alpastic anemia group, the regimen was CY 200 mg/kg and ATG 90 mg/kg. For autologuous PSCT; multiple myeloma, the regimen was CY 2 g/m^2 and melphalan 140–200 mg/m^2; for lymphoma as above + etoposide 1 g/m^2 ±CCNU 200/m^2; and for AML it was BU 8–16 mg/kg, etoposide 30 mg/kg ± cytosar 1 g/m^2.

Results: In thalassemic patients, the incidences of grade IV acute GVHD were 23%, and 58%, in BMT, and PSCT, respectively. The incidences of extensive chronic GVHD in such groups were 17% and 38%, respectively. The rates of survival and disease-free survival were 83% and 73%, respectively in BMT group, for PSCT group the rates were 61%, and 58%, respectively.

Very sever hemorrhagic cystitis was developed in 6 non-thalassemic patients with leukemia; it was the cause of death in two patients. The internal iliac artery was ligated in two patients; it was life-saving in one of them. The rates of disease-free survival in patients with leukemia, aplastic anemia, and lymphoma were 65%, 85%, and 50%, respectively. The survival rate for patients with multiple myeloma was 90%.

Conclusion: We advise allogeneic BMT rather than PSCT in patients with transfusion-dependent beta-thalassemia major; such therapies might be life-saving in lethal diseases such as leukemia, severe aplastic anemia and relapsing lymphoma.

Is "Classic Technique without Venovenous Bypass" Safe in Liver Transplantation? New Findings in a Comparative Study between Classic and Piggyback Techniques

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Background: The classic technique of hepatectomy with venovenous bypass may cause longer anhepatic phase, and increase the rate of some complications such as postoperative renal failure and thromboembolic events due to bypass. On the other hand, in certain circumstances such as in presence of a tumor or anatomical difficulties, the surgeon has to use the classic technique; however, there are some controversies over the safety of this technique without venovenous bypass in liver transplantation.

Objective: To compare the results obtained from using the classic technique without bypass and piggyback techniques.

Methods: Medical charts of 227 liver transplant recipients (55 cases of classic and 172 cases of piggyback technique) successively underwent the operation from March 2010 to June 2011 were examined. The main method of hepatectomy was piggyback, but in cirrhotic patients with anatomic difficulty or in the presence of a tumor or surgeon's preference, the classic technique without venovenous bypass was used.

Results: There was no significant difference in postoperative rise in creatinine, intraoperative blood pressure drop, transfused packed RBC and survival rate between the studied groups. The warm ischemic time was approximately 7 min longer in the classic than in the Piggyback technique ($p<0.001$), yet it was less than 52 minutes which is an acceptable time for this phase. Hospital stay was shorter in the classic than the Piggyback group.

Conclusion: Although the piggyback technique is the preferred technique for hepatectomy in liver transplantation, the classic technique—even without venovenous bypass—can be safely used in cirrhotic livers if the surgeon deems suitable.

Recurrence Rate and Outcome of Liver Transplantation in Hepatitis C

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Background: It is estimated that hepatitis C recurrence after orthotopic liver transplantation (OLT) develops in up to 30% of cases.

Objective: To evaluate the recurrence rate of HCV in and survival rate of patients transplanted for HCV cirrhosis in Shiraz Organ Transplantation Center.

Methods: Between 2002 and 2011, 34 adult patients underwent OLT for HCV cirrhosis; these included 4 patients with HCV-related hepatocellular carcinoma (HCC).

Results: 34 patients (25 men and 8 women) underwent LT for hepatitis C; they had a mean age of 47.8 years. The mean±SD follow-up time was 23.2±28.9 months. The survival curves were analyzed by the Kaplan-Meier approach. The 1-, 3- and 5-year patient and graft survival rates were 69.5%, 50% and 42.8% for HCC– patients, respectively; the 1- and 3-year survival rate was 56% and 44% for HCC+ patients, respectively. 6 patients experienced graft reinfection which was confirmed pathologically.

Conclusion: The long-term survival was statistically identical among HCC+ compared to HCC– recipients. Compared with patients transplanted for other indications of liver transplantation, we experienced inferior results in patients with HCV cirrhosis.

Modified Multivisceral Transplantation for Patients with Advanced Intra-Abdominal Desmoid Tumor

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Background: Locally-invasive desmoid tumors, occurring in the abdominal cavity or retroperitoneal re-

gion, sometimes seem to be unresectable due to major vessel encasement or the likelihood of subsequent intestinal failure which may occur after resection. Liver-sparing "modified" multivisceral transplantation (MMVTx) has recently been used for complete resection of these tumors.

Objective: Herein, we present our experience with MMVTx in 2 patients with advanced intra-abdominal desmoid tumors.

Case 1: A 30-year-old man who was a known case of intra-abdominal desmoid tumor, referred 10 months after initial operation due to recurrence of the tumor. He also had a history of familial adenomatous polyposis with involvement of the entire colon. Resection of the tumor and total colectomy with ileo-rectal anastomosis had been performed in the first operation. Abdominal CT showed recurrence of the tumor with involvement of all abdominal organs except for the liver and left kidney; the patient became a candidate for multivisceral transplantation.

Following laparotomy and en-bloc resection of the tumor and involved organs (stomach, duodenum, pancreas, spleen and whole small intestine), MMVTx was performed for the patient. The patient is now symptom free for 10 months after transplantation.

Case 2: A 35-year-old woman with history of abdominal surgery because of a retroperitoneal mass, was referred to our center because of tumor recurrence. The surgeons reported a huge mass in the right side of the abdominal cavity with involvement of the right kidney and right colon in the first operation; the mass had been resected completely. Pathologic review confirmed desmoid tumor. The patient experienced jaundice 6 months after the first operation. Spiral CT showed a large mass in the head and body of the pancreas with involvement of the small bowel mesentery. The patient became a candidate for MMVTx and following en-bloc resection of the tumor, MMVTx was performed for her. She survived the operation without any complication.

Conclusion: Although large, non-resectable desmoid tumors are pathologically benign with minimal metastatic potential, they tend to invade locally, especially to the mesenteric root and/or celiac axis and other abdominal viscera. MMVTx could be a therapeutic option for these advanced tumors, but a more prolonged follow-up is still to be defined for long-term outcome.

The Urological Complications in 100 Live Unrelated Allograft Kidney Recipients

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Background: The kidney replacement is the treatment of choice for chronic renal failure. In this treatment, the lifestyle, fertility and sexual activity of patients are normal. The most common surgical complications of kidney transplant are urological complications which are associated with high mortality and morbidity.

Objective: We described the urological complications of kidney transplant recipients transplanted in our center during the past three years.

Methods: We have been performing kidney transplantation in our center since 20 years ago. From 2008 to 2012, 100 unrelated living donor kidney recipients (51 men and 49 women) aged between 15 and 60 years who underwent transplantation in our center were evaluated for urological complications. The patients were followed for at least 6 months.

Results: We observed no urological complications in the 100 studied kidney transplant recipients.

Conclusion: It seems that the high experience and knowledge of surgeons in this kidney transplant center about implantation of the allograft ureter are with the key for uneventful procedures done in this center.

High Rate of Primary Function in Cadaveric Kidney in Renal Transplantation Ward of Mashhad Imam Reza Hospital: Our Experience with the First 365 Cadaveric Grafts

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Background: Renal graft function and survival are influenced by various factors. One of the factors related to cadaveric grafts is cold ischemia. Cadaveric renal transplantation is usually associated with delayed function (DGF) due to prolonged cold ischemia time (CIT).

Objective: In this study we presented the results of the first 365 transplants from cadaveric grafts at our locally procured center.

Methods: DGF was defined a condition which requires hemodialysis for 2 or more sessions.

Results: The 365 recipients studied included 170 women with a mean±SD age of 33.3±11.6 years, and 195 men with mean±SD age of 27.6±11 years. The colds ischemia time was <2 hrs. All kidneys were successfully implanted. Primary renal function was observed in 340 recipients. Graft loss was occurred in 7 patients due to acute and hyperacute rejection in 2 patients, accelerated rejection in 3, and venous thrombosis in 3 patients. There was no delayed graft function. One recipient died of heart failure 32 hours after transplantation.

Conclusion: Primary function is highly desirable in cadaveric kidney recipients. Short CIT due to local procurement of organ may have contributed to the high primary function observed in our center.

De Novo Malignancy Following Liver Transplantation

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Background: Liver transplant recipients are at high risk for development of hepatic and extrahepatic malignancies.

Objective: To evaluate the incidence of de novo malignancies in patients with liver transplantation in Shiraz Organ Transplant Center.

Methods: A total of 1443 orthotopic liver transplantation from deceased and living donors performed from 1992 to March 2012 were analyzed. The immunosuppressive regimen included calcineurin inhibitors with steroids with or without mycophenolate mofetil.

Results: Of 1443 patients, 26 (1.8%) developed malignancies; 19 (73%) developed PTLD, in whom 13 patients were under 5 years of age. Among PTLD patients, 5 expired in spite of diagnosis and treatment. Other malignancies included 2 cases of gastric adenocarcinoma, 1 thyroid cancer, 1 lumbosacral multiple myeloma, 1 intestinal adenocarcinoma, 1 pancreatic head adenocarcinoma, and 1 testicular cancer.

Conclusion: PTLD is the most common cancer among our patients after liver transplantation which involved mostly children. Interestingly, there was no skin cancer in our patients, while it constitutes the most common malignancy following liver transplantation all over the world.

Endourological Procedures for the Management of Urinary Calculi in Transplant Kidneys

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Background: Endourological procedures are commonly used for treating urinary calculi.

Objective: To assess the safety and efficacy of endourological procedures for urololithiasis in transplanted kidneys.

Methods: Patient characteristic, predisposing factors, clinical presentation, endourological procedures, complications, stone-free rate and graft and patient survival rates were analyzed.

Results: Between January 1989 and September 2011, we followed a total of 1800 renal transplant recipients and diagnosed 21 cases of urolithiasis. These patients consisted of 7 women and 14 men and had a mean age of 22 years; they were treated in the Renal Transplant Unit. Predisposing factors included hyperparathyroidism (n=6), hyperuricemia (n=5), ureteral stricture or obstruction (n=2), recurrent UTI (n =4), and unknown factors (n= 4). Clinical presentation consisted of hematuria (n=6), rise in creatinine (n=5), UTI (n=4), anuria (n=3), and hydronephrosis (n=3). Localization of stones were in pelvis (n=8), calyces (n=3), and ureter (n=10). Size of stones ranged from 12 to 22 mm in kidneys and 6 to 10 mm in ureters. According to the size and location of stones different treatments were given: ESWL (n=9), TULP (n=10), PCNL (n=6) and combination therapy (n=4). Stone-free status was achieved in 6 of 9 in ESWL group (75%), in 7 of 10 in TULP group (70%), and in 6 of 6 in PCNL group (100%). In patients who were not stone-free we used combination therapy and at last all of the patients were stone-free (100%). No intraoperative complications occurred. The mean initial and post-operative creatinine levels were 3 and 1.5 mg/dL.

Conclusion: Endourological procedures for urolithiasis in transplanted kidneys are safe and effective methods with a high overall stone-free rate and should be done by experienced hands.

Does the Laparoscopic Nephrectomy Donor Leave the Hospital Earlier than the Open Nephrectomy Donor?

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Background: Kidney transplantation is the treatment of choice for choronic renal failure. Two options are used for living donor nepherectomy—open and laprascopic donor nepherectomy.

Objective: To assess if laparoscipc nephrectomy donors leave hospital earlier than open nepherctomy do-

nors.

Methods: From 2005 to 2011, the hospital stay of 326 kidney donors (35 women, 291 men) operated at Imam Reza Hospital, was studied.

Results: Of 326 kidney donors studied, 48 leaved hospital on the second day of operation, 276 on the third day of operation, 1 donor on the eighth day of operation, and one on the sixth day of operation; none of them had their ribs resected.

Conclusion: Regarding the length of hospital stay, almost all donors left the hospital on the third day of operation; the length of hospital stay did not significantly different between open nephrectomy donors and laparoscopic nepherectomy donors.

Liver Transplantation for Hereditary Tyrosinemia: A Single Center Experience

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Background: Hereditary tyrosinemia is a rare inherited metabolic condition which leads to a fatal multisystem disease in childhood if it remains untreated. The treatment of choice in patients who developed cirrhosis or liver mass is liver transplantation because the risk for the development of hepatocellular carcinoma is very high.

Objective: To evaluate the outcome of children with tyrosinemia who underwent liver transplantation in Shiraz Transplant Center.

Methods: Between January 2007 and June 2010, 25 children with hereditary tyrosinemia type 1 and cirrhosis or multiple hepatic nodules wit no response to nitizinone, underwent orthotopic liver transplantation. The diagnosis of tyrosinemia was confirmed by measurement of serum or urine succinylacetone.

Results: There were 14 (56%) girls and 11 (44%) boys with a median age of 3.8 years. 20 (80%) of 25 patients had received livers from living donors (first-degree relatives—10 from fathers, 9 from mothers, and 1 from paternal uncle); 5 patients (20%) received liver from deceased donors. 8 patients developed acute rejection that managed by methylprednisolone pulse therapy. 4 patients died—1 of lymphoma and 3 of bacterial sepsis.

Conclusion: To the best of our knowledge this is the largest series of children with tyrosinemia who underwent liver transplantation. This procedure results in clinical and biochemical improvement in those with no response to medical therapy.

Pancreas Transplant: 5-year Experience in Shiraz Transplant Center

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Background: Pancreas transplant is the treatment of choice for patients with type 1 diabetes. This kind of transplant has been performed since 5 years ago in Shiraz Transplant Center.

Methods: Pancreas transplant was performed in 105 patients since January 2007. Simultaneous pancreas and kidney transplant (SPK) was done in 60, pancreas (PTA) alone in 30, pancreas after kidney (PAK) in 8, and pancreas in multiorgan transplant in 7 patients. Patients received simulect or alemtazomab as induction therapy and prograf, cellcept and prednisolone as maintenance immunosuppressive therapy.

Results: The mean±SD age of the patients was 31±4.6 (range: 23–42) years. The patients used to receive 40–45 units of insulin before transplant. Fasting blood sugar was 275±70 mg/dL before transplant and 95±7 mg/dL after transplant. During follow-up, 3 patients died of sepsis and vascular events. 14 patients were explored in whom 11 had intra-abdominal bleeding and 3 had GI bleeding. 3 patients developed chronic rejection and the transplant organ was removed. The graft, and patient survival rates were 81%, and 97%, respectively.

Conclusion: The results of pancreas transplant in our center were compatible to those from large transplant centers.

Successful Transplantation of a Spitted Crossed Fused Lump Type Ectopic Kidney into Two Patients with ESRD

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Background: Historically, kidneys with congenital abnormalities were often discarded because of the perceived risk of technical complications. However, as the waiting time for kidney transplants continues to increase, transplant centers have become keen to use kidneys with congenital abnormalities. Horseshoe kidneys are now routinely used for transplantation, either as a single or split graft.

Case Report: The donor was a 27-year-old man with head trauma during a motorcycle accident. He did not have significant past medical or surgical history. The patient was hemodynamically stable with good urine output; his serum creatinine was 1.3 mg/dL at the time of donation. After laparotomy we found that both kidneys were fused in the form of lump cross ectopia located in left side. We decided to divide the two fused kidney and after splitting, each of them was transplanted to one recipient. We made four vascular anastomosis for each recipients (two arteries and two veins). Both recipients were in a low socioeconomic status and had been transplanted previously with 6 and 7 years free of dialysis, respectively. There was immediate diuresis in both recipients after declamping of anastomoses. During 9 months of follow-up serum creatinine of both patients was lower than 1.5 mg/dL. One patient had lymphocele refractive to conservative management, which was treated surgically. The other patient had pelvicutaneous fistula treated with surgery.

Conclusion: Crossed fused renal ectopia should not be considered a contraindication for transplantation. The kidneys must be both procured and transplanted with careful attention to the anomalous vascular and ureteral anatomy. Transplant surgeons should be familiar with potential anatomic variations to ensure these grafts are not wasted.

Liver Transplantation for Hepatitis B-Related Cirrhosis

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Background: About 3% of Iranian population are chronic carriers of HBV. On the other hand, 70%–84% of cirrhotic patients in Iran have evidence of exposure to HBV, while 51%–56% of them are chronic carriers. These data may suggest that HBV is probably the most common cause of cirrhosis in Iran. Among these patients, many have decompensated cirrhosis and require orthotopic liver transplantation (OLT).

Objective: In this study, authors overview the results of 18 years of experience with liver transplantation of HBV patients in Shiraz Organ Transplantation Center.

Methods: In this retrospective study, we analyzed the outcome of 167 HBV-cirrhotic patients who underwent OLT. The median follow-up after LT was 30.7 (range: 1–212) months. All patients received HBV prophylaxis after transplantation with long-term administration of anti-HBS immune globulins (HBIG) and antiviral drugs. Medical records related to graft re-infection proven by histology, were used to determine the recurrence rate.

Results: Of 1284 OLT performed from 1993 to 2011, 167 (14.4%) patients had HBV cirrhosis. We divided the patients into two groups: with and without hepatocellular carcinoma (HCC). 1-, 3- and 5-year survival rates were 86.9%, 73.7%, and 60% in HCC– patients, respectively. 1- and 3-year survival rates were 75%, and 75% in HCC+ patients, respectively. 11 (6.5%) patients experienced graft reinfection which was confirmed pathologically.

Conclusion: Major advances in the management of HBV-related cirrhotic patients have reduced the rate of graft reinfection with resultant improve in outcomes, comparable to those for patients transplanted for other indications.

Liver Transplant in Patient with Wilson's Disease

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Background: Liver transplant is a therapeutic option for patients with Wilson's disease who present with fulminant liver failure or drug resistance.

Objective: In this study, we investigated the result of liver transplantation in Wilson's disease in Shiraz Transplant Center.

Methods: 104 (26 female and 78 male) patients with Wilson's disease were transplanted since 2003 in our center. The mean±SD age of the patients was 28±3.2 (range: 6–45) years. Indication of liver transplant was fulminant liver failure in 7, drug resistance in 12 and chronic liver failure in other patients.

Results: The graft and survival rates were 90% and 92%, respectively. 3 patients died in the hospital course and 8 patients had chronic rejection. Portal vein thrombosis was occurred in 1 patient; 5 patients developed biliary complications.

Conclusion: Patient survival was very good; it was much better in patients with chronic liver disease than fulminant liver failure.

Results of Liver Transplantation in Familial Hypercholesterolemia

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Background: Familial hypercholesterolemia (FH) is caused by dysfunction of LDL receptors, which results in high serum cholesterol level.

Objective: In this study, we evaluated the results of liver transplant in patients with FH performed in Shiraz Organ Transplant Center.

Method: From January 2006 to March 2011, 23 (10 were female and 13 male) patients with FH were transplanted; they aged between 4 and 26 years. Of 23 patients, 5 patients received liver from their family. All patients were checked for cardiovascular diseases before transplant and received medical treatment to decrease their serum cholesterol level.

Results: The patient survival rate was 96% and only one patient died of cardiac event. All cutaneous lesions disappeared after liver transplant. Except one patient who needed cardiac vascular replacement after transplant, other patients survived the procedure with good cardiac function.

Conclusion: Liver transplant is a safe and effective treatment for patients with homozygous FH refractory to medical therapy.

Liver Transplantation in Budd-Chiari Syndrome

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Background: Results of liver transplantation in patients with Budd-Chirari syndrome (BCS) were different in various studies; furthermore, its role and timing is still controversial.

Objective: To investigate the results of liver transplantation in patients with BCS, in Shiraz Transplant Center.

Methods: From December 2006 to March 2011, 28 patients with end-stage liver disease due to BCS were transplanted. In our center 15 patients were female and aged between 15 and 49 years. CBC, BM and MRV were performed for all patients. One patient received liver from splitting liver.

Results: During follow-up, 3 patients died—1 because of bleeding, one developed PNF and one of sepsis. The patient survival was 83%.

Conclusion: Liver transplantation is a good option for patients with BCS who developed end-stage liver disease.