Original Articles

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Pancreas Transplantation: Experience of Single Center

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Rezumat

Transplantul de pancreas: experiența unui singur centru

Context: Diabetul este cea mai frecventă cauză de insuficiență renală. La pacienții cu insuficiență renală şi diabet de tip 1, dializa și tratamentul cu insulină pot prevenii tabloul clinic care provoacă moarte rapidă, dar acestea sunt insuficiente pentru a preveni complicațiile pe termen lung. La pacienții cu diabet de tip 1, transplantul de pancreas şi celule insulare este singurul tratament curativ, care de altfel în ultima vreme este din ce in ce mai utilizat.
Metode: Între lunile decembrie 2006 și august 2010, s-a practicat transplant pancreatic la un total de 10 pacienți. Datele aparținând pacienților au fost analizate retrospectiv.
Rezultate: În acest studiu au fost analizate datele de la 10 de pacienți. 6 pacienți au fost de sex masculin și 4 pacienți de sex feminin. Toți pacienții au supraviețuit cu success intervenției și au în prezent organe funcționale.
Concluzii: În ceea ce privește tratamentul pacienților cu diabet zaharat de tip 1, transplantul de pancreas este cea mai eficientă metodă cu efect curativ. Acest articol prezintă experiența în transplantul de pancreas a Universității Ankara și subliniază fezabilitatea acestei proceduri.

Cuvinte cheie: transplant dublu de pancreas și rinichi, diabet zaharat

Abstract

Background: Diabetes is the most common cause of renal failure. In patients with type I diabetes and renal failure, dialysis and insulin therapy can prevent a clinical context that causes rapid death, but they are insufficient to prevent long term complications. Pancreas and islet cell transplantation in patients with type I diabetes are the only curative treatment and have recently become more common.
Methods: Between December 2006 and August 2010 a total of 10 patients underwent pancreas transplantation. The patients' data were analysed retrospectively.
Results: 10 patients and their data were included in this study. Six patients were male and 4 patients were female. All patients are still alive, with functional grafts.
Conclusions: Pancreas transplantation is the most effective treatment for patients with type I DM. This paper discusses the feasibility of this process and presents the experience of Ankara University in pancreas transplantation.

Key words: pancreas, renal transplantation, diabetes mellitus

Introduction

The most common cause of end stage renal failure is diabetes mellitus (DM). A primary factor in the development of major diabetic complications is hyperglicemia. Therefore the basic strategy on regulating the course and complications of patients is to correct hyperglicemia in patients. In order to prevent late diabetic complications, to improve quality of life and to ensure

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normoglicemia, insulin pumps, pancreatic islet cell transplantation or pancreas transplantation have started being used, allowing autoregulation. Pancreas or islet cell transplantation is the only curative treatment in patients with type I diabetes.

The first successful pancreas transplantation was performed by Kelly and Lillehei on December 16 1966 at the University of Minnesota. In Europe it was performed for the first time by Dubernard in 1978 (1). In the early period due to very low levels of graft and patient survival rates, very few cases were reported until the 1980s. According to the data from December 2004 of the International Pancreas Transplantation Registry, more than 23,000 pancreas transplantations were performed all over the wold, >17,000 in the US and almost 6,000 from outside the US, and on average 1,900 cases added to this (2). Pancreas transplantation was first discussed in the 1980s in Turkey, and was performed for the first time in 2003.

This paper discusses the first 10 cases of pancreas transplantation performed at the Transplantation Unit of Ankara University, along with their early results.

Materials and Methods

The first simultaneous pancreas- kidney transplant was performed in December 2006. Pancreas transplantation was performed until August 2010 on a total of 10 patients. Candidates were selected based on lymphocyte cross-match. The extraction of the organs was performed as a liver-kidney en-bloc extraction. During the back-table process, the pancreas was detached from the liver. The donor iliac Y bifurcation autograft was anastomosed to the superior mesenteric artery and splenic artery and the pancreas arterial system was restructured. The first and second part of the duodenum were stapled with a linear cutter to prepare them for duodenoenterostomy for exocrine drainage.

Midline transabdominal incisions were used for the recipients. The pancreas grafts were transplanted to the right paracolic area and the renal grafts to the left iliac fossa. The grafts of the portal vein were anastomosed to the right iliac vein, and the arterial system graft was anastomosed to the right iliac artery, so the endocrine system was reconstructed with systemic circulation. For pancreas exocrine drainage, duodenostomy was performed to the ileum 50 cm proximal to the ileocecal junction. In patients undergoing simultaneous pancreas - kidney transplantation, the kidney was placed in the left iliac fossa. Blood glucose levels were measured on an hourly basis. During hospitalisation renal and pancreatic functions were evaluated with blood creatinin, glucose, c-peptide, amylase and lipase levels. Doppler ultrasound for assessment of perfusion of the graft was performed after 24 hours.

Ampicillin and ceftriaxone, during the first 5 days, fluconazole, 100 mg intravenously in the first 7 days and 200 mg per os for 2 months were used for infection prophylaxis.

Anti-thymocyte globulin for induction, and corticosteroids, tacrolimus, and mycophenolate mofetil for maintenance immunosuppression therapy were given to all patients.

Results

Between December 2006 and August 2010 a total of 10 patients underwent pancreas transplantation. Two patients with end stage renal failure and type I DM underwent simultaneous kidney- pancreas transplantation (SPK). Pancreas transplantations were performed on 8 renal transplantation patients (pancreas after kidney) (PAK). Six patients were male, and 4 patients were female. The mean age of our patients was 30.5 (20-39) years. The average duration of anaesthesia was 2.63 (1.80 - 4.00) hours, intraoperative average of 0.36 (0-2) units of erythrocyte suspension was used, and the average length of hospitalisation was 28.2 (6-90) days. Haemodialysis was required by 1 patient postoperatively on the first day. In 3 patients a liquid collection was observed in the paracolic and pelvic area, and this collection was drained percutaneously under ultrasonography guidance. Venous thrombosis developed in two of the patients, and low molecule weight heparin was used for treatment. Two of the patients with previous renal transplant developed graft rejection, and after pulse steroid treatment returned to normal graft functions.

None of the patients required insulin in the postoperative period. Fasting glucose levels were 80-120 mg/dl, and hemoglobulin A1c levels were < 6 %. All patients are alive, with functional grafts.

Discussion

Pancreas transplantation is the most effective treatment for patients with type I DM. The purpose of pancreas transplantation is to prevent microvascular complications by keeping blood glucose within normal levels.

Grafts survival rates were increased by the new surgical techniques, donor pool, organ preservation, advances in immunosuppression treatment (3). Between 1988 and 2003, graft survival rate was increased from 75% to 90% by the American surgeons performing pancreas transplantation. Graft survival rate increased from 55% to 78% in simultaneous kidney-pancreas transplantation, and from 45% to 77% in pancreas transplantation done after renal transplantation.

5-year and 10-year survival rates are 81%, and 67% in SPK transplantation patients, pancreas graft survivals are 73%, and 60%, renal graft survivals are 67 %, and 44%.

Although we have a huge number of vascular surgery and transplantation cases, our pancreas transplantation results are much better than we expected. This is probably due to the small number of cases. If the number of cases will be increased we can expect to have graft loss or patient morbidity, and mortality.

A limited number of cadaveric donors in our country are harvested, and the number of experienced surgeons in pancreas transplantation is even smaller. Harvesting the liver and pancreas together requires experience. Another problem in our country is that the pancreas and kidney are not offered together to the same recipient. If these problems are to be solved, pancreas transplantation in our centre will be performed in larger numbers.

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