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Outcome of pancreatic transplantation

Outcome of pancreas transplantations in Göteborg, Sweden 1985–1990

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Summary. During 1985 to 1990, 67 segmental pancreas transplantations with bladder drainage were performed. Fifty were combined pancreas and kidney and 17 were pancreas after kidney transplants. All patients were transplanted with the same technique. The 1-year actuarial pancreas graft survival for the combined patients with quadruple immunosuppressive therapy was 83% and the patient survival, 95%. The most important complications were infections, leakage from the pancreatico cystostoma and vascular complications.

Key words: Pancreas transplantation - Graft survival - Patient survival-Complications

Introduction

All pancreas transplantations between 1985 and 1990 were performed with the same surgical technique and with few changes in the immunosuppressive protocol (Frisk et al. 1987a; Frisk et al. 1987b). The aim of this paper was to present the survival and complication rates .

Subjects and methods

Surgical technique. A pancreas segment was placed intraperitoneally with exocrine deviation to the urinary bladder, using a two-layer suture technique. The splenic artery and vein were anastomosed to the external iliac vessels. In patients receiving a combined pancreas and kidney, a simultaneous transplanted kidney was anastomosed extraperitoneally to the external iliac vessels on the contralateral side.

Immunosuppression. All patients received a standard triple immunosuppressive therapy with prednisolone (100 mg daily tapered to 20 mg at 3 weeks), azathioprine (1,5-2 mg/kg body weight and cyclosporin A (CyA) (8 mg/kg body weight starting day 3 or 4). The CyA concentration in peripheral blood was monitored using a monoclonal radioimmunoassay. All but six of the patients received additional prophylactic immunosuppression with anti-thymocyte globulin (ATG) during the first post-operative week (quadruple therapy).

Rejection diagnosis. Clinical signs of rejection in the kidney grafts were usually verified with core needle biopsy. In the pancreas graft a rejection was suspected when urinary amylase secretion decreased or fine needle biopsy of the pancreas showed lymphoblast dominated inflammation.

Statistical analysis. Survival rates were calculated using the life table method (Colton 1974).

Results

Graft and patient survival rates

In total 67 pancreas transplantations were performed during 1985-1990. Fifty of these were combined pancreas and kidney(COMBI) and 17 pancreas after kidney (PAK). Patient characteristics are seen in Table 1 and the actuarial graft and patient survival for the COMBI patients in Tables 2 and 3.

Of the six patients with triple immuno-suppressive therapy from the early period of our programme, two died early with functioning grafts and two died more

than 6 months after graft failure. Of the two patients remaining, one patient is on dialysis and the other has both transplants functioning . All but one patient in the triple therapy group have experienced rejection episodes.

Table 1. Patient characteristics

	COMBI	PAK
Sex (male/female)	39/11	11/6
Mean age (years)	39	38
Age range (years)	26-53	27-51
Retransplants	0	5

COMBI = combined pancreas and kidney transplantation
PAK = pancreas after kidney transplantation

Of the 44 COMBI patients on quadruple immunosuppressive therapy, 34 have both transplants functioning, two have only the pancreas functioning, three only the kidney and in two patients both transplants failed. Three patients are dead, two who died with functioning grafts and one who died more than 6 months after failure of both grafts. Rejections episodes were seen in 27 of the 44 patients, 13 of them having only 1 rejection episode.

In the PAK patients the causes of graft failure were rejection (n=8), graft thrombosis (n=4) and one arterial bleeding due to a candida infection in the anastomosis. No PAK patient lost the kidney graft due to failure of the pancreas graft. One patient died of candida sepsis and pulmonary embolism 10 months after pancreas graft failure. The 1 year actuarial graft survival for 17 PAK patients was 28%.

Complications

Complications were similar in the COMBI and PAK groups, except for thrombosis of the pancreas which occurred in 24% in the PAK and 4% in the COMBI group. All complications in the COMBI group are listed in Table 4. The registered complications included the immediate post-operative period as well as the follow-up period with functioning grafts.

The infectious complications included wound infection, sepsis, cytomegalous virus infection, candida sepsis and other serious infections. Of the 14 patients (28%) with leakage from the pancreatico cystostoma, 50% required additional surgery, while the remaining healed with conservative treatment. The cardiocerebro-vascular complications included myocardial infarcton, cerebral embolus/thrombosis and leg or toe amputations.

Table 2. Actuarial graft survival in combined pancreas and kidney patients

Category of patient	1 year all	1 year quadruple therapy	2 year all	2 year quadruple therapy
Both transplants functioning	68%	76%	68%	76%
Pancreas only functioning	77%	83%	71%	80%
Kidney only functioning	75%	83%	72%	80%

All patients with haemorrhages from the pancreas or kidney graft site were treated surgically. Other complications from the pancreas included graft pancreatitis, obstruction of the pancreas duct and excessive fluid from the pancreas wound. Among the complications from the kidney requiring surgery were lymphocele and stenosis of the ureter-bladder anastomosis. Thirty percent of the patients having complications required surgical intervention, and 15% of the patients in the COMBI group had no complication at all.

Table 3. Patient survival in pancreas transplanted recipients

Category	1 year	2 year
COMBI all n=50	89%	87%
COMBI quadruple n=44	95%	92%
COMBI + PAK n=67	91%	89%

COMBI = combined pancreas and kidney transplantation
PAK = pancreas after kidney transplantation

The distribution of all registered complications is presented in Table 5.

Table 4. Frequency of complications after combined pancreas and kidney transplantations

Type of complication	% of patients
Infections	57
Leakage pancreatico cystostoma	28
Cardiocerebrovascular	28
Retinal haemorrhages	4
Pancreas graft thrombosis	4
Kidney graft thrombosis	4
Post-operative haemorrhage pancreas	10
Post-operative haemorrhage kidney	4
Other pancreas complications	12
Other kidney complications	6
Other complications	16

Table 5. Distribution of registered complications

Type of complication	% of total complications
Infections	42
Leakage pancreatico cystostoma	13
Cardiocerebrovascular	13
Retinal hemorrhages	2
Pancreas graft thrombosis	2
Kidney graft thrombosis	2
Postoperative hemorrhage pancreas	4
Postoperative hemorrhage kidney	2
Other pancreas complications	7
Other kidney complications	3
Other complications	10

Discussion

According to the Pancreas Registry, rejection is the most frequent cause of graft failure (Squifflet 1990). This is consistent with our results, especially in the PAK group which has a poor graft survival rate. Rejection and graft thrombosis are the main reasons for the graft loss in the PAK group. In our material PAK patients had late rejection episodes,which was not seen in the COMBI patients. The reason for this is still unclear. In order to improve the results in the PAK patients we have extended the follow up procedure, with more frequent analyses of urine-amylase output. Furthermore, the immunosuppressive protocol has been slightly modified with a slower tapering of the immunosuppressive drugs. Our graft survival rates of the combined procedure are in accordance with the Registry (Squifflet 1990). Leakage of the pancreatico cystostoma, occurring in 28% of our patients explains most of the pancreas wound infections,accounting for up to 50% of the total infectious complications. The complication is of course a matter of inconvenience for the patient and requires a longer hospital stay and convalescence. It does not, however, affect graft survival and has not yet led to any graft failure, which is the main reason for us to continue with the present segmental graft technique.

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