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Intestinal Retransplantation

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ADVANCEMENT in surgical technique, perioperative care, and the availability of effective immunosuppressive agents has made intestinal transplantation a feasible procedure in patients with intestinal failure. Despite improvements in survival, however, the procedure still carries a higher patient and graft loss when compared to other organs. Re-transplantation (re-Tx) in this patient population may be necessary in cases of primary graft failure. We present our experience with 6 patients who underwent re-Tx of intestinal allografts and discuss possible determinants of survival.

METHODS

Six patients who underwent re-Tx of intestinal allografts after failure of the primary graft constitute our study population. Following primary graft failure, evaluation for re-Tx focused on the cause of graft failure, the risk of disease recurrence, the presence of an ongoing viral or bacterial infection, and the immunological status of the patient.

The re-Tx procedure consisted of either isolated intestine (SB), Liver/SB (LSB), or multivisceral (MV) abdominal organs. Immunosuppression in all patients was based on tacrolimus (FK506) and steroids; azathioprine was added to certain patients with recurrent rejection or nephrotoxicity.¹ The post-operative care, nutritional and immunosuppressive management, and graft surveillance were as previously described for primary intestinal transplantation.¹

Follow-up time was defined until patient death or the time of completion of this study, and ranged between 19 to 251 days.

RESULTS

Intestinal allograft rejection was the main cause of intestinal graft loss in five patients (PTLD was a contributing factor in two, and adenovirus hepatitis in another). Hepatic artery thrombosis (HAT) led to the loss of the liver graft in one recipient. In LSB recipients, acute liver failure from HAT in 1, and adenovirus hepatitis in the second was the main reason for urgent re-Tx of the liver and LSB allografts at 11 and 60 days after the primary transplant respectively. Both patients died from sepsis at 19 and 47 days post re-Tx. A third LSB recipient suffered from chronic rejection of the intestinal allograft component, with a history of resolved PTLD, and normal liver function. Re-Tx with a MV graft was performed 462 days after the primary transplant and 120 days after complete resolution of PTLD which was documented by endoscopy, intestinal biopsies, and CT scanning of chest and abdomen. This patient died 57 days after re-Tx from fulminant PTLD.

In isolated SB recipients, two recipients lost their grafts to rejection at 35 and 668 days, respectively. The SB graft was explanted and an SB re-Tx performed 16 and 61 days thereafter. Both patients died in the ICU from sepsis. The third patient lost the initial SB graft from rejection and

PTLD 774 days after the primary transplant. The primary intestinal allograft was explanted and an SB re-Tx was performed 340 days later. Prior to re-Tx the PTLD was completely cured as evidenced by endoscopies, CT scanning and EBV PCR of the peripheral blood. This patient is still alive 242 days after SB re-Tx, and is the only surviving patient in our series.

DISCUSSION

The timing and urgency of re-Tx were determinants of outcome in these patients. Urgent re-Tx of the liver allograft alone in one patient (HAT), or L/SB graft in another (adenovirus hepatitis) resulted in their death from septic complications within 1 month of re-Tx. Technical difficulties along with suboptimal medical condition of the recipient (ICU bound, on mechanical ventilation, and immunosuppressed) contributed to their demise.

In the non-urgent re-Tx recipient, the cause of the primary graft failure, and the timing of the re-Tx were determinant factors. Rejection was the main cause of graft failure in 2 SB recipients, both of which had their graft removed 16 and 61 days before re-Tx, and both died following re-Tx from septic complications. Longer waiting time between graft removal and re-Tx would have allowed the recipient to clear any subclinical infection, and restore an immune system that was heavily suppressed shortly before graft enterectomy.

The remaining two recipients (1 SB and 1 LSB) failed their primary graft to rejection and PTLD. One had re-Tx 3 months after the PTLD was thought to be cured based on the available diagnostic tools, but died of fulminant PTLD within 2 months of re-Tx. The remaining patient underwent SB explantation 1 year prior to the re-Tx procedure. PTLD was completely cured prior to re-Tx as documented by the absence of any residual lesion, as well as a negative EBV PCR in the peripheral blood. The patient was also completely off immunosuppression during this time period between graft enterectomy and the re-Tx procedure. The immune response was normal at the time of re-Tx as evidenced by in vitro assays (MLR, response to third party antigens, and cytokine profile). Though he is the only

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surviving patient, he suffered from severe rejection and EBV infection in the early post re-Tx period, which has resolved. We believe the longer time between graft removal and re-Tx played a major role in clearing the EBV and restoring a normal immune host response.

CONCLUSION

We conclude that intestinal re-Tx alone or with other abdominal organs is associated with high mortality and morbidity. Primary graft enterectomy and observation, allowing all causes of first graft failure to be corrected and a

more stable medical condition can provide successful elective SB re-Tx. The risk of re-Tx in composite (LSB or MV) grafts is prohibitive, and should be considered under very selective criteria.

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