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## Posttransplant Lymphoproliferative Disorders in Small Bowel Allograft Recipients

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**W**E HAVE PREVIOUSLY estimated a 20% frequency of Epstein-Barr virus (EBV) related posttransplant lymphoproliferative disorders (PTLD) in small bowel allograft recipients.<sup>1</sup> The present study compares rates of PTLD among pediatric and adult recipients of isolated or composite small bowel allografts. We also report PTLD frequency before and after the institution of quantitative EBV monitoring and the use of ancillary donor bone marrow infusion to facilitate microchimerism, both of which began in mid-1994.

### MATERIALS AND METHODS

The records of patients who underwent small bowel transplantation at the University of Pittsburgh Medical Center between May 1990 and July 1999 were reviewed. Age at transplant, allograft type, classification of PTLD, and patient survival were recorded. Actuarial survival and actuarial risk of PTLD were calculated using the Kaplan-Meier method. Chi-square test or Kruskal-Wallis test, followed by Tukey multiple comparison analysis, was used to evaluate statistical significance.

### RESULTS

A total of 127 patients received small bowel allografts either alone ( $n = 48$ ) or in combination with other abdominal visceral organs, including liver ( $n = 79$ ), during the study period. These included 73 pediatric and 54 adult patients. Twenty-seven study patients developed PTLD for an overall frequency of 21%. Of these PTLD cases, 22 occurred in the pediatric and 5 in the adult population (30% vs 9%,  $P = .004$ ). The actuarial frequency of PTLD at 24 months was also greater in pediatric (31%) than in adult (10%) recipients ( $P = .01$ ). All five PTLDs in the adult group occurred in patients who received composite bowel allografts. The only significant association between PTLD frequency and type of transplant appeared in adult patients with multivisceral versus isolated bowel transplants (25% vs 3.4%,  $P = .05$ ). No significant difference in PTLD frequency on the basis of EBV seropositivity versus seronegativity at time of

transplant was seen in adults or children. The overall PTLD frequency during the first half of the study (41%) was significantly higher than during the second half (16%,  $P = .01$ ). Bowel involvement by PTLD was seen in 78% of patients. The actuarial survival for PTLD patients was 37% at 2 years. No difference in survival was seen on the basis of polymorphic versus monomorphic appearance of tumors.

### DISCUSSION

These data indicate that pediatric small bowel recipients and adults receiving composite visceral allografts represent subpopulations at high risk for PTLD development among all bowel allograft recipients. The allograft bowel itself is involved in PTLD in a high percentage of cases, reminiscent of the situation in lung allograft recipients.<sup>2</sup> The significant reduction in PTLD frequency during the second half of our study period coincided temporally with both the introduction of genomic EBV surveillance in peripheral blood<sup>3</sup> and with the institution of supplemental donor bone marrow infusion to enhance microchimerism.<sup>4</sup> The relative contributions of these interventions remain to be elucidated.

### REFERENCES

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