Original article

Renal transplantation and chronic dialysis in children and adolescents: the 1993 annual report of the North American Pediatric Renal Transplant Cooperative Study*

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Abstract. The 1993 North American Pediatric Renal Transplant Cooperative Study annual report summarizes data voluntarily contributed by 82 participating centers on 3,223 pediatric patients who received 2,819 renal transplants from January 1987 through January 1993 and 999 independent courses of dialysis from January 1992 through January 1993. In addition to updating information regarding trends and outcomes in pediatric renal transplantation presented in previous annual reports, 1st-year registry data are presented regarding current practices and trends in chronic dialysis therapy for children and adolescents in the United States and Canada. Living donor graft (LDG) survival rate was 90% at 1 year, 85% at 2 years and 75% at 5 years post transplant. Cadaver graft (CG) survival rates were 76%, 71% and 62% at 1, 2 and 5 years post transplant, respectively. Overall mortality post transplantation continues to be low (CG 6.8%, LDG 4%), mortality remains high in young infants. The dialysis cohort was generally younger than the transplantation cohort. In all age groups, peritoneal dialysis was utilized in the majority of pediatric patients and the overall incidence of peritonitis was 1 episode per 8.2 patient months. External percutaneous catheters were utilized as the predominant chronic hemodialysis access in the study, and access site infections ranged from 6.9% at 1 month to 13.5% at 6 months.

Key words: End-stage renal disease – Renal transplantation – Dialysis – Graft survival – Patient survival

Introduction

Since 1987, the North American Pediatric Renal Transplant Cooperative Study (NAPRTCS) has studied renal transplantation in children and adolescents in the United States and Canada [1–3]. In 1992, the study was expanded to include pediatric patients who receive chronic hemodialysis (HD) or peritoneal dialysis (PD) therapy. The scientific objectives of the study are to provide a comprehensive analysis of current practice, trends and outcomes in pediatric end-stage renal disease therapy. By identifying key factors which affect the morbidity and mortality of pediatric renal transplantation and dialysis, the ultimate goal of the study is to improve the clinical care of children and adolescents with chronic renal failure. The 1993 NAPRTCS annual report summarizes data voluntarily contributed by 82 participating centers on 3,223 pediatric patients who received 2,819 transplants from January 1987 through January 1993 and 999 independent courses of dialysis from January 1992 through January 1993. In addition to updating information regarding trends and outcomes in pediatric renal transplantation presented in the 1992 annual report [3], this report will present 1st-year registry data regarding current practices and trends in chronic dialysis therapy for children and adolescents in North America.

Methods

The NAPRTCS is made up of a clinical coordinating center, a data coordinating center and 82 medical centers treating children with end-stage renal disease in the United States and Canada. The data for this report, compiled in January 1993, include transplants reported during the 6 preceding years and independent courses of dialysis which occurred on or after 1 January 1992. Data regarding each renal allograft received or course of dialysis initiated has been reported to the data coordinating center 1 month following initiation of therapy, and every 6 months thereafter, as previously described [3, 4].

Standard univariate and multivariate statistical methods, including product-limit estimates of survival distributions, were used to analyze the data. Proportional-hazards survival models were constructed that equated an individual patient’s hazard to an underlying hazard multiplied by an estimated exponentiated linear combination of risk factors. Multivariate models were scaled so that risk increased with larger values of the covariates; the relative risk for a single dichotomous risk factor was the exponentiated parameter.

Results

Patient registrations

Through January 1993, 82 centers had submitted a total of 3,223 transplant and dialysis patient registrations. Patient registrations are summarized in Table 1. Data were compiled on 2,819 transplant procedures: 2,604 index transplants (i.e., transplants performed at the time of study enrollment) and 215 additional transplants performed in previously registered patients. Data regarding dialysis therapy were compiled from 999 independent courses of dialysis, defined as maintenance on a given dialytic modality for 30 or more days. Of these, 908 represent index courses while 91 represent additional dialysis courses in patients who received independent courses of dialysis on or after 1 January 1992. Of the data available for analysis, the 2,604 index transplants include 2,463 cases where transplantation was reported as the initial therapy and 141 cases where transplantation occurred subsequent to initial registration in the dialysis arm of NAPRTCS. The 908 index dialysis initiations include 739 cases where dialysis was reported as the initial therapy and 169 cases of dialysis initiation subsequent to failure of the index graft.

Renal transplantation

Patient characteristics. Table 2 summarizes selected characteristics of pediatric renal transplant recipients according to the year of transplantation. Secondary to characteristic reporting lags, total numbers of transplants in each re-