Growth After Renal Transplantation in Prepubertal Children: Impact of Various Treatment Modalities

The authors retrospectively evaluated growth in 47 prepubertal boys and 23 prepubertal girls following renal transplantation. The data were analyzed with respect to several variables, including initial growth retardation, type of immunosuppressive therapy (azathioprine versus cyclosporine), alternate-day versus daily prednisone, and total prednisone dose. Data were collected from the start of the first dialysis for up to 2 years after the first renal transplant. Height, weight, sexual maturation, serum creatinine, episodes and type of dialysis, and the number of renal transplants were also recorded. The primary renal disease of these children included glomerulopathies (50%), urinary tract abnormalities and/or renal hypoplasia (36%), and nephrotic syndrome (11%).

The mean height for all subjects was below the 3rd percentile at the start of the first dialysis and decreased significantly during the dialysis period. At the time of the first renal transplant, the mean height standard deviation score (SDS) for boys was -3.0 and -2.3 for girls. Following transplantation, height SDS increased by +0.3 in boys but decreased by -0.1 in girls. Catch-up growth did not occur over the next 2 years in 70% of these children. Gender, duration of initial dialysis, age at first renal transplantation, and the duration of a glomerular filtration rate (GFR) of <50 mL/min/1.73 m^2 were not associated with a change in SDS. But a significant positive association between height SDS and the percentage of time on alternate-day prednisone therapy was noted. Likewise, a positive association between the extent of urinary tract abnormalities and/or renal hypoplasia versus other types of renal disease was demonstrated. By using backward multiple regression analysis, the authors showed that percentage of time on alternate-day prednisone therapy, cumulative dose of prednisone, azathioprine versus cyclosporine, and duration of reduced GFR had a significant negative influence on height SDS 2 years after transplantation.

Hokken-Koelega A, et al. *Pediatr Res* 1994;35:367-371.

Editor's comment: *Accurate knowledge of the possibility of spontaneous catch-up growth after kidney transplantation in children with chronic renal glomerular insufficiency is extremely important for interpretating the results of therapeutic trials with growth hormone (GH) and establishing appropriate indications. The homogeneity of the strictly prepubertal cohort followed for 2 years, the relevance of the auxologic data, and the quality of the statistical analysis make this paper valuable. One may regret that the endocrine data regarding GH secretion, insulin-like growth factor 1, and plasma binding proteins in these patients, if available, were not included in this work.*

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Second Editor's comment: *The authors summarize their data in some detail. They note that height SDS was already significantly decreased at the time dialysis was initiated and few children (30%) had catch-up growth after renal transplantation. Certainly these data suggest that alternative treatments are needed to stimulate growth in children with chronic renal disease post-transplantation. At the present time, biosynthetic GH has been approved for the treatment of growth retardation in children with chronic renal insufficiency, and trials are underway to demonstrate its effectiveness post-transplantation. Van Dop et al (*J Pediatr *1992:120:244-250) have shown marked acceleration of growth rates (from 1.9 to 7.2 cm/y) in a group of post-transplant children treated with GH with a mean bone age of 8.9 ± 2.7 years. Hopefully, studies such as these will change the outlook for children with renal transplants with regard to stature.*

The readers may wish to read the next abstract dealing with growth post-transplant in adolescents treated with GH.

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