

# Pubertal Growth in Chronic Renal Failure

This paper analyzes the height growth of 15 boys and 14 girls with end-stage renal failure first studied before puberty and followed at 3- to 6-month intervals until growth ceased or nearly ceased. The height data were smoothed by the kernel estimation method, which is a form of moving average. The records were from Heidelberg, and the curves were compared with those from the Zurich Longitudinal Growth Study. This made possible a comparison with late normal maturers as well as with the average maturers in a normal growth study.

The start of the pubertal growth spurt was delayed by 2.5 years in both the girls and boys, and its duration and intensity were also very significantly reduced, with the mean height gain at around 50% of that observed in the late-maturing control group. However, mean height at the onset of the spurt was approximately the same as that in the late-maturing control group. The data indicate that most patients with end-stage renal failure occurring before or during puberty irreversibly lose growth potential. Renal transplantation did not consistently improve pubertal growth.

Schaefer F, Seidel C, Binding A, et al. *Pediatr Res* 1990;28:5.

**Editor's comment:** *This paper is particularly striking because of the use of the kernel estimation method, which, in my opinion, is currently the most advanced technique for analyzing growth curves. Since it is nonparametric, it is*

*particularly applicable in cases of growth disorder, and this paper constitutes a real model for other research workers studying growth in chronic disease. It is interesting that in the patients with renal failure, puberty did not start until their height had reached virtually that of the controls when they started puberty; however, by this time height velocity was far below normal and the subsequent pubertal spurt was very much reduced. Such a fine analysis does require many measurements of height to be made during the growth period but results in a much better understanding of the dynamics associated with the disorder than has previously been possible.*

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