Recombinant Human Growth Hormone Therapy in Renal Insufficiency: New Hope for Children

Failure to grow appropriately is an all-too-frequent accompaniment of chronic renal insufficiency and end-stage renal disease (ESRD) in childhood. Attempts to prevent short stature by treating acidemia, calcium and phosphorus imbalance, and protein/calorie malnutrition are effective maneuvers in some, but not all, patients. Short stature remains an uncomfortable, socially stigmatizing feature for these children.

Pediatric nephrologists have been pleasantly amazed by the improvement in well-being experienced by children whose anemia is being treated with recombinant erythropoietin. Those of us trained some time ago were taught the body adapted to slowly progressive anemia so that patients experienced few ill effects of anemia. In retrospect, most children did adapt fairly well so that school work and social interactions were maintained at near-normal levels. It has been gratifying, however, to see the remarkable improvement in energy levels and attitudes of those children with chronic renal insufficiency or those who receive dialysis, now that treatment with recombinant erythropoietin is used to treat their anemia.

Now, those of us who care for children with ESRD have another opportunity to study a product of recombinant technology. Each of us has many sad tales of patients upset by their short stature, by their young appearance, and by both statural and sexual developmental delay. It would be comforting to have a way to resolve this dilemma. Dr. Fine’s review in this issue of JASN describes encouraging preliminary results of the use of recombinant human growth hormone as reported by his group and others (1). In addition, Ress et al. (2) have recently reported that height velocities can increase in both prepubertal and pubertal children. It should be appreciated that only small numbers of patients have been treated thus far, so it would be unwise to over generalize the therapeutic effect and margin of safety of the hormone. Collaborative studies seem indicated in order to document the effects more rigorously.

Finally, it is vital that there be close scrutiny for untoward side effects of growth hormone administration in children. Glomerular filtration rate increases in some animals and humans given growth hormone injections (3). If hyperfiltration leads to progressive scarring in the children given growth hormone, deterioration in renal function may accelerate. Thus, changes in glomerular filtration rate must be measured by precise methods during growth hormone administration in humans include changes in glucose tolerance, hypertension, hypercalcuiia, and an increase in the incidence of some types of tumors (2). Changes in body composition in normal children of short stature who received growth hormone have been described recently (4).

Physicians who participate in studies of growth hormone administration, or who might prescribe the hormone outside of a study, should be aware of the possible side effects. Collective vigilance is essential to determine the safety and efficacy of the hormone so that hundreds of children with ESRD might benefit from this potentially revolutionary treatment.

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REFERENCES