Dosing of GH in GH-Deficient Emerging Adults

BY THE ENDOCRINE SOCIETY

The first goal is to determine whether the adolescent with GH-deficiency remains GH-deficient as an adult. This will often require measurement of IGF-1 levels at least one month off treatment and a GH stimulation test. At present the other indications for therapy with GH as a child/adolescent do not carry over to the emerging adult. The attainment of adult body composition, including maximal bone mineral content, occurs 5 or more years following achievement of (near) adult height, so the goal of growth hormone therapy for persistent GHD in the transition period is generally different than in older adults, in whom it is to maintain body composition or to prevent bone loss. With this goal in mind, studies examining the efficacy of GH in the transition period have generally tested a dose of 12.5-25 ug/kg/day, higher than the usual adult dose range of 300 to 1,000 µg/d (~4-14 ug/kg/day for 70 a kg individual). At these higher doses, IGF-1 levels are generally within +2 standard deviations for age. In general, side effects are reported less often in this age group, but at a higher rate if GH therapy had been discontinued for a number of years prior to restarting.

Studies evaluating GH efficacy after more than two years of treatment have not been done, so it is unknown when to decrease from the higher transition dose to the lower adult dose [1]. In the absence of these data, one strategy is to re-start at a dose of 12.5 to 25 µg/kg/d (~1/2 the adolescent dose) and down-titrate it at 6-12 month intervals while monitoring the IGF-I levels to keep them between 0 to +1 SDS, given the changing normal range at the end of adolescence for the emerging adult [1-3]. If the patient has not received rhGH for at least 6-12 months, it may be prudent to begin at the low end of the adult dose of 300 µg per day and titrate (usually upward) as one would do for an adult just starting GH therapy. The adverse events of edema and joint discomfort are usually mild and the subject continues to be on the trajectory to attain full adult body composition [2-3].

Stage	Dose	IGF-I Target (SDS)
Infant, Child, Early Adolescent	25-50 µg/kg/d	0 to +1
Transition (without hiatus)	12.5-50 µg/kg/d	0 to +1
Transition (with hiatus) / Adult	300-1,000 µg/d	0 to +1

REFERENCES

1. Mauras N. GH use in the transition of adolescence to adulthood. Endocr Dev 2012; 18:109
2. Clayton PE, Cuneo RC, Juul A, Monson JP, Shalet SM, Tauber M. *Consensus statement on the management of the GH-treated adolescent in the transition to adult care.* Eur J Endocrinol 2005; 152:165.
3. Cook DM, Rose SR. *A review of guidelines for use of growth hormone in pediatric and transition patients.* Pituitary 2012; 15:301

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