

molecular pathology, potential for symptomatic diagnosis, genotype-phenotype correlation, and genetic counseling); Severity and Variability Without Screening (including mortality, developmental disabilities, and physical findings); Clinical Outcome With Screening and Treatment (including mortality, clinical disability, variability, and possible interventions); Screening Test Characteristics and Confirmation (including type of test, timing, stability of specimen, confirmation, accuracy of screening, and ongoing studies); Special Concerns and Issues; and Professional and Public Education.

Information on additional newborn screening tests that are available in some university-based laboratories and commercial laboratories also is provided. These include adenosine deaminase deficiency; arginase deficiency; urea cycle defects; Duchenne muscular dystrophy; glucose-6-phosphate dehydrogenase deficiency; pyroglutamic aciduria; medium-chain acetyl-CoA dehydrogenase deficiency; and other organic acidemias.

American Academy of Pediatrics, Committee on Genetics. *Pediatr* 1996;98(3):473-500.

**Editor's comment:** This is a useful resource for pediatricians who suddenly find they need information about newborn screening. Information regarding many different metabolic disorders is contained in this one article. Each section provides current information on screening variability among different states, appropriate therapies, as well as the recent advances in genetics regarding metabolic disorders. The morbidity and mortality of metabolic diseases can be improved significantly with early detection and treatment. The field of metabolic diseases is changing rapidly because of molecular genetic techniques and new types of therapy. These guidelines will help physicians help their patients. Obtain your copy soon.

Judith G. Hall, MD

## A Month-Long Effect From a Single Injection of Microencapsulated Human Growth Hormone

The investigators have prepared a sustained-release form of rhGH using zinc and incorporating it into biodegradable polymers of DL-lactic co-glycolic acid (PLGA), producing 50- $\mu$ m diameter microspheres. The monomeric form of rhGH is

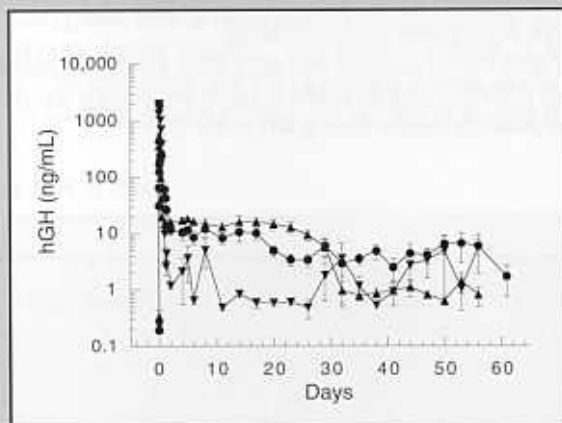
released from these microspheres. One subcutaneous (sc) injection did not cause an inflammatory reaction or fibrosis at the site of injection. When this microencapsulated form of rhGH (24 mg) was injected sc into juvenile rhesus monkeys, the peak serum rhGH concentration (260 ng/mL) was achieved within 12 hours after injection. Levels of rhGH declined and were maintained at 10 ng/mL through day 20 and thereafter at 4 to 5 ng/mL through day 60 after administration (this is a calculated rate of release of rhGH from the microspheres 0.4 mg/d) (see Figure 1). Insulin-like growth factor 1 (IGF-1) and IGF-binding protein 3 (IGFBP-3) values increased 2- to 3-fold within 3 days and were maintained for 30 days. These data were similar to those recorded in another group of animals receiving microsphere-equivalent amounts of rhGH by osmotic pump. Daily injections of rhGH (0.86 mg/d) resulted in lower levels of IGF-1 and IGFBP-3. One of 4 animals developed a low titer of anti-rhGH antibodies.

Johnson OFL, et al. *Nat Med* 1996;2(7):795-799.

**Editor's comment:** The availability of a clinically useful preparation of hGH that can be administered once a month or less will be of great benefit in the management of patients with GH deficiency and analogous to the utility of depot forms of GnRH agonist in central precocious puberty. If further studies demonstrate the safety and effectiveness of this preparation of rhGH, it may have more utility than oral forms of GH secretagogues, which need to be taken at least once daily and which will be ineffective in patients with primary pituitary dysfunction.

Allen W. Root, MD

Figure 1



Recombinant hGH serum concentration levels in rhesus monkeys. Values are means  $\pm$  SEM. Treatment groups were 160 mg microspheres (24 mg rhGH) (●), 24 mg rhGH in solution (▼), or 3.4 mg rhGH in solution followed by surgical implantation of an osmotic pump containing 20.8 mg rhGH in solution (for a total dose of 24 mg) (▲).

From Johnson OL, Cleland JL, Lee HJ, et al. A month-long effect from a single injection of microencapsulated human growth hormone. *Nat Med* 1996;2(7):797.