HUMAN GROWTH HORMONE: CURRENT STATUS OF AVAILABILITY AND USEFULNESS

About 10% of short patients referred for endocrine consultation have hypopituitarism. This may be in the form of growth hormone deficiency in association with the loss of other pituitary trophic hormones or isolated growth hormone deficiency. For treatment of these patients, pediatricians inquire whether human growth hormone (HGH) is available and what growth response will result from its administration.

Excellent responses in augmenting somatic growth and controlling hypoglycemia in the treatment of growth hormone deficiency have been obtained with intramuscular injections of HGH. Growth rates increase to supranormal levels, permitting "catch up" growth in amounts as much as 15 cm per year during therapy. It is frequently necessary to treat with HGH for several years, since the hypopituitary patient is usually well below the 3rd percentile in height at the time of diagnosis. The minimum amount of HGH required would at present seem to be of the order of 3 units per week. Since most HGH preparations have a potency of the order of 1 unit or less per milligram, and the human pituitaries from which HGH is extracted yield from 3 to 5 mg (depending on the extraction procedure), many pituitaries are required to treat each patient.

The increasing availability of growth hormone immunoassay has made it possible to diagnose growth hormone deficiency relatively easily; therefore, the number of children who need therapy has increased considerably. However, the supply of growth hormone is still entirely dependent on the collection and extraction of human pituitaries. This laborious procedure has not been able to keep up with the increasing demand for the hormone. At present, less than 10% of the need for growth hormone is met by the available supply. Attempts at modifying animal hormone for human use (porcine, bovine) have not been successful.

Synthesis of growth hormone remains the ultimate answer to the problem, but there is no indication that this will be achieved within the next few years. For the present, the supply of growth hormone depends on the pituitary collection efforts of two agencies:

1. Human Growth Incorporated, composed mainly of parents of short children, has chapters in many large cities in the United States.

2. The National Pituitary Agency, a committee constituted by the National Institutes of Health, has secured the cooperation of pathologists who, with consent, remove pituitaries at autopsy.

The pituitaries collected from both these sources are under control of the National Pituitary Society, which makes growth hormone and other pituitary hormones available to qualified investigators for research. To obtain growth hormone therapy, the patient must be cared for by a qualified investigator and must participate in a clinical research project which has the approval of the National Pituitary Agency.

In an effort to increase the supply of HGH, pediatricians are urged to encourage pathologists in their own hospitals to cooperate with the National Pituitary Agency, Suite 503-7, 210 West Fayette Street, Baltimore, Maryland 21201. Patients who could benefit from HGH should be referred to researchers carrying out investigative therapy at teaching centers in the United States. In Canada the Medical Research Council is sponsoring a "Therapeutic Trial of Human Growth Hormone." Patients who show evidence of HGH deficiency are selected for treatment if they meet the criteria suggested in the protocol of the
study; copies of the criteria are available from Dr. H. Friesen, Royal Victoria Hospital, Montreal 2, P.Q.

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   Liaison Representative
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