HUMAN GROWTH FOUNDATION

fourth friday

Annual Conference
April 5th & 6th, 2002

FROM THE PRESIDENT'S DESK

WINTER 2002

On April 5th & 6th, 2002 we will have our Annual Conference in Kansas City, MO at the Hyatt Regency Crown Center Hotel. This conference of the Human Growth Foundation is a business meeting required by our by-laws. However, since the Memphis 1998 meeting, we have transformed it into an educational and social experience as well. This year our board members, Dr. Campbell Howard and Bill McCollum, both from Kansas City and both past HGF presidents, have been working diligently to make this meeting the best yet. The educational programs will be a full day of sessions that will cover topics concerning growth and growth hormone. The sessions presently scheduled include: *"Pertinent Issues in the Diagnosis of Growth Hormone Deficiency"* (Dr. Jill Jacobson, Kansas City), "Growth Hormone Research/ Future Directions" (Dr. Barbara Lippe, Pharmacia), *"Kids to Adults- Transitioning Growth Hormone Therapy* (Dr. Stephen Kemp, Little Rock), *"Living with Growth Hormone Deficiency"* (Dr. Marty Barnard, Kansas City), and *"Financial Implications of Growth Hormone Deficiency"* (Dr. Lloyd Olsen, Kansas City). Our keynote speaker, Dr. David Cook from Portland, who is internationally known for his work with Adult Growth Hormone Deficiency Syndrome, will discuss *"Growth Hormone Therapy in Adults - the Future"*. CEU credits are available for nurses, pharmacists and other health care professionals. Contact the HGF office for the proper registration forms for these credits.

In addition, there are several social events planned which include a Friday evening reception on April 5th (a magician may be visiting) and an Ice Cream Social on Saturday afternoon April 6th. During the meeting a Silent Auction will be held, with the proceeds going to the John Hickey Fund. Participants on the list server who are able to attend should find the meeting a worthwhile experience.

A reminder...The John Hickey Memorial Fund, named in honor of John Hickey, was established to support the training of endocrinologists. John was very active in HGF from its inception and served for many years as our treasurer until shortly before his death. Presently there is an acute shortage of manpower in pediatric endocrinology, resulting in excessively long waiting periods for clinical appointments and restricted time available for discussions in clinic with the endocrinologist. A solution for this problem is to support the training of an increased number of new endocrinologists. With the help of some end-of-the-year contributions, the fund's total is slightly over $35,000.00. It will require about ten times this amount to establish a fund large enough that the yearly interest resulting from it will support the training of one post-doctoral fellow per year.

See you in Kansas City in April !

Stephen Kemp, M.D., Ph.D.
President

Inside this Issue

ASK THE DOCTOR

I have read that growth hormone could help children with cystic fibrosis. Is this true? What are the risks?

Cystic fibrosis (CF) is a very serious multisystem disorder which effects one in every 2500 live births in the United States. A recessively inherited disorder of the movement of salts into cells, CF causes thickened secretions which damage vital organs like the lungs and pancreas. Affected children have recurrent respiratory infections and declining lung function over time. Insufficiency of the pancreas results in reduced release of pancreatic enzymes causing malabsorption of fat and vitamins, and the development of diabetes in about 20% of CF children by 18 years of age. Poor intake of nutrients, frequent infections, and reduced tissue oxygen levels slow weights gain and linear growth. According to the CH foundation, 23 % of children are below the 5th percentile for weight and 18% are under the 5th percentile for height! These findings are particularly important as malnutrition is known to adversely effect survival of patients with CF. Although most children with CF are not GH deficient, many have a low level of the GH "effector" molecule, insulin like growth factor-1 (IGF-1), an important "anabolic" (tissue building) protein.

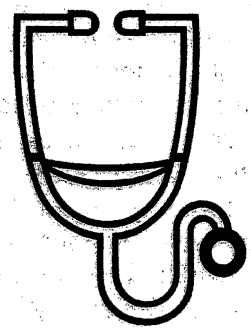
A recent report published in the *Journal of Pediatrics* describes the effects of a year of daily GH injections in prepubertal CF children who were short and underweight for age despite adequate nutritional intake (1). These subjects were compared to a matched untreated "control" group of CF children and patients were randomly assigned to the treatment or observation groups. At the end of the year, during which the intake of calories in the two groups remained similar, the GH treated subjects were taller and heavier than the untreated children, and had grown and gained weight faster. Of particular interest, the treated children required somewhat fewer hospitalizations and outpatient intravenous antibiotic treatments than the untreated children. The GH treated group also demonstrated improvement in some lung function tests, but not others. A reviewer noted that the treated group appeared to have slightly lower lung function than the control group at the beginning of the study, suggesting that the improvements with GH could have been just a return to the treated children's' usual level of lung function (2). The treated children also demonstrated improved strength of their muscles of respiration, but as this testing is dependent on effort and both doctors and patients knew which subjects were receiving GH, it could have been influenced by the treated children's desire to try harder on their breathing tests.

GH is know to "antagonize" the action of insulin. None of the treated children developed diabetes or glucose tolerance (elevated blood sugar levels) during the year of therapy. However, their insulin levels were significantly higher than those of the untreated group. The possible long term consequences of these raised insulin levels are unknown, The GH treatment did not advance the bone age excessively.

Growth hormone is now prescribed as a growth stimulant to non-GH deficient children with chronic renal disease, Turner's Syndrome, intrauterine growth retardation, and Prader Willi syndrome. It has also been used as a treatment for AIDS wasting. The recent studies of GH treatment of children with CF shows promise, but involve very small numbers and short follow-up time. Larger and longer term studies are needed to know if GH will truly be a safe and effective treatment for children with CF.

Frank B. Diamond, Jr. MD

1. Hardin DS et al. J Pediatr 2001;139:636-642
2. Bucuvalas JC. and Chenausek SD. J Pediatr 2001;139:616-618



INTERNET LIST—SGA AND GHD

ON THE HGF INTERNET SUPPORT LISTS: SGA AND GHD

rGH therapy (GH replacement therapy) has been approved, and is being administered to, infants who are small-for-gestational size (SGA). Questions arose on the HGF-PEDS list concerning the characteristics and significance of SGA, the differences between SGA and intra-uterine growth retardation (IUGR), and the safety and efficacy of rGH therapy for SGA. Below is the principal part of the response on the list with the addition of potential long-term side effects that need to be studied over the years.

Small-for-gestational age (SGA) is a subset of (IUGR). An infant is considered to be SGA when the birth body size (weight or length) is below the third percentile for gestation. By contrast, an infant is considered to have IUGR when the birth weight or length, or both, is below the 10th percentile for gestational age. "The proportion of newborns with normal birth weight and overlap between SGA and IUGR, isolated low birth weight, isolated low birth length, and combined low birth weight and length represents 2.5-3.0 % of newborns; and, 8-10 % of that population do not catch up postnatally, resulting in persistent severe height deficiency, developmental difficulties and poor outcome." *Children born with intra-uterine growth retardation (IUGR) or small for gestational age (SGA): long term growth and metabolic consequences.* Chatelain P. Endocr Regul. 2000 Mar;34 (1):33-6; Williams Textbook of Endocrinology, 9th Ed. (W. B. Saunders, Philadelphia: 1998) at p. 1455.

"Poor growth in childhood is associated with a number of later complications and early recognition may enable early intervention to improve outcomes. Approximately 20% of small for gestational age (SGA) babies remain small at two years. Most catch up growth occurs in the first 6 months and smallness at 6 months predicts later small size in the majority of cases. . . . Shortness and small head circumference at 6 months were predicted by shortness and small head circumference at birth, especially in boys. Underweight was predicted by early detection of SGA antenatally. Most SGA babies who remained small at 6 months failed to show catch up growth after birth." *Perinatal predictors of growth at six months in small for gestational age babies."* McCowan L, Harding J, Barker S, Ford C. Early Hum Dev. 1999 Dec;56(2-3):205-16.

"Studies have shown that continuous or discontinuous treatment with recombinant human GH in varying dosages accelerates growth significantly in short children born SGA, resulting in catch-up growth to values within the normal range, followed by growth along their target height percentile . . . . [However], SGA has been associated with increased prevalence of diabetes mellitus type II, hypertension, and hyperlipidemia at a relatively young age in later life. All three disorders are risk factors of cardiovascular diseases. Concern has been expressed regarding possible adverse effects of long-term GH treatment during childhood. A previous study by our group showed that in short children born SGA either with or without GH deficiency long-term treatment with supra-physiological GH dosages caused a relative insulin resistance, similar to findings in other GH-treated patient groups. Because relative insulin resistance is associated with the development of diabetes type II, follow-up of these children during long-term GH treatment is required. Data on possible effects of GH treatment on other risk factors for cardiovascular diseases during childhood are very limited in SGA children." *Body Composition, Blood Pressure, and Lipid Metabolism before and during Long-Term Growth Hormone (GH) Treatment in Children with Short Stature Born Small for Gestational Age Either with or without GH Deficiency.* Theo Sas, Paul Mulder and Anita Hokken-Koelega J Clin Endo & Metab Vol 85, No. 10 3786-3792 (2000). (Citations and footnotes removed.)

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