CAPE NEWS

Newsletter of the Indian Society for Pediatric &Adolescent Endocrinology (ISPAE)

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INSIDE THIS ISSUE:

Growth hormone Deficiency in Children

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Introduction

Short stature is a common reason for referral to Pediatric Endocrinology Clinics and the prevalence of short stature may be as common as congenital hypothyroidism. However, late referral will compromise the benefit of therapy in these children. Hence increased awareness among pediatricians, early recognition, appropriate diagnosis and advice on relevant management will improve outcome of children with short stature. This article would focus on several aspects of growth hormone deficiency (GHD).

Definition of short stature

Short stature is defined as a condition in which the height of an individual is more than 2 standard deviations (SD) below the mean for the age, sex and population group. Height velocity over 1 year > 2 SD below mean for age and sex is another criteria that would be helpful in diagnosis

Definition of Growth Hormone Deficiency (GHD)

GHD may be isolated or associated with one or more pituitary hormonal deficiency. Isolated growth hormone deficiency if caused by severe shortage or absence of growth hormone. In GHD type IA, absence of growth hormone results in severe short stature evident as short birth length or from early infancy; in type IB, very low levels of GH are seen associated with short stature but less severe than what is seen in IA, usually apparent in early or mid child hood. Type II also presents with very low levels of GH and short stature evident from early or mid childhood and in > 50% of these children, pituitary hypoplasia are seen. Type II is evident as short stature from early childhood and may be associated with immunodeficiency.

Incidence

While the prevalence of severe GHD reported was 1 in 4018 children in Scotland, the incidence of primary congenital hypothyroidism was 1 in 4350 births. Thus, GHD maybe as common as congenital hypothyroidism in some regions of the world. Prevalence of GHD in India is unknown. Analysis of case records of 1739 children attending the Paediatric Endocrine Clinic at GKNM Hospital in Coimbatore from 2011 – 2013, revealed that 76 (4.3%) of children had presented for evaluation of short stature. Amongst them, 7.9% of children had isolated GHD and an additional 6.6% had multiple pituitary hormonal deficiencies. The mean age at presentation for evaluation of short stature was 12 – 18 years and for GHD 7.8 ± 5.1 years in contrast to presentation for short stature in developed countries (8.6±4.6 years). Some of these patients had presented even after completion of growth.

Demographics at GKNMH

The sex ratio (boys : girls) was 5: 1 for GHD, and 2 : l in children presenting for evaluation of short stature.

Table. Causes of short stature seen at GKNM Hospital, Coimbatore.

	%
Physiological short stature	**46**
Familial short stature	30
Constitutional delay	16
Pathological short stature	**54**
Isolated GHD	7.9
Multiple pituitary hormonal deficiencies	6.6
Acquired hypothyroidism	7.9
Turner syndrome	6.5
Disproportionate short stature	10
Others (SGA, secondary to chronic illness, Down syndrome, etc.)	12.8
Idiopathic short stature	2.6

Clinical features of GHD

An evaluation of longitudinal heights plotted on a growth chart (along with the mid parental height) during all clinic visits would be invaluable in identifying growth faltering and help in the prompt diagnosis of GHD.Any growth chart may be used consistently.

The clinical features suggestive of GHD include a normal upper segment: lower segment ratio, midline defects, evidence of specific syndromes, doll-like facies, septo-optic dysplasia, central adiposity, poor muscle tone, hypoglycaemia in the neonatal period and micropenis. Height >2 SD and a height velocity >2 SD below mean for the age and sex of the child would be suggestive of GHD. Features of other pituitary hormonal deficiencies (TSH, ACTH, LH, and FSH) may be evident in some of these children.

Diagnosis

Diagnostic criteria for GHD vary in different countries. While the diagnosis is by a combination of clinical and biochemical GHD is some nations, GHD is diagnosed in Australia as biochemical GHD or short stature and slow growth.

Delayed bone age below -2 SD for the age and sex of the subject is often seen in children with GHD. MRI of the brain may reveal septo-optic dysplasia, pituitary abnormalities, craniopharyngioma, etc.

Growth hormone (GH) stimulation tests are performed with the usage of the following drugs for stimulation: clonidine, arginine, glucagon, L-dopa, propranolol,and rarely now, insulin. Sex steroid priming is performed prior to the stimulation tests in peri-pubertal children. Other associated hormone deficiencies such as TSH and ACTH have to be corrected with replacement of thyroxine and cortisol prior to testing for GHD. While some protocols suggest checking GHD with two provocative tests, a few others suggest the usage of one provocative test along with IGF1 and IGFBP3. A peak GH response of < 10ng/ml is diagnostic of GHD.

Management

Recombinant human GH (hGH) delivered subcutaneously for 6-7 days of the week at bed time at a dose of 1.4mg/m2/day seems to be most effective compared to other dosage regimens. Best responses are observed in children with an early start to treatment. hGH is generally continued until the completion of growth as indicated by closure of all epiphyses on the bone age x-ray or with a growth of <1cm/year over the preceding 6 months.

Follow-up

Measurement of growth velocity would be the most important aspect of follow-up along with 6-monthly IGF1, yearly bone age, pubertal monitoring and thyroid function tests. Poor response to therapy should raise the possibility of poor compliance, inadequate dosing, and GH insensitivity.

Complications

Long term mortality analysed in the EuSAGhE study in Belgium, the Netherlands and Sweden among 2543 adults (corresponding to 46556 person-years in observation) treated with hGH during childhood did not reveal any increase in cardiovascular disease or cancer. Idiopathic intracranial hypertension and slipped capital femoral epiphysis are rare associations in children treated with hGH.

Future

Injecting long acting GH once a week has proved to be efficacious in initial trials. In India, public funding of hGH therapy will greatly benefit children with GHD, improving their quality of life, and reducing the enormous financial burden on their families.

Conclusion

Regular growth monitoring is the single most important investigation that would help in prompt diagnosis of GHD, initiation of early treatment to achieve optimal outcome.

Growth hormone Therapy in children – A Patient Guide

Dr Ruchi Shah, Fellow in Pediatric Endocrinology, Mumbai

In order for a child to grow, a gland deep inside the brain, called the pituitary, must release enough growth hormone (GH). Natural growth hormone is released during deep sleep. Many factors influence the release of GH, including nutrition, sleep, exercise, stress, medications, blood sugar levels, and other hormones present in the body. When a child's body does not produce or release enough GH, he or she may have several symptoms, the most noticeable being slow or no growth or facial features that make the child look a lot younger than his or her peers. Although being small has no effect on a child's intelligence, it may cause self-esteem issues and interfere with the development of mature social skills.

How Growth Hormone Treatment Works

Once a child has been diagnosed with a condition requiring growth hormone, the doctor will discuss the pros and cons of GH therapy. The GH used in treatment is manufactured in the laboratory to be identical to that produced by the pituitary gland, so it is safe and effective. GH is given through an injection under the skin in the fat. GH can be given by a special injection device that looks like a pen. Because it is such a shallow injection, the needle is very small and does not hurt much at all.

What To Expect With Growth Hormone Treatment

The main thing to expect is growth! Although Serial monitoring of growth by your doctor will be done to demonstrate this. There may be a few other things you notice:

- Your child may outgrow his or her shoes quickly
- Your child may want to eat more. An increase in appetite is common, especially if he or she had a poor appetite before treatment.
- Your child may look skinnier for a while once height growth starts. An increase inlean body mass and decrease of fat mass are common with GH treatment.

It may take a number of years for your child to reach his or her adult height, so you should be aware that GH treatment is often a long-term commitment. Routine visits with your doctor will be needed, as will be monitoring height, weight, periodic blood tests and x-rays. Although the length of treatment varies, your child probably will have to stay on GH treatment until he or she has:

- Reached his or her full adult height
- Reached full bone maturity
- Grown less than 2 cm in the last year

Getting and Giving GH Injections

- GH injections are quick and almost pain-free, so children ages 10 and up may be able to and often prefer to give themselves their own injections.
- It is important that a parent supervises the injection to make sure the child gives the correct dosage each day. Parents should give the injections to younger children.
- Because natural growth hormone is released mainly during sleep in children, GH treatment is more effective when taken at bedtime. You may change the time occasionally, by a few hours earlier or later, but do not give before 5 p.m., except under unusual circumstances (such as leaving for a trip, a sleep-over, etc.)
- Learning how to give GH injections may sound intimidating at first, but once you and your child get used to it, it becomes just another daily habit.
- Do not make up missed injections.
- For best results, try not to miss more than once per month.

Storage

- GH must be refrigerated; letting it get too hot or too cold will decrease its effectiveness.
- If left out overnight, you may place it back into refrigerator and continue to use it.
- When travelling, keep it in the cooler provided in the starter kit for up to 10 hours, then put on ice after 10 hours. Be careful not to place GH pens directly in ice — keep them separate by placing pen in a Ziploc bag.

Injection Sites

- Use 4 of the 8 possible injection sites, and rotate them each time. The sites are back of arms, top or outside of thighs, sides of belly, and outer quadrant of buttocks.
- Document the site used nightly on a calendar.
- Document when you open a new cartridge to keep track of expiration dates and how many injections have been used out of each cartridge.

Finishing A Cartridge

- Because GH is very expensive, you should use up all of the medication in every cartridge.
- Pens will only allow you to dial to what is left of the medication. Use up the last of it, and start a new cartridge by doing a second injection with the amount missing.

Other Medications

- Since GH does not interfere with other medications, it can be taken even if your child is mildly ill (colds, flu), unless your PCP tells you to stop.
- If your child becomes seriously ill or is hospitalized, call the Endocrinology Clinic.

Possible Side Effects

Although infrequent, there are some possible side effects that you should be aware of.
They are:

- Allergic reaction, including swelling at the injection site, rash, or hives
- Hip, knee, or other joint pain
- Headache
- Progression of spine curvature in patients with scoliosis
- Temporary increase in blood sugar levels, which stops when the GH treatment stops

If the headache is persistent or severe, however, call the doctor immediately.

SIDE-EFFECTS OF GROWTH HORMONE

- **Wide safety margin**
- **Frequency : 2-3.5% / pt. yrs of treatment**
- **Side Effects**

  -Benign intracranial hypertension
  -Hypothyroidism (transient)
  -Slipped Capital Femoral Epiphyses
  -Possible Insulin Resistance or Glucose Intolerance
  -Prepubertal Gynecomastia

HISTORY OF GROWTH HORMONE

Dr. Shalmi Mehta,
Consultant Pediatric Endocrinologist,Ahmedabad

Growth hormone is an important growth promoting factor. However the importance of pituitary gland for growth was recognized in the late 19th century. Growth hormone therapy was made available for severely GH deficient children and adolescents only in late 1950s. The struggle for the discovery of GH has been difficult yet interesting. It involves the whole team of clinicians, chemists, physiologist and especially pathologists.

The first human to receive GH of any origin was a 3.5 yrs old patient with presumed GHD. He received bovine GH in 1956 by **Dr. Robert Blizzard**. He received it daily for 3 weeks, however it was eventually concluded that bovine GH did not act in humans. Thus the concept of species specific GH evolved (unlike in insulin).

Human Growth Hormone (HGH) was first prepared and studied by **Dr. Maurice Raben** from the Tufts University. **Frank Hooey** was the first patient treated with HGH in 1958. He was 17 yrs old with a height of 4 ft 3 inches and grew to 5 ft 6 inches. Prior to 1958, studies with GH were pursued primarily in rodents and lower mammals by **Choh H. Li** from Berkeley, **Alfred Wilhelmi** from Emory University and **Maurice Raben** from Tufts University. Each utilized a different extraction method to retrieve growth hormone. The collection of pituitaries was a diverse effort initially. The researchers, endocrinologists and even patients of short children requested pathologists to collect pituitaries from all autopsied patients. By 1962, Raben was receiving approximately 15,000 pitutiaries per year. Initially about 1 mg of hGH was obtained per pituitary. 1 mg of hormone was required to treat 1 patient/day hence 365 pitutiaries were needed per patient per year. From the available pituitaries, only 3 patients could receive a full course of therapy. This lead to the development of the black market competition for pituitaries.

In order to prevent this, The National Institutes of Health (NIH) in 1961, established the National Pituitary Agency (NPA) at the John Hopkins Hospital, Baltimore to collect pituitaries on a national basis and extract the hormones. In those early days, no biopotency was determined and growth hormone was dispensed and injected on a mg weight basis. The amount of hGH extracted per pituitary steadily improved. In 1977, Harbor UCLA endocrinologist **Albert Parlow** began producing a superior form of hGH using a different purification process than Raben and Wilhelmi.

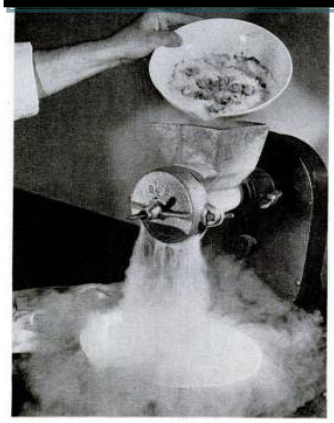
Between 1963 and 1985, the NPA supervised almost all of the GH treatment in US. During this period, 7700 children in the US and 27000 children worldwide were given GH extracted from human pituitary glands to treat severe GHD. On June 17, 1984, Stanford University pediatric endocrinologist Raymond Hintz received word from the mother of 20 yr old patient, who had been treated with hGH. He was noticed to be unsteady on his feet and had mild drooling. 6 months later the young man died and autopsy revealed spongiform encephalopathy, s/o Creutzfeldt and Jakob disease. Following this, Dr. Robert Blizzard heard from the parents of a 34 yr old former patient who died in Dallas of similar symptoms. The exhumed body revealed CJD. With more than 3000 patients receiving hGH and with the emerging cases of CJD, the NPA immediately halted all distribution of the hormone.

Meanwhile, laboratory experiments demonstrated that genes could be manipulated to produce useful new substances. Identification of the biochemical structure of GH in 1972 by **Professor Choh Hao Li** became the catalyst for the development of recombinant DNA derived human GH. **Dr. Peter Seeburg** PhD, a post doctorate fellow with Howard Goodman at the University of California, San Francisco was the first person to synthesize recombinant Human Growth Hormone. He joined the company Genetech and manufactured the first first rHGH by the name of Protropin. By October 1985, the clinical trials were successfully completed and the FDA approved rhGH for clinical use in patients with GHD.

Earlier to the discovery of rhGH, the GH treatment was reserved for only the most severe cases of GHD because of scarce supplies. With the development of rhGH an unlimited commercial source became available allowing for an ever growing list of FDA approved indications for GH use in non GH deficient children and for additional indications in adults

Prof Choh Hao Li from Berkeley

Prof Peter Seeburg Genetech



Extraction of growth hormone from pituitary glands

FDA APPROVED INDICATIONS FOR GROWTH HORMONE

Growth Hormone Deficiency	Turner syndrome
Chronic Renal Failure	SGA: No catch-up growth till 4 years
Prader Willi Syndrome	Noonan Syndrome
SHOX mutation	Idiopathic short stature

CONTROVERSIES IN PEDIATRIC ENDOCRINOLOGY

Dr J Leenatha Reddy,
Consultant in Paediatric Endocrinology & Diabetes, Rainbow Children's & Apollo Hospital , Hyderabad

Sex steroid priming for GH testing

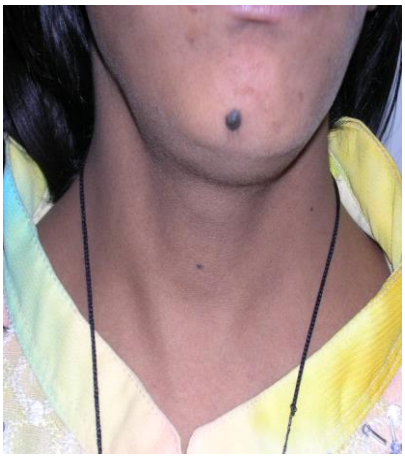
- There is no gold standard test for making the diagnosis of growth hormone deficiency, so a combination of tests are required that includes GH stimulation.
- It is important to make the accurate diagnosis so that unnecessary GH treatment can be avoided.
- The use of priming with sex steroid before stimulation test in the peripubertal age group is still very controversial.
- There is a reduction in GH secretion just before puberty and this can cause difficulty in differentiating the physiological event from GH deficiency.
- Studies have shown that sex steroid priming improves the diagnostic accuracy with reduction in false diagnosis of GH deficiency.
- There is no agreement on the appropriate age for priming, but it should be considered in short children with a bone age of at least 10yrs and above.
- Estrogen can be used in girls and in boys (less the 11yrs), IM testosterone can be given as a single injection for boys above 11yrs.
- There are no major side effects reported by using sex steroids for priming.
- At the end it is the individual consultants decision as to whether priming is required or not until a consensus is reached among endocrinologists.

Growth hormone treatment for Idiopathic Short Stature (ISS)

- ISS is one of the most common reasons for children being seen in the endocrine clinic is short stature.
- ISS is defined as height < -2SD without evident cause after adequate diagnostic evaluation.
- The condition represents 60 – 80% of the population of short children seen in clinic.
- This definition will include constitutional delay in growth and puberty and familial short stature.
- Growth hormone can improve short stature, it should be considered in the treatment of children with ISS. In 2003, FDA approved the use of GH in children with ISS.
- Studies have shown an increase in height by 3.5 – 7.5cms with GH treatment over a duration of 4 -7yrs.
- The best response is seen in children who are treated at a younger age and showed a good growth velocity in the first year of treatment.
- The risk of adverse events for children treated with GH for ISS was similar to that seen in children with GH treatable conditions.
- Management of ISS is controversial, but GH treatment can be considered if parents understand the possible adverse events and that the response can unpredictable.

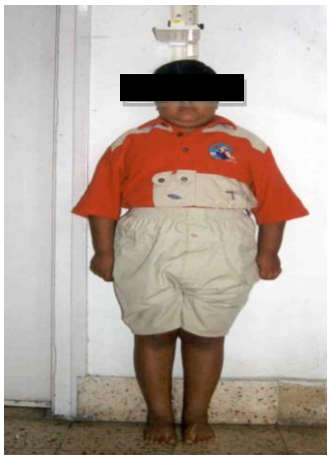
PICTORIAL QUIZ FOR MEMBERS (solution page 14)

IMAGE: 1



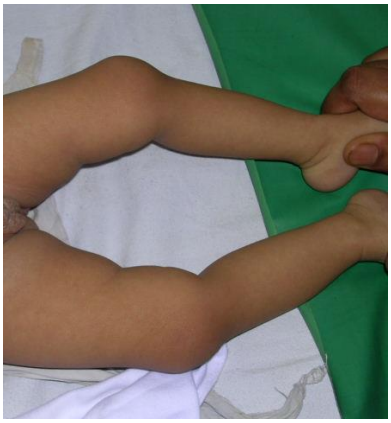
Finding in a short girl child

IMAGE: 2



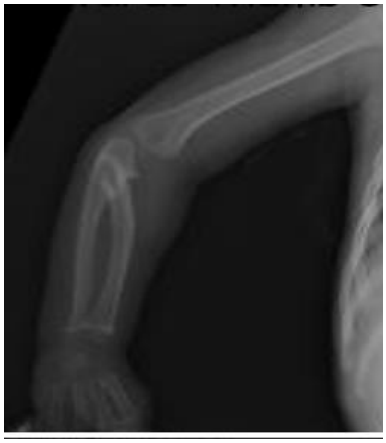
Obesity that will respond to GH therapy

IMAGE: 3



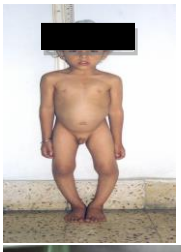
Clinical finding in the above image

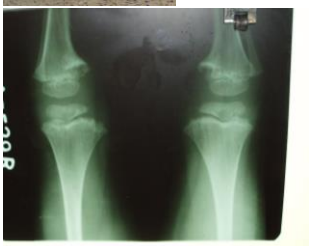
IMAGE: 4



Radiological finding in a short child

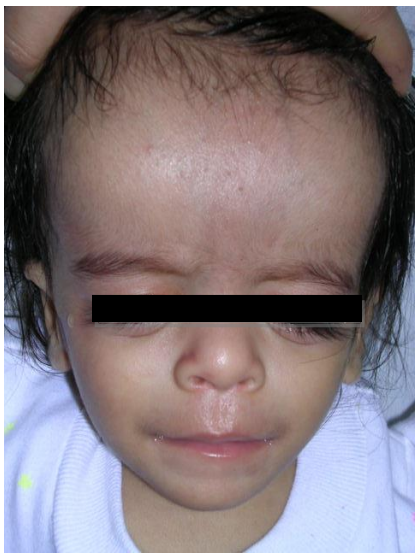
IMAGE 5





Cause for short stature

IMAGE 6



Syndromic cause for short stature

DRUG INFORMATION PAGE – GROWTH HORMONE

Dr Bhanu K Bhakri
Consultant in Paediatric Endocrinology & Diabetes, AIIMS, Hrishikesh

The conventional replacement dose of rGH for GH deficiency in children is 0.18–0.35mg/kg/wk. It is further titrated based upon response to therapy. Higher doses, up to 3 to 4 times the conventional doses, are required for certain conditions like short stature in children born SGA.

The reported adverse reactions include injection site reaction, hypersensitivity, fluid retention, intracranial hypertension and pancreatitis. The patients on rGH should be monitored for glucose intolerance, hypothyroidism, recurrence of pre-existing neoplasm and musculoskeletal conditions secondary to rapid growth. Growth hormone is contraindicated or its cautious use is advised in acute critical illness, hypersensitivity, active malignancy, diabetic retinopathy, marked obesity with sleep apnea and severe respiratory impairment.

The currently available GH preparations are essentially equivalent, but vary in preparation and delivery. They include lyophilized GH that is mixed with a sterile diluent, premixed GH solutions in a multiple dose vial, GH pen/needle delivery system, AND a non needle delivery system. (1 mg of rGH = 3 units)

Name	**Manufacturer**	**Preparation**	**Approx MRP (Rs per IU)**	**Contact details (India)**
Eutropin	LG	4 IU/vial × 1, 5, 10 vials/pack 15 IU/vial × 1 vial/pack	200	0124-4830000 info@lglsi.com
Humatrope	Eli Lilly	Pen device with 6mg, 12 mg and 24 mg cartridge and vial (5 mg) for use with syringe and needle	415	1-800-545-5979
Genotropin	Pfizer	Reusable pen, prefilled syringe 4 IU x 1's (1550 INR) 12 IU x 1's (5000 INR) 16 IU x 1's (6400 INR) 36 IU x 1's (13200 INR)	400	1-800-879-3477
Norditropin	Novo	Disposable pen device 5 mg/1.5 ml 10 mg/1.5 ml 15 mg/1.5 ml	450	Telephone : +91 80 4030 3200 Fax No. : +91 80 4112 3518 email : prindia@novonordisk.com
Siazen	Merck	Powder for injection in vial: 3.33 mg	375	Tel: +91 22 66639800, +91 80 39282500 Fax: +91 80 28396345
Headon	Ranbaxy	Vial	200	+91-1244135000 +911244135143 corporate.communications@ranbaxy.com

PEDENDOSCAN

Dr Sachin Mittal, Mumbai

Growth Hormone therapy in GHD

Reference Curve for the First-Year Growth Response to Growth Hormone Treatment in Prepubertal Children with Idiopathic Growth Hormone Deficiency: Validation of the KIGS First-Year Growth Response Curve Using the Belgian Register for the Study of Growth and Puberty Problems. Straetemans S et al. Horm Res Paediatr. 2014 Mar 28.

The observed first-year HVs decreased significantly with age with no effect of GH dose or gender. Distance to target height, severity of GHD and occurrence of multiple pituitary hormone deficiencies had a positive effect on the calculated HV SDS.

Response of Indian Growth Hormone Deficient Children to Growth Hormone Therapy: Association with Pituitary Size. Khadilkar VV, Prasad HK, Ekbote VH, Rustagi VT, Singh J, Chiplonkar SA, Khadilkar AV. Indian J Pediatr. 2014 Apr 29.

Children with hypoplastic pituitary (pituitary height<3 mm) had more severe height deficit & a retardation of skeletal maturation at baseline as compared to children with normal pituitary heights. After one year of GH therapy, a higher improvement in height for age Z scores and percentage change in height for age Z scores was seen in patients with hypoplastic pituitaries.

Characterization and Prevalence of Severe Primary IGF-1 Deficiency in a Large Cohort of French Children with Short Stature. Teissier R et al. Eur J Endocrinol. 2014 Mar 24.

This study aimed to characterize and assess the prevalence of severe primary IGFD in a large cohort of 2546 patients evaluated for short stature in France. IGFD was defined by height ≤-3 standard deviation score (SD), serum IGF-1 levels< 2.5th percentile, GH sufficiency, and absence of causes of secondary IGFD. 30(1.2%) patients, met this criteria. The results indicated that only 4 of the 30 children were definite or possible candidates for rhIGF1 replacement therapy.

Growth Hormone therapy in SGA

Three Years Growth Response to Growth Hormone Treatment in Very Young Children Born Small for Gestational Age - Data from KIGS. Boguszewski MC et al. JCEM 2014 Apr 23

Median height SDS significantly increased from -3.9 at start to -2.2 SDS at 3 yrs in the 2-4 yrs group and from -3.4 SDS to -2.0 SDS in the 4-6 yrs group.

The Impact of Long-Term Growth Hormone Treatment on Metabolic Parameters in Japanese Patients with Short Stature Born SGA. Kappelgaard AM et al. Horm Res Paediatr. 2014 Feb 11

Data were analysed from a 156-week extension of a 104-week multicentre, randomised, double-blind, parallel-group trial involving 65 SGA children (age 3-<8 years) who received 33 µg/kg/day (n = 31) or 67 µg/kg/day (n = 34) GH for 260 weeks. A positive correlation between Δheight SDS and ΔIGF-I SDS was observed. Insulin and glucose levels were generally unaffected. Favourable changes in lipid profiles were recorded, which were maintained for the study duration.

Growth Hormone therapy in Turner Syndrome

Comparison of Body Surface Area versus Weight-Based Growth Hormone Dosing for Girls with Turner Syndrome. Schrier L et al. Horm Res Paediatr. 2014 Apr 23

The authors concluded that the cumulative dose and cost were significantly lower if the GH dose was adjusted for m(2) BSA and it is at least as efficacious as dosing per kg BW, and is more cost-effective.

Safety and Efficacy of Oxandrolone(Ox) in Growth Hormone-Treated Girls with Turner Syndrome: Evidence from Recent Studies and Recommendations for Use. Sas TC et al. Horm Res Paediatr. 2014 Apr 25:289-297.

The addition of Ox to GH treatment leads to an increase in adult height, on average 2.3-4.6 cm. If Ox dosages <0.06 mg/kg/day are used, side effects are modest. The most relevant safety concerns are virilization (including clitoromegaly and voice deepening) and a transient delay of breast development.

Growth Hormone therapy in ISS

Growth hormone regimens in Australia: analysis of the first 3 years of treatment for idiopathic growth hormone deficiency and idiopathic short stature. Hughes IP et al. Clin Endocrinol (Oxf). 2012 Jul;77(1):62-71

A lower starting dose is offset by the initiation of treatment at younger ages. Incremental dosing does not appear optimal. A first-year dose of 6·4-6·9 mg/m(2)/week for GHD and 8·9 mg/m(2)/week for ISS with early commencement of GH treatment may be most efficacious.

Characteristics of children with the best and poorest first- and second-year growth during rhGH therapy: data from 25 years of the Genentech national cooperative growth study (NCGS). Kaplowitz PB et al. Int J Pediatr Endocrinol. 2013 May 1;2013(1):9

Using National Cooperative Growth Study (NCGS) data, characteristics contributing to responsiveness to rhGH and the pattern of change from years 1 to 2 were determined by computing Height velocity standard deviation score (HV SDS) for 2 years for prepubertal children with idiopathic GH deficiency & idiopathic short stature (ISS). For IGHD, multiple characteristics contributed to best first-year response but for ISS, best first-year HV SDS was associated only with BMI SDS and inversely with pre-treatment HV.

Dose-sparing and safety-enhancing effects of an IGF-I-based dosing regimen in short children treated with growth hormone in a 2-year randomized controlled trial: therapeutic and pharmacoeconomic considerations. Cohen P et al. Clin Endocrinol (Oxf). 2014 Jan 16

The authors concluded that IGF-I-based GH dosing, targeted to age- and gender-adjusted means, may offer a more dose-sparing and potentially safer mode of therapy than traditional weight-based dosing.

PUBLICATIONS FROM OUR MEMBERS

Dutta D, et al. Vitamin-D supplementation in prediabetes reduced progression to type 2 diabetes and was associated with decreased insulin resistance and systemic inflammation: An open label randomized prospective study from Eastern India, Diabetes Res Clinical Pract (2014)

Meher D, Dutta D, et al. Effect of a mixed meal on plasma lipids, insulin resistance and systemic inflammation in nonobese Indian adults with normal glucose tolerance and treatment naive type-2 diabetes. Diabetes Res Clin Pract (2014),

Dutta D, et al. Serum vitamin-D predicts insulin resistance in individuals with prediabetes. Indian J Med Res 2013; 138: 121-128

Dutta D, Choudhuri S, Mondal SA, Mukherjee S, Chowdhury S. Urine albumin creatinine ratio predicts prediabetes progression to diabetes and reversal to normoglycemia: Role of associated insulin resistance, inflammatory cytokines and low vitamin-D. J Diabetes 2013 Nov 20.

Ramkumar S,et al. Genu valgum and primary hyperparathyroidism in children. International Journal of Case Reports and Images 2014

Vaman V. Khadilkar et al Response of Indian Growth Hormone Deficient Children to Growth Hormone Therapy: Association with Pituitary Size. Indian J Pediatr 2014

Khadilkar A et al. Waist circumference percentiles in 2-18 year old Indian children. J Pediatr March 2014.

WELCOME TO OUR NEW MEMBERS

Atul Kumar Heda, Bhilwara, Rajasthan
Abraham Paulose, Kolenchery, Kerala
Swati Kanodia, Delhi
Ravindra Kumar , Delhi
Vishnu Agarwal
Deepa Anirudhan, Thrissur, Kerala
Anita Singh, Jaunpur, Uttar Pradesh
Ashish Saini, Ghaziabad, Delhi NCR
Saurabh Uppal, Bengaluru

CONGRATULATIONS

A.V. Gandhi award for Excellence in Endocrinology under the category"Best Clinical Accumen" in the ICE update in Hyderabad –

Dr Ramkumar S, Apollo Children's Hospital, Chennai

APPES meeting abstract submission Last date – 8/6/2014

Visit APPES website for further details

SOLUTION TO PICTORIAL QUIZ

1. **Turner syndrome**
2. **Prader Willi syndrome**
3. **Hemi hypertrophy**
4. **Madelung deformity**
5. **Metaphyseal dysplasia**
6. **Russel silver syndrome**

UPCOMING ISSSUE: PRECOCIOUS PUBERTY

PATIENT RELATED ACTIVITIES BY ISPAE MEMBERS

CALICUT (Dr M Vijaykumar)

A diabetic camp was held at the department of Pediatrics Govt Medical College, Kozhikode on Republic day.

Medical student's organization of Government Medical College, Kozhikode (Imprints) has decided to sponsor glucometers and strips to children with type 1 diabetes for one year. Student's union of Government Medical College Kozhikode, IAP Kozhikode branch and ISPAE jointly organized a get together of children with type 1 diabetes on 12th March at Aurora Auditorium of Government Medical College, Kozhikode. This function was followed by various cultural activities by the medical students and children with diabetes.

ISPAE, in association with IAP Calicut branch and department of Pediatrics government medical college, Calicut, celebrated Down syndrome day on March 21 at Government Medical College auditorium .Dr Riaz, head, department of pediatrics inaugurated the program. About 100 affected children with their parents attended the function. Dr Vijayakumar and Dr Krishnakumar took classes for parents regarding the follow up of these children .It was followed by painting competition and cultural activities.

INDORE (Dr Sanjay Jhulka)

A Type 1 support group meet was organized on the 13th april. We had dance on Bollywood songs and kids were trained by Mr Tarun Barod Indore's answer to Mr Shaimak Dawar. We had games and educational interactions. Aim was to have Fun, Interaction and Educate the children and their parents.

BANGALORE (Dr Santhosh O S)

On the World Diabetes day, drawing competition was organized for children with type 1 diabetes. Several children participated with joy and excitement. The theme for drawing was " life around Diabetes" . Every child received complimentary drawing tools and Cash prizes were given to children with best expressive drawing. By this few children who were unhappy, struggling and still in denial of accepting their diabetes condition were identified and provided necessary support.

CHENNAI (Dr Hemchand K P)

A camp was conducted for obese children by Senior Pediatrician Dr Rajamuralee and Pediatric endocrinologist Dr Hemchand K P. The program consisted of education and lectures by a pediatrician, endocrinologist, dietician and Pediatric physiotherapist.

KANPUR (Dr Anurag Bajpai)

GROW India Day, Feb 2 2014 - First GROW India day was celebrated on February 2 2014. The key events included a parent and teacher sensitization workshop about growth, release of "Road to Growth" book, release of documentaries on celiac disease, hypothyroidism and growth hormone deficiency, launch of celiac, thyroid, growth hormone and type 1 DM support group, announcement of websites on growth and type 1 DM and mobile applications for growth and growth exhibition to increase awareness about growth disorders. The program was attended by 148 teachers from 60 schools across the region and 140 families of children with growth disorders.

GROW India School Initiative, Fatehpur, March 12 2014 - GROW India School Initiative was launched in Fatehpur with participation of twenty schools. It was decided to launch growth monitoring in collaboration with GROW India in these schools.

ACADEMIC ACTIVITIES BY ISPAE MEMBERS

COIMBATORE (Dr Meena Mohan)

Pedendocon 2014, the 2nd Paediatric Endocrinology CME, was successfully conducted on 23.02.14 at Aloft Hotel in Coimbatore. 75 participants, both paediatricians and trainees were benefited from the academic feast. The faculty members include: Prof Zulf Mughal, Dr Senthul K S (UK), Dr Vaman Khadilkar (Pune), Dr P Ragupathy (Bengaluru) and Dr Meena kumara Mohan. The topics covered include the entire specturem of pediatric endocrinology. It was an academic feast for all those who attended.

SITAMRHI (Dr Sanjay Kumar)

A CME was organized jointly by Sitamrhi branch of IAP and Sitamrhi branch of FOGSI on pubertal disorders on 13th April 2014 in Hotel Sitayan. The topic discussed include: Delayed puberty (Dr Lata Gupta) and Precocious puberty (Dr Sanjay Kumar)

CHENNAI (Prof P Venkatraman and Prof P G Sundarraman)

A one day conference Pedendo 2014 was organized in Sri Ramachandra Medical College University on February 14 2014 by Prof PG SUndarraman and Prof P Venkatraman. The topics included the entire spectrum of pediatric endocrinology and a ready reckoner in pediatric endocrinology was released on this occasion. The topics were followed by debates on controversial issues in pediatric endocrinology and capsule presentations by post graduates.

CHENNAI (Dr Hemchand K P)

A guest lecture on "current concepts in Vitamin D replacement" by Prof Zulf Mughal from Manchester UK. The program held at Mehta Children's hospital was attended by practicing pediatricians and DNB Pediatric trainees.

RAIPUR (Dr Hari Mangtani)

A Pediatric Endocrine Update was organized in Raipur on 22nd and 23rd of March. It was a state level event done under the banner of Chhattisgarh IAP. More than 80 Pediatricians from all over the state attended the conference. The faculty members Dr Sudha Rao,Dr Archana Arya, Dr Shalmi Mehta, Dr Hemchand Prasad, Dr Hari Mangtani,

KANPUR (Dr Anurag Bajpai)

Puberty Workshop, FOGSI Gurgaon, Feb 22 2014

GROW India organized it's III puberty workshop under the banner of FOGSI Gurgaon. The program used case based approaches to highlight key issues in assessment and treatment of early and delayed puberty in girls. The workshop was conducted by Dr Ritu Jain, Dr Yuthika Bajpai and Dr Anurag Bajpai and attended by 70 gynecologists.

Glucose disorders workshops, IAP Gurgaon, March 8 2014 and Lucknow Academy of Pediatrics, April 13 2014

Glucose disorder module of GROW Society was implemented in association with IAP Gurgaon by Dr Anurag Bajpai, Dr Deepak Ahuja and Dr Sanjay Niranjan. The module covered key aspects of Type 1 DM and hypoglycemia.

ISPAE Travel Award 2014 Guidelines –

Supported by a grant from Ranbaxy Ortholands

Indian Society for Pediatric and Adolescent Endocrinology (ISPAE) announces the invitation of applications for the ISPAE Travel Award 2014. The objective of the award is to inculcate interest and disseminate knowledge in pediatric endocrinology among pediatricians and physicians with interest in pediatric endocrinology. The process and procedures are as follows:

1. The award is meant as a reimbursement to partially defray the expenses of the selected candidate in spending two to three months (2-3 months) with a Pediatric Endocrinology centre *or* an Endocrinology centre with facilities for exposure and training in pediatric endocrinology.

2. The training centre should have at least (1) two pediatric endocrinologists or (2) one pediatric endocrinologist and one adult endocrinologist interested in pediatric endocrinology as faculty/trainers. The centers which have on-going training and/or fellowship programs would be preferred. For more information please visit www.ispae.org.in

3. The applicant must communicate with the training centre/ mentor in advance. Documentation of acceptance by the Centre/ mentor/ institute concerned should be submitted along with the application.

4. It is planned to grant travel award to 2 persons this year.

5. The award consists of an amount of Rs 25,000/-, and will be given after the **candidate successfully completes his/her tenure** and **course report signed by the mentor which is submitted to the executive committee of ISPAE and is approved.**

6. The applicant must be a member of ISPAE. Those who are not members of ISPAE would have to first become members to be eligible for the **grant.** Please check the details regarding ISPAE membership at our web-site www.ispae.org.in

7. Preference will be given to young faculty members, who are in a position to start pediatric endocrine clinics in their hospital, or are already running a clinic but have not had the benefit of a formal training program. However, the award is not limited to this group. Those who have done endocrinology or pediatric endocrinology training earlier and wish to do a refresher course in pediatric endocrinology may also apply.

8. Upper age limit is 45 years.

9. The application must be accompanied by a recommendation note from one active ISPAE member.

10. It is desirable that the applicant plans for & submits a brief synopsis of a research plan that he/she would like to commence during the period .

11. **Applicants should send in their applications for the award by 30th June 2014.** The awardees will be announced by 31st July 2014. Travel award granted will have to be availed of during the financial year 2014-15.

12. Interested candidates must submit their applications in the prescribed application form. This application must be forwarded by the Head of the Department, if the applicant is a student or trainee and those working in a government institutions.

    Completed applications should be sent by email to Dr Sudha Rao (Secretary, ISPAE) and Dr Ganesh Jevalikar (Joint Secretary ISPAE), at c_sudha@hotmail.com and gjevalikar@gmail.com . Hard copies should be additionally sent to Dr Ganesh Jevalikar ,**Consultant, Division of Endocrinology and Diabetes, Medanta The Medicity, Sector 38, Gurgaon (Haryana)- 122 001.**

Application for Interest to host ISPAE 2015

Application is invited from members interested to host the next Biennial Meeting of ISPAE to be held in 2015. For the successful conduct of the meeting, following requirement are laid down.

1. Meeting should be held in between Sep 2015 to Nov 2015. Clash with any major society meetings are best avoided. This meeting will be held over 2 ½ to 3 days.
2. Application should name the team members who will be involved in the local arrangement/conduct of the meeting. Minimum of 2 ISPAE members should be in that city or within a short distance and be part of the local organizing team.
3. The proposed host city must have reasonably good domestic flight connections.
4. Requirements of the host venue
   a. Room to seat up to 300 delegates.
   b. Good audiovisual facilities.
   c. Space for trade exhibition.
   d. Area for Poster display for up to 40 posters.
   e. Area for lunch, morning/afternoon tea service
   f. Small 2-3 meeting/ conference rooms to seat 8-10 persons.
5. The local organizing team should be able to generate sufficient funds for successful conduct of the meeting. ISPAE will have no financial liability for conduct of the meeting but will provide seed money up to Rs. 50,000. This money should be returned within 4 weeks of completion of the meeting or preferably earlier.
6. The conference accounts must be in ISPAE PAN number and will be audited by ISPAE auditor and money handling should be as per ISPAE bylaws.
7. Before the main scientific meeting, pediatric endocrinology training (PET) workshop will be held. It will be attended by maximum of 30 participants and 6-10 faculty members/ organizers. This will be a 3 days residential training program. It is to be held at a venue close to the main meeting venue. Budgeting this entire event will have to be 1ooked after by local organizing team.
8. ISPAE will appoint three members including Chairman Scientific Committee to coordinate the scientific program for the main meeting PET organizing team will consist of members appointed by ISPAE and will include the Chairman and Secretary of the Local Organizing team. All the members will work closely to make the program a success.

Kindly forward the application with details by email to Dr Vaman Khadilkar, President ISPAE and Dr Sudha Rao Secretary, ISPAE at vamankhadilkar@gmail.com and c_sudha@hotmail.com