CAPE NEWS

Newsletter of the Indian Society for Pediatric and Adolescent Endocrinology (ISPAE)
www.ispae.org.in

December, 2017
Volume 21, Issue 3

Contents

1. From the Editor's desk
2. ISPAD 2018 meeting
3. Hearty welcome to new members
4. ISPAE Annual Report 2017
5. Pubertal induction in boys
6. Prolactinoma in children and adolescents
7. Is there a need for oxytocin replacement in craniopharyngioma survivors?
8. Tumoral calcinosis: a challenging condition in children
9. A rare case of solitary toxic thyroid nodule in a young child
10. Pedendoscan
11. Photoquiz
12. Conference Report: 5th ISPAE Biennial Meet 2017, Coimbatore
13. ISPAE - PET / APPES Joint Fellows' School 2017: an Enriching Unforgettable Experience.
14. Pearls from ISPAE-Biennial Meet 2017
15. Activities by ISPAE members
16. Fellowships and Awards to ISPAE members
17. Answer to photoquiz

From the Editor's desk

Dear members,

This new issue of CAPENEWS, brings you three interesting mini-reviews on various aspects of pituitary disorders in children. In the first mini-review, Dr Virendra A Patil has discussed the newer concepts of pubertal induction in boys, especially those with hypogonadotropic hypogonadism. The second mini-review by Dr Shrikrishna V Acharya is focussed on the management of prolactinoma in children and adolescents, which is often missed or misdiagnosed. In the third mini-review, I have discussed the emerging role for oxytocin in survivors of craniopharyngioma.

More interestingly, we have case reports of a child with recurrent tumoral calcinosis requiring multiple surgeries, and a rare case of toxic solitary thyroid nodule in a young child.

I am sure all those interested in pediatric endocrinology will find this issue useful. I thank all my team members, Dr Rajni Sharma, Dr Sachin Mittal, Dr Sweta Budyal, and Dr Vani HN for their active participation in designing this issue and for their valuable contributions. My special thanks to Dr Anju Virmani, for her whole hearted efforts to make this issue a fantastic one.

Dr Vijaya Sarathi, Editor, CAPENEWS

We are excited that the International Society for Pediatric and Adolescent Diabetes, ISPAD, is coming to India for its 44th Annual Conference, ISPAD 2018, combined with ISPAE's mid-term meeting, from 11th-14th October 2018 (Thu-Sun), in Hyderabad, with the theme "Reaching the Unreached". Registration will be available online from January 2018, but till mid-January, is available at a 20% discount, for which the form is appended in this newsletter. Please email the filled form to ispad2018@gmail.com, or virmani.anju@gmail.com.

Hearty Welcome to New ISPAE Members

Aishwarya Krishnamurthy	Amutha Elangovan	Anjan Bhattacharya
Archana Sarda	Banshi Saboo	Chaitra Kalale Ravi
Deepak Dalal	Diksha Gajanan Shirodkar	Divya Mariam Mathews
Grishma Gaurav Ganeshwar	Jasmine Kaur Ahuja	Kaarthikeyani Sankar
Kakali Roy	Kiran Meena	Mona Sood
Nishant Rangrez	Priya Karkera	Rajiv Sinha
Sarita Ann Bosco	Sanjeet Jaiswal	Sheryl Salis
Shivani Dogra	Shrinath Shetty	Sudip Sengupta
Vasundhara Chugh	Vinayak Ramrao Harale	

ISPAE Annual Report 2017

Dear All,

Warm regards for the festive season.

Our team took over in the dawn of this year with the responsibility of carrying forward the wonderful work of previous office bearers. The year has been a very exciting one for our young society with a number of new initiatives and development.

There has been a significant rise in our membership with joining of 27 life and 21 associate members, taking our membership to 503 (303 life, 196 associate and 4 honorary).

Academics has always been at the forefront of ISPAE's priorities, and a number of initiatives were undertaken this year in this direction. ISPAE guidelines for Congenital Hypothyroidism under the stewardship of Dr Vijayalakshmi Bhatia are under publication in the Indian Journal of Pediatrics. Consensus Guidelines on the assessment and management of growth hormone deficiency are being developed by a committee led by Dr Anju Seth and Dr Rajesh Khadgawat. A wonderful Vth Pediatric Endocrine Training program was held under the able leadership of Dr Sudha Rao at The Coco Lagoon, Pollachi in the outskirts of Coimbatore. This time the PET program was merged with the APPES Fellows' School, providing an opportunity to national and international fellows to interact with stalwarts in Pediatric Endocrinology. The organizational brilliance of Dr Ahila, Dr Raghupathy and the entire ISPAE 2017 was evident in this academic feast that encompassed all aspects of Pediatric Endocrinology. The mantle of ISPAE biennial meeting has been passed to the able hands of Dr Subrata Dey, heralding a new horizon for ISPAE with the first meeting in the Eastern region in 2019. Dr Sandhya Kondpalle successfully completed her ISPAE observership at Bharti Vidyapeeth, Pune.

This year witnessed a number of international collaborations for ISPAE. The formation of the International Consortium of Pediatric Endocrinology (ICPE), with ten regional and two global societies, is a positive step in the direction of bringing all stakeholders of Pediatric Endocrinology across the world under one umbrella. Through ICPE, ISPAE would partner with other societies in the conduct of international meetings and development of clinical practice guidelines. Dr Vandana Jain has been nominated for PES international guidelines in neonatal diabetes. In a first, two of our young members -Dr Shreya Sharma from BJ Wadia Children's Hospital, Mumbai, and Dr Suchit Gupta from SGPGI, Lucknow - represented ISPAE at the Global Fellows' School at Washington DC. ISPAE is partnering with ISPAD in the organization of ISPAD 2018 meeting at Hyderabad under the leadership of Dr Anju Virmani – this will also be our mid-term meeting.

The year 2017 marked the unveiling of ISPAE Type 1 Diabetes (T1D) Initiative to improve lives of children with diabetes. The Initiative, with immense support from the entire General Body, has been working towards increasing awareness, advocacy, health care provider empowerment, resources, and research for T1D in children. ISPAE has been actively advocating the rights of children with diabetes, with a highly successful online petition demanding declaration of T1D as a disability. A dossier for this is being prepared, to be presented to the Government. The advocacy group is also working towards development of a national registry and support group for T1D. E-resources in the form of mobile applications, multi-lingual educational books, awareness videos and online content have been prepared. As part of the Initiative, a number of highly successful programs were conducted by members across the country on the occasion of World Diabetes Day (WDD). In a first, the best WDD activities were awarded at ISPAE 2017 - Dr Hemchand Prasad (Mehta Children's Hospital, Chennai) won the first prize, Dr Meena Mohan (Masonic Hospital, Coimbatore) the second prize, and Dr Preeti Dabagdhao (SGPGI, Lucknow) the third prize. The Initiative plans to complete the pilot phase this year, with nation-wide implementation next year.

Charity activities have been integral to ISPAE and this year the Department of Endocrinology, SGPGI, Lucknow, and Dr Meena Mohan, Masonic Hospital, Coimbatore, received the ISPAE Charity Awards for their wonderful work. A number of charitable and public awareness activities related to growth, hypothyroidism, diabetes (mentioned above) and obesity were conducted across the country by our members over the year.

Last year has witnessed a slew of academic activities by ISPAE members. The year started with a sizeable endocrine presence in PEDION at Bengaluru. This was followed by *Pedendo* in Chennai by Dr Hemchand, *First Advanced Pediatric Endocrine Symposium* and *Sixth Practical Pediatric Endocrinology Course* at Kanpur, *Pediatric Endocrinology for Postgraduates* by Dr P Raghupathy and Dr Amarnath Kulkarni, a *Master Class in Pediatric Endocrinology* in Bangalore by Dr Shaila Bhattacharya, a *Growth Symposium* in Bangalore by Dr Raghupathy, *Third AIIMS-LHMC CME* in Delhi by Dr Rajni Sharma and Dr Anju Seth, a *National Symposium* in New Delhi by Dr IPS Kochar, besides numerous regional and state level CMEs.

We sincerely thank the entire membership of ISPAE for actively participating in all activities, and hope to continuing working in the next year with your support. Special thanks to the executive members and advisors for shouldering a large chunk of activity. Last but definitely not the least, immense thanks to our president Dr Anju Seth for her problem-solving ability, and Joint Secretary Dr Rajni Sharma for the wonderful execution of ISPAE activities.

Anju Seth
President

Anurag Bajpai
Secretary-Treasurer

Pubertal Induction in Boys

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Introduction

Puberty is a phase in the continuum of development and maturation of hypothalamic-pituitary-gonadal (HPG) system which starts in foetal life, and completes with full maturation of sexual and fertility potential. Failure of this development leads to hypogonadism, which can be hypo-gonadotropic hypogonadism (HH) (with hypothalamic or pituitary defects), or hyper-gonadotropic hypogonadism (with gonadal defects). Pubertal induction is essential in both types of hypogonadism to achieve development and maintenance of secondary sexual characters. Other goals of pubertal induction are stimulation of statural growth, promotion of bone health, as well as psychological and emotional well-being. In HH, testicular growth and induction of fertility are the additional goals of therapy [1].

Physiology of puberty in boys

Fetal testosterone production is driven by maternal human chorionic gonadotropin (hCG) in the first two trimesters. The fetal HPG axis is activated around the third trimester and remains active for the first 6 months of neonatal life. This is called mini-puberty. It leads to proliferation of germ cells and Sertoli cells (SCs). As each SC supports limited number of germ cells, this event has long-lasting implications on future fertility potential. Intra-testicular testosterone is formed in mini-puberty but no spermatogenesis occurs, as SCs lack androgen receptors during infancy. Thereafter, the HPG axis

remains quiescent till puberty. The normal timing of pubertal onset in boys is between 9 and 14 years. At the time of puberty, FSH stimulates proliferation of immature SCs and spermatogonia, whereas LH stimulates Leydig cells to produce testosterone. FSH, in concert with intra-testicular testosterone, starts the process of spermatogenesis. Patients who lack mini-puberty will have severe phenotype of congenital hypogonadotropic hypogonadism (CHH) with testicular volume (TV) of < 4 ml [1,2].

Timing of pubertal induction in boys

It is advised not to start pubertal induction before a skeletal age of 12 years or a chronological age of 14 years. Earlier induction can be considered if specific signs like anosmia, midline defects are present [1,3].

Induction with testosterone

Several preparations of testosterone are available, in injectable, oral or transdermal forms. Testosterone enanthate, cypionate and propionate are commonly used injectable esters. Testosterone enanthate has longer duration of action than testosterone propionate. Puberty induction can be initiated with 50 mg intramuscular testosterone injections at monthly intervals, which are increased gradually in 50 mg increments every 6–12 months. After reaching a monthly dose of 100-150 mg, inter-dose interval can be reduced to every 2 weeks. Adult testosterone replacement dose is up to 200 mg every 2 weeks. Gradual escalation of testosterone dose is important to prevent premature closure of long bone epiphyses that would compromise adult height, while affording time for psychosexual development, and minimizing the risk of precocious sexual activity [4]. Oral preparations have to be taken 2-3 times a day, and scrotal patches are too large for application in adolescents [3]. Transdermal testosterone formulations are not yet approved for pubertal induction in boys with delayed puberty [5].

Advantages of sex steroids include low-cost, well-accepted, adequate virilization and convenience due to longer inter-dose intervals. The main disadvantage is fluctuations in blood testosterone levels. Testosterone treatment can achieve virilisation but not puberty in the true sense, as it does not lead to testicular enlargement and spermatogenesis [3].

Induction with gonadotropin based therapy

The goals of therapy in adolescent or young adult males with HH include the induction of normal puberty and testicular development, that will allow future fertility. In patients with HH, fertility induction has been safely and effectively achieved with gonadotrophin therapy (GnT) initiated in adulthood [6]. So, the need to induce puberty using gonadotropin based therapy before adulthood can be challenged. However, psychological distress associated with low testicular volume can be alleviated by using gonadotropin therapy, which improves quality of life.

Shiraishi et al compared the effects of hCG and FSH therapy (n=31) and testosterone therapy (n=6) in HH (both congenital and acquired HH) males aged 16-52 years. Quality of life assessment showed that GnT but not testosterone treatment, could prevent negative physical and psychological sequelae [7]. This finding is replicated by Rohayem et al in their recent study of 60 male HH patients of 14-22 years [6].

Moreover, when GnT is initiated in adulthood, appearance of sperms may take 12 to 24 months in patients with severe phenotype. However if induction is done in adolescence, it prevents the delay in time for spermatogenesis when fertility is desired during adulthood. In accordance with this, the European consensus statement provides the option of pubertal induction with GnT (hCG alone or combined with FSH) or pulsatile GnRH [1].

Pulsatile GnRH therapy

Pulsatile GnRH therapy can induce virilization as well as spermatogenesis in HH subjects. It requires an infusion pump for pulsatile GnRH infusion. The dose ranges from 25-600 ng/kg, every 2 hours, to mimic physiologic GnRH pulsatility, and is titrated as per the testosterone response. It is cumbersome compared to GnT, and does not offer any advantage over it; on the contrary it is not effective in patients with *GNRHR* mutation and pituitary damage [8,9].

Gonadotropin therapy (GnT)

Different options for GnT include hCG monotherapy, combination of hCG and FSH, and FSH pre-treatment before combination therapy.

hCG monotherapy: hCG is used to provide LH-like activity. Its half-life is longer than that of LH. In contrast to LH, which would require pulsatile administration approximately every 2 hours, hCG is administered two to three times per week. Patients with partial phenotype (TV ≥ 4ml) respond better to hCG monotherapy, as they probably have had mini-puberty and some degree of spontaneous pubertal development. Patients with severe phenotype may respond to hCG monotherapy in the form of testosterone response but not essentially with spermatogenesis; most of them will require FSH treatment along with hCG.

In a retrospective analysis of 59 idiopathic HH patients (age: 14-21 years), Bistritzer et al showed that hCG monotherapy (n=38, severe 30 and partial 8) led to excellent testicular size response and virilization, comparable to that with testosterone therapy (n=21) [10].

hCG + FSH: To mimic physiology, both hCG and FSH are required. Combination therapy results in better testicular growth and spermatogenesis as compared to hCG monotherapy [11,12]. These observations were also reproduced in a recent meta-analysis [8], which found no significant differences in results seen with the use of different FSH preparations (urinary-derived, highly purified or recombinant).

FSH pretreatment followed by combination of FSH and hCG: Animal studies have shown that in immature testis, intra-testicular testosterone produced by Leydig cells narrows the window for FSH induced SC proliferation, which substantiates the concept of a period of FSH monotherapy prior to combination GnT [8]. Moreover, it is noteworthy that FSH induces LH receptor expression. In 1997, Raivio et al showed increase in testicular volume and inhibin B with FSH monotherapy in 3 prepubertal HH boys. In 2007, the same group described the effectiveness of FSH pretreatment (2 months–2.8 years in duration) preceding combination therapy in pubertal induction as well as spermatogenesis in a long term, retrospective study of 14 prepubertal HH boys [13]. In a randomized open-label clinical trial, Dwyer et al compared GnRH therapy alone, with 4 months of rFSH pretreatment followed by 24 months of GnRH therapy. All men (n=7) receiving the sequential treatment developed sperm in the ejaculate, whereas 2/6 men in the other group remained azoospermic. The authors suggested that FSH pretreatment of 2 months duration may be sufficient [14]. While larger randomized control trials are awaited to define the optimal approach, the most severely affected HH patients can be offered sequential therapy in an attempt to maximize fertility potential.

Is there an optimal protocol for using gonadotropin based therapy?

There is no consensus regarding optimal GnT protocol. Recently, Sato et al have proposed different protocols for acquired and congenital HH. For acquired HH, they proposed simultaneous combination GnT. hCG is started at a dose of 100 U per week with gradual escalation every 6 months (100→200→500→1000→1500→2000), while FSH is started at 12.5 U per week and gradually increased every 6 months (12.5→25→50→75 U once a week) to reach adult doses. For congenital HH with severe phenotype, they suggest pretreatment with higher dose of rFSH (75 U every day) for

2 months. Then hCG is started and escalated, similar to the acquired HH protocol. Both the protocols are expected to induce the secondary sex characteristics over a period of 4 to 5 years in a near-physiological manner [15].

Endpoint of GnT

GnT can be stopped when the patient achieves complete sexual maturation and when there is no further increase in testicular volume. Generally this requires 2-3 years of treatment. Sperm-banking can be considered before shifting back to testosterone therapy in patients with evidence of spermatogenesis. If necessary, GnT can be repeated during adulthood to re-induce fertility.

Reversal

About 10-20% patients of CHH undergo spontaneous recovery of reproductive function while on treatment with testosterone or gonadotropin based therapy. Hence, intermittent reassessment of HPG axis should be done after stopping treatment. Unfortunately, there are no predictors of reversal and such reversal is not always lasting. Hence it requires ongoing monitoring.

Conclusion

Pubertal induction in boys with hypogonadism can be safely achieved with gradually increasing doses of testosterone. However, in HH boys, gonadotropin based therapy can be considered as an alternative option, with the advantage of improving quality of life and future fertility potential.

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Prolactinoma in Children and Adolescents

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Introduction

Prolactinomas are the most common hormone-secreting pituitary tumors, with an estimated prevalence of 100 per million adults [1]. Though prolactinomas are infrequent in children and adolescents, they account for 50% of all pituitary adenomas [2-4]. Advances in the knowledge of tumor pathogenesis, the molecular biology, and long-term follow-up of patients have led to new approaches in the clinical and therapeutic management.

Pathogenesis

Many recent papers have clarified different facets of the pathogenesis of pituitary adenomas. The pituitary tumor transforming gene (PTTG) was isolated from rat pituitary tumor cells in 1997 and was identified as a pituitary-derived transforming gene [5]. PTTG has been shown to be tumorigenic in vivo, through regulation of the basic fibroblast growth factor (BFGF) secretion and inhibition of chromatid separation. Overexpression of PTTG has been shown in all hormone-secreting adenomas including prolactinomas [6]. Estrogen is known to support tumorigenesis in the pituitary gland by PTTG induction, which results in an increase of BFGF and of vascular endothelial growth factor (VEGF) production. These findings suggest a role for estrogen in the formation and progression of pituitary adenomas via a paracrine mechanism involving angiogenesis [7]. Apart from VEGF, the fibroblast growth factor (FGF) and epidermal growth factor (EGF), which are expressed under normal conditions in pituitary cells, are also known factors in tumorigenesis [8].

Recently, the role of the high mobility group A 2 (HMGA2) gene in the genesis of pituitary adenomas in humans has been demonstrated [9]. It has been recognized that HMGA2 is substantially expressed in tumor cells from human prolactinomas [9]. All these genetic mutations and molecular alterations have contributed to the understanding of genesis of prolactinomas, variable clinical behavior and different therapeutic responses (dopamine-sensitive, dopamine-resistant).

Clinical Features

The clinical manifestations of prolactinoma vary, based on gender, age of onset, tumor size and serum prolactin (PRL) levels. Girls have a higher prevalence of microprolactinomas; hence, their signs and symptoms are mainly due to hormonal alterations. Hyperprolactinemia in females can lead to hypogonadotropic hypogonadism (delayed puberty, primary and secondary amenorrhea,

oligomenorrhea) and/or galactorrhoea. Males usually present with delayed puberty and gynecomastia and galactorrhea, but may present with neuro-ophthalmologic signs due to higher incidence of macroadenomas [10]. The higher prevalence of macroadenomas in boys, similar to adults, may be due to delayed onset of symptoms as compared to girls.

Galactorrhea is less common in pediatric patients (30-50%) compared to adult females (80%) [4,10,11]. In boys, gynecomastia is seen in 50% and is frequently associated with galactorrhoa (50-75%). However, in peri-pubertal males with prolactinoma and gynecomastia, the latter is less often attributed to the prolactinoma, due to the common occurrence of pubertal gynecomastia in normal adolescents (up to 60%). Rarely, prepubertal boys with hyperprolactinemia may also have gynecomastia. Unlike other hypothalamic pituitary organic processes, prolactinomas are not usually associated with short stature in pediatric patients [11]. Bone mineral density has been shown to be significantly lower in adolescent patients with hyperprolactinemia than their sex- and age-matched controls [13].

Elevated PRL alters the gonadotropic axis, resulting in inhibition of pulsatile GnRH secretion. A few reports also suggest a direct inhibitory effect of hyperprolactinemia on testicular and ovarian function. In addition, LH inhibition due to an increased opioid tone has been implicated as a cause of amenorrhea in hyperprolactinemia patients.

Headache is the most common neuro-ophthalmologic symptom (64-77% males, 17-30% females), but it is not consistently related to tumor size or to PRL levels. Visual field defects can be present, depending on tumor size. In some cases, the tumor may cause blindness, exophthalmos and rarely, it may be associated with raised intracranial hypertension [10].

Diagnosis

The diagnosis of prolactinoma requires both presence of sustained hyperprolactinemia and radiographic evidence of pituitary adenoma. Due to a slight increase in PRL during normal puberty, adequate gender and age-specific reference values are required. A single measurement of PRL is usually adequate for diagnosis. However, in doubtful cases, the International Consensus of the Pituitary Society recommends testing on another day, preferably by obtaining 2-3 samples separated by 15-20 min to avoid the effect of pulsatile secretion [4].

Slightly increased serum PRL values, a normal MRI and no clinical symptoms, suggest the possible presence of big PRL isoforms (macroprolactin) with little or no biologic activity. Asymptomatic hyperprolactinemia has also been reported in pediatric patients due to abnormal elevation of PRL isoforms.

Hyperprolactinemia in children and adolescents in the presence of a pituitary adenoma is consistent with the diagnosis of prolactinoma. However, any pituitary mass compressing the stalk may cause elevation of PRL. Moreover, approximately 10% of the general population may have asymptomatic pituitary microadenomas (incidentalomas) [4], and normal girls may have pituitary enlargement during puberty (superior margin of the pituitary gland takes the form of a tent). In patients with other causes of hyperprolactinemia, such as drug-induced (especially prokinetics) hyperprolactinemia, if undue pituitary imaging is performed, these imaging abnormalities are often reported as pituitary microadenomas, leading to a false diagnosis of prolactinoma. Patients with primary hypothyroidism may have hyperprolactinemia and associated symptoms, and often have pituitary enlargement due to pituitary hyperplasia. Therefore, the presence of a pituitary adenoma on imaging in a patient with moderate hyperprolactinemia would not automatically confirm the diagnosis of prolactinoma. It is important to first rule out primary hypothyroidism and intake of drugs associated with hyperprolactinemia. Definitive diagnosis of PRL-secreting adenoma should be confirmed by histopathology, but as these tumors are rarely treated with surgery, such confirmation is generally based on the response to drug therapy. Thus, normalization of serum PRL levels

associated with significant tumor size shrinkage (50-75%) or complete remission would confirm the diagnosis.

In patients with prolactinomas, PRL concentrations generally correlate well with tumor size. Macroprolactinomas are usually associated with serum PRL level > 400 ng/ml. In a patient with macroadenoma and symptoms attributable to hyperprolactinemia, but normal or inappropriately low serum PRL levels, serum PRL should be tested in serial dilutions to rule out the 'hook effect' which may falsely reduce prolactin levels in patients with very high prolactin levels.

In patients with macroprolactinoma, an assessment of the visual field using perimetry should also be performed, to check for the involvement of the 'via optica' [4].

Treatment

Dopaminergic agonists are the initial therapy of choice in children, adolescents, and adults, because of their efficacy and tolerance [14]. The goals of therapy are to ensure normal pubertal development, restore and/or maintain adequate gonadal function, shrink the pituitary tumor mass, achieve adequate peak bone mass, and ensure future fertility.

Bromocriptine, cabergoline, pergolide and quinagolide exert their action by binding to the D2 dopamine receptor, a G-protein-coupled receptor, expressed in the pituitary lactotrophs, leading to an inhibition of the PRL synthesis and secretion. Furthermore, they also inhibit pituitary lactotroph mitosis and growth. This effect, coupled with an induction of perivascular fibrosis and cell necrosis, results in tumor shrinkage.

Bromocriptine: Therapeutic doses of bromocriptine are in the range of 2.5-15 mg/day, with a standard dose between 5 and 7.5 mg/day, in split doses. Adverse effects can be reduced by starting therapy at a single dose of 1.25 mg/day, and then increasing the dose. Several series of children and adolescents with prolactinomas treated with bromocriptine have shown less efficacy than in adult studies (67.7%).

Cabergoline: Unlike other dopaminergic agonists, cabergoline has a long half-life, being administered once or twice weekly. The long action of cabergoline is due to its low clearance and slow elimination from the pituitary tissue, its high affinity binding for D2 dopaminergic receptors, and an extensive enterohepatic circulation. In children and adolescents, cabergoline has been used at variable doses (0.25-3.5 mg/week).

Pergolide and **Quinagolide** are rarely used in children and there is insufficient data regarding their usage.

Adverse effects of dopaminergic agonists are mainly gastrointestinal, cardiovascular, and neurological. The most common gastrointestinal effects are nausea and vomiting, which are usually transient, but may lead to discontinuation of therapy in 3-5%. Orthostatic hypotension occurs in roughly 5% of patients at the initiation of therapy. Aggravation of pre-existing psychosis has been associated with the use of dopaminergic agonists. Cardiac valve regurgitation in patients with Parkinson's disease treated with pergolide and cabergoline has raised new concerns about long-term safety of dopamine agonists. Aortic valve calcification and mild tricuspid regurgitation have also been reported in long-term treatment of adults with prolactinomas [15].

In addition to drug intolerance, another limiting factor for the use of dopaminergic agonists in prolactinomas is drug resistance, an intrinsic nature of the tumor, which depends on the density of dopaminergic receptors and their binding affinity to D2 agonists.

In prolactinomas, surgery is not a preferred option. Even in macroprolactinomas, surgery should be

reserved for cases in which drug therapy has failed or for neurosurgical emergencies. When performed, the trans-sphenoidal approach represents the standard of care, except in young children in whom the sphenoid sinus is not well-pneumatized [10].

External radiotherapy is rarely used to treat prolactinomas. It is indicated only after failed surgery and/or drug therapy [4]. Temozolamide may be an option for persistent or recurrent disease after surgery or radiotherapy.

Conclusions

Diagnosis and follow-up of prolactinomas in children and adolescents shows some gender-dependent differences in their clinical presentation. Primary hypothyroidism and drug induced hyperprolactinemia should be ruled out before making the diagnosis of prolactinoma, due to overlapping clinical presentation and confusing imaging findings. In the majority of patients, dopaminergic agonist therapy can control the disease effectively, restore PRL levels to normal and achieve restoration of gonadotropin axis.

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Is there a need for oxytocin replacement in craniopharyngioma survivors?

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Introduction

The quality of life in survivors of childhood-onset craniopharyngioma (CP) is frequently impaired due to hypothalamic involvement or sequelae of surgical lesions such as obesity and neuropsychological deficits [1-3]. Oxytocin is a peptide hormone, primarily synthesized in the paraventricular and supraoptic nuclei of the hypothalamus, and released by the posterior pituitary. CP-associated lesions often impair sites critical for oxytocin production and release. Despite the high prevalence of panhypopituitrism and diabetes insipidus in patients with CP, little is known about the status of oxytocin in these patients. Oxytocin plays a major role in the regulation of behavior and body composition. Still, its link to CP-associated obesity and affective dysfunction is not well studied.

Oxytocin insufficiency in CP

In a cross-sectional study, Daubenbuchel et al demonstrated that salivary oxytocin concentrations were not significantly different in CP patients from controls. Salivary oxytocin levels also did not differ between CP patients with and without preoperative hypothalamic involvement. Interestingly, patients with surgical lesions in the anterior hypothalamic areas (grade 1) had significantly lower fasting salivary oxytocin levels and lower, but not significantly different, post-breakfast salivary oxytocin levels compared to patients with surgical lesions in the posterior hypothalamic areas (grade 2) and patients without hypothalamic lesions (grade 0). Radiation therapy and presence of diabetes insipidus did not have any effect on salivary oxytocin levels, whereas patients with higher BMI had lower raise in oxytocin levels after breakfast [4].

Another study by Gebert et al including 26 adult CP patients and 26 age- and sex-matched healthy controls also demonstrated that salivary oxytocin levels were not different in CP patients than controls, but baseline oxytocin levels were indeed reduced in patients with hypothalamic damage. Compared to controls, all CP patients demonstrated blunted oxytocin release in response to exercise-induced stimulation, suggesting that all CP patients have oxytocin dysfunction and exercise unmasks oxytocin dysfunction in all of them. Even in this study diabetes insipidus was not associated with oxytocin levels [5].

Oxytocin and affective dysfunction in CP

Social and emotional impairment, school dysfunction, and neurobehavioral impairment are highly prevalent in survivors of childhood CP, and negatively affect the quality of life [1]. The study by Gebert et al also showed that higher baseline salivary oxytocin had significant association with trait-anxiety, and a positive association with depression that failed to reach statistical significance. On the other hand, blunted oxytocin release was associated with state-anxiety whereas empathy was not associated with oxytocin measures. The study concluded that baseline oxytocin levels and stimulated oxytocin-responses might have different effects on affective function [5].

In a youngster with pituitary/hypothalamic dysfunction after CP removal, treatment with low dose intranasal oxytocin resulted in increased desire for socialization and improvement in affection towards family. The study suggested potential benefits of intranasal oxytocin therapy for patients with panhypopituitrism [6]. Another study which included post-operative CP patients with detectable baseline oxytocin levels showed that intranasal oxytocin (24 U) is well tolerated and increases oxytocin concentrations in saliva and urine. CP patients with postsurgical lesions limited to

the anterior hypothalamus area (Grade 1) showed improvements in emotional identification compared to those with lesions of anterior and posterior hypothalamic areas (grade 2) [7].

Oxytocin and obesity in CP

Hypothalamic obesity is a treatment-resistant condition common in CP survivors, and is strongly associated with poor quality of life in them [2,3]. Oxytocin has been shown to play a role in the regulation of energy balance and to have anorexigenic effects in animal studies. A recent study showed that oxytocin acting in the ventromedial hypothalamus decreases intake driven by energy not by palatability, and it stimulates activity of hypothalamic sites controlling energy balance [8].

In a parent-observed study, administration of intranasal oxytocin for 10 weeks in a 13-year-old male with confirmed hypothalamic obesity and hyperphagia post-CP resection, reduced hyperphagia and BMI z-score from 1.77 to 1.49. Naltrexone, an opiate antagonist, has been shown to potentiate the anorexigenic effects of oxytocin. Addition of naltrexone over the next 38 weeks further reduced hyperphagia and BMI z-score to 0.82 [9].

Conclusion

Reports of successful treatment of CP-related hypothalamic obesity, hyperphagia and affective dysfunction by oxytocin is promising enough for conducting future studies to explore its role in the treatment of recalcitrant forms of obesity and affective dysfunction in CP patients.

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Tumoral Calcinosis: a Challenging Condition in Children

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Case summary

A 6yo boy presented to us with complaints of right gluteal swelling for 1.5y, which was gradually progressive, not associated with pain or restriction of movement around the joint. There was no history of preceding trauma. There was history of similar swelling of left forefoot at 2 years of age, which was removed surgically. Three years earlier, the child had fever following which he had developed deviation of angle of mouth to the left side, which gradually resolved over a few days.

On examination his weight was 18 kg (25th centile) and height was 116 cm (50th centile). Vital parameters were normal and sexual maturity scale was prepubertal. Local examination revealed a big gluteal swelling measuring approximately 15 x 10 cm, firm and nontender. Overlying skin showed hyperpigmentation and ulceration (fig 1A). Central nervous system examination was suggestive of left upper motor neuron facial palsy. Rest of the systemic examination was essentially normal.

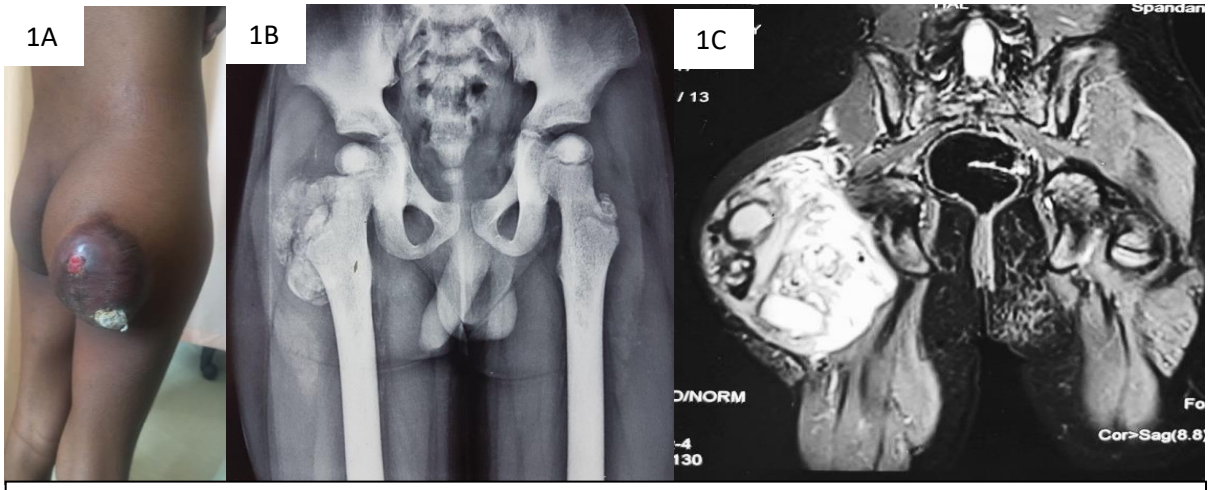

Fig 1A: Clinical photograph showing large right gluteal swelling; 1B: X ray showing flocculent heterogenous calcific shadows around neck and greater trochanter of right femur; 1C: MRI pelvis showing hyper-intense, multi-locular cystic lesion in soft tissue of right gluteal region with characteristic “Sedimentation sign” present. Underlying bone appears normal.

On investigation, his serum calcium was 10 mg/dl, phosphorus 9.1 mg/dl, alkaline phosphatase 128 IU/L, parathyroid hormone 25 pg/ml and 25(OH)-vitamin D 14.2 ng/ml. His renal parameters were within normal limits. X-ray pelvis was suggestive of flocculent, heterogeneous radio-opaque shadow around neck of right femur (fig 1B). MRI of pelvis showed hyper-intense multi-locular cystic lesion in the soft tissue of the right gluteal region, with presence of the characteristic “sedimentation sign”. The underlying bone appeared normal (fig 1C). CT scan of the brain showed the presence of multiple calcific foci bilaterally in the anterior periventricular region, basal ganglia and bilateral subcortical white matter. With this clinical, biochemical and radiological presentation, a diagnosis of hyperphosphatemic tumoral calcinosis was made. The child then underwent wide local excision of the mass. The gross pathological examination revealed a thinly capsulated irregular, nodular, cavitatory lesion with extensive areas of necrosis. The lesion was seen extending up to the skin, ulcerating it (? sinus tract). Microscopically it showed subepithelial aggregation of chronic inflammation consisting of lymphocytes, plasma cells, scattered eosinophils and perivascular chronic inflammation. An extensive area of calcification bordered by multinucleate giant cells was also noted. These histopathological findings were consistent with the clinical diagnosis of tumoral

calcinosis. Later, the child was started on a low phosphorus diet, phosphate binders (aluminium and magnesium hydroxide at 50 mg/kg/day PO divided 6^{th} hourly) and a phosphaturic agent (acetazolamide at 5 mg/kg/dose every alternate day). Medical therapy reduced serum phosphorus to 3.6 mg/dl within a month.

Discussion

Tumoral calcinosis is an uncommon form of extraosseous calcification characterized by large, rubbery or cystic masses, occurring mainly in relation to large joints. The principal manifestation of the disease is the presence of these masses; the underlying joints are unaffected and as a rule, the patients are in good health [1]. Tumoral calcinosis most commonly occurs around the hip, shoulder and elbow; it is less frequently seen in the foot and ankle. The masses tend to grow slowly over a period of years and may become quite large. Generally they are painless and do not limit range of motion of adjacent joints unless they become large. Symptoms may also result from compression of adjacent neural structures. When large, the lesions tend to ulcerate the skin and form a sinus track that drains chalky, milk like fluid. This fluid may look like pus but is usually sterile and contains calcium phosphate and calcium carbonate. The masses can, however, become a site of secondary infection. The exact cause is not known but Smack *et al* formulated a pathogenesis-based classification of tumoral calcinosis into three types: *primary normophosphatemic tumoral calcinosis* (no known disorders of phosphate or calcium metabolism), *primary hyperphosphatemic tumoral calcinosis* (elevated serum phosphorus and normal serum calcium, probably due to a defect in phosphate resorption) and *secondary tumoral calcinosis* (due to a concurrent disease causing soft tissue calcification which includes chronic renal failure with secondary hyperparathyroidism, hypervitaminosis D, milk-alkali syndrome and bone destruction) [2,3]. A high recurrence rate after excision is common in the latter form. Tumoral calcinosis also appears to be triggered by minor trauma. Bleeding is followed by histiocyte aggregation with subsequent formation of cystic cavities lined by histiocytes [4]. . The radiographic hallmark of tumoral calcinosis is the demonstration of large multi-globular calcific deposits in a para-articular distribution, usually along the extensor surface of joints. This calcified material may be paste-like and have a homogeneously dense radiographic appearance, or it may be semifluid, like “milk of calcium,” and demonstrate sedimentation sign on upright radiographs. Recent advances on genetic basis for hyperphosphatemic tumoral calcinosis have shed light on genes related to the phosphaturic hormone, FGF-23. These include FGF-23 itself, FGF-23 glycosylating enzyme, GALNT3 and FGF-23 co-receptor, α-Klotho. Tumoral calcinosis lesions can become very large and frequently require surgical resection due to pain, deformity and limitation of joint movements. Surgery may be curative, but unfortunately, these lesions typically recur due to persistence of the underlying metabolic defect. Surgical excision combined with phosphate deprivation (using aluminum hydroxide) in conjunction with acetazolamide synergistically lowers hyperphosphatemia and has proved to be the most effective therapy [5,6].

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A Rare Case of Solitary Toxic Thyroid Nodule in a Young Child

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Case summary

A 2y 7mo old boy was brought with complaints of swelling in left side of his neck for the previous 5 months, which was gradually increasing in size. He had no pain or difficulty in swallowing. He had a mild delay in developmental milestones, mainly in speech, and recent hyperactive behavior for the past 2 months.

On examination, the child was found to be hyperactive, with mild facial dysmorphism (microcephaly, low set ears and high arched palate). Neck examination revealed a globular swelling in the left side of neck which was firm, nontender and moved with deglutination. Skin over the swelling was normal and there was no significant cervical lymphadenopathy. Rest of the general and systemic examination, including vitals, was normal.

Previous investigations done elsewhere, a fortnight earlier, revealed normal thyroid function tests (TFT) and an FNAC reported a cystic lesion of the thyroid. He was advised surgical excision. Repeat TFT in our hospital suggested thyrotoxicosis (Free T3: 4.71 pg/ml, Free T4: 1.58 ng/ml and TSH: 0.07 µIU/ml). USG of the neck showed an enlarged left lobe of thyroid with a well-defined, capsulated, mixed-echogenic lesion with cystic areas, occupying the entire lobe with no regional enlarged nodes. Thyroid scintigraphy showed increased tracer uptake in the globular swelling in the left lobe of thyroid, with negligible tracer uptake in the right lobe, with no definite cold areas, suggesting the diagnosis of 'toxic adenoma of thyroid'.

He was started on oral carbimazole and after achieving euthyroid status, was subjected to left hemithyroidectomy. Histopathological examination revealed a colloid goiter pattern. His TFT on 3rd post-operative day revealed Free T3 3.21 pg/ml, Free T4 0.94 ng/ml and TSH 0.04 µIU/ml. Follow-up a month later revealed normal TFT (Free T3: 3.21pg/ml, Free T4: 0.84 ng/ml, TSH: 1.64 µIU/ml). Parents also reported significant improvement in hyperactive behavior.

Discussion

A true solitary nodule is quite rare in the first two decades of life. The prevalence of thyroid nodules in children is less (0.22-1.35%) than in adults (~4%) [1,2]. Suspected thyroid nodules in children merit close attention due to higher risk of malignancy in children (20%) than in adults [3]. Unlike adults in whom the prevalence of malignancy in hot nodules is < 1%, that in children may be up to 29%, especially in hot nodules with detectable uptake in the extranodular tissue [4,5]. Thus, one major goal of the diagnostic evaluation of thyroid nodules is to differentiate thyroid cancers, especially aggressive lesions, from benign adenomas.

Most children with thyroid nodule come to the attention of a pediatrician because of a mass in the thyroid region. The majority of children with autonomous thyroid nodules are clinically euthyroid, in contrast to adults [6]. If a thyroid swelling is diagnosed as a truly solitary solid thyroid nodule, fine needle aspiration cytology should be done to obtain a definitive diagnosis. Radioisotope scintigraphy is helpful in classifying the nodule's activity into hot, warm, or cold. Radioactive iodine uptake characteristics of nodules can direct treatment and assist in estimating risk of malignancy. Radionuclide I-123 scintigraphy enables study of both the trapping and organification by the nodules. On the other hand, the Technetium pertechnetate image demonstrates only the trapping by the nodule. The diagnosis of a hyperfunctioning or hot nodule is established when the image reveals increased accumulation of the radioisotope in the nodule, and decreased or absent uptake in the surrounding thyroid tissues. Surgical treatment is preferred for all children and adolescents

with solitary toxic nodule after preoperative anti-thyroid mediation, because of the risks of thyroid carcinoma. If the nodule is present in a thyroid lobe, we proceed with hemithyroidectomy. If the nodule is in the isthmus, we prefer isthmectomy to hemithyroidectomy, because hemithyroidectomy may cause compensatory hypertrophy of the opposite lobe due to the removal of a larger volume of normally functioning thyroid tissue. Short term anti-thyroid drug therapy is given preoperatively, to make the patient euthyroid. Administration of iodides is not indicated in the preoperative treatment of toxic nodules. Radioiodine is not given in children because an existing malignancy would be missed, and RAI may precipitate malignant transformation at a later date.

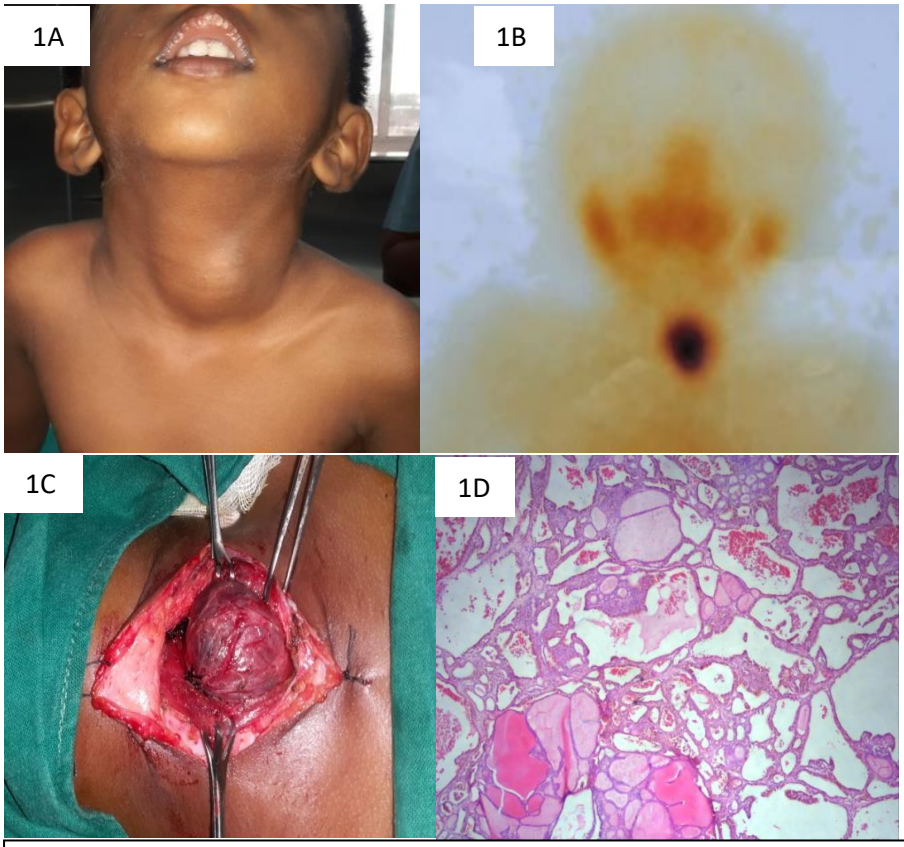

Fig 1A: Clinical photograph showing left-sided solitary thyroid nodule; 1B: ^{99m}-pertechnate thyroid scintigraphy revealing 3% uptake in left lobe and no uptake in right lobe, suggestive of autonomously functioning thyroid nodule; 1C: intra-operative photograph demonstrating thyroid nodule; 1D: histopathology suggestive of colloid goiter.

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Pedendoscan

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Children's experiences of managing Type 1 diabetes in everyday life: a thematic synthesis of qualitative studies. Rankin D et al, Diabet Med. 2017;34:1050-60.

With an aim to explore the everyday experiences of children (aged ≤ 12 years) with Type 1 diabetes (T1D) and to identify factors that help or hinder diabetes self-management practices, 8 databases were searched to select the studies concerned with identification of children's view regarding self-management of diabetes. Eighteen studies from five countries were included in the review. Synthesis of the findings of the studiesresulted in identification of three overarching analytical themes. The first theme, 'Understandings of diabetes and involvement in self-management', outlines ways in which children understand diabetes and develop self-management responsibilities. The second theme, 'Disruption to life and getting on with it', reports children's frustrations at disruptions to everyday life when managing diabetes, and how attempts to appear normal to family and friends affect self-management practices. The third theme, 'Friends' support', describes how friends' reactions and responses to diabetes affect children's ability to appear normal and willingness to disclose information about diabetes, and support provided by 'informed friends', or peers with diabetes. The authors concluded that to help children optimise their glycemic control, further work should be undertaken to identify their need for support, which takes into account the potential ways in which parents, friends and peers can offer assistance.

The burden of common infections in children and adolescents with diabetes mellitus. Korbel L et al, A Pediatric Health Information System study. Pediatr Diabetes. 2017;1–8.

To evaluate the number of pediatric and adolescent patients with DM seeking medical treatment for infection management and to assess its socioeconomic impact, a retrospective analysis of 123 599 diabetic patient (77% T1D, 23% type 2 DM) encounters was performed using the Pediatric Health Information System (PHIS) database. Emergency Department (ED) visits and hospitalizations for T1D and T2D increased throughout the study period. Respiratory infections were the most common type of infection followed by skin and soft tissue infections for both ED care and inpatient hospitalizations. It was observed that patients with infections had longer stay at hospital and higher cost per day than those without infections.

Cardiovascular autonomic dysfunction predicts increasing albumin excretion in type 1 diabetes. Lu L et al. Pediatr Diabetes. 2017;1–6

A prospective study of 199 children and adolescents was done to evaluate the role of cardiovascular autonomic dysfunction in the development of renal complications in young people with T1D. Patients underwent autonomic function assessment ~5 years after diagnosis, and were subsequently followed with longitudinal assessments of HbA1c and urine albumin-creatinine ratio (ACR) over 8.6 ± 3.4 years, using 4 standardized tests of cardiovascular reflexes - heart rate (HR) response to (1) Valsalva Manoeuvre, (2) deep breathing, (3) standing; and (4) blood pressure (BP) response to standing. The association between autonomic parameters and future changes in ACR were assessed using Linear mixed models. Independent of HbA1c, each SD increase in HR response to Valsalva Manoeuvre predicted an ACR increase of 2.16% per year (P = .04), while each SD increase in diastolic BP response to standing predicted an ACR increase of 2.55% per year (P = .02). Autonomic dysfunction was found to have a potential role in the pathogenesis of diabetic nephropathy.

Home-based vs. inpatient education for children newly diagnosed with type 1 diabetes. Clapin H et al. Pediatr Diabetes, 2016;18:579–587.

A randomized-control trial included 50 newly diagnosed T1D (3-16 years) with 25 to each group, for comparing inpatient care with a hybrid home-based alternative, examining metabolic and psychosocial outcomes, diabetes knowledge, length of stay, and patient satisfaction. Patients were randomized to standard care with a 5-6 day initial inpatient stay or discharge after 2 days for home-based management. All patients received practical skills training in the first 48 hours. The intervention group was visited twice/day by a nurse for 2 days to assist with injections, then a multi-disciplinary team made 3 home visits over 2 weeks to complete education. Patients were followed up for 12 months. Clinical outcomes included HbA1c, hypoglycemia, and diabetes-related readmissions. Surveys measured patient satisfaction, diabetes knowledge, family impact, and quality of life. There were no differences in medical or psychosocial outcomes or diabetes knowledge. Average length of admission was 1.9 days shorter for the intervention group. Families indicated that with hindsight, most would choose home-based over hospital-based management.

A History of Cow's Milk Allergy Is Associated with Lower Vitamin D Status in Schoolchildren. Rosendahl J et al. Horm Res Paediatr 2017;88:244–250

A cross-sectional study was done of 171 ten-year-olds where serum 25-hydroxyvitamin D (25[OH]D) levels were measured, and data on food consumption and use of vitamin D supplements collected to examine the main determinants of vitamin D status. A validated questionnaire was used to evaluate the history of allergic diseases. The study revealed an association between lower vitamin D status and lack of vitamin D supplementation, female gender, non-Caucasian ethnicity, and a history of milk allergy.

One-Year Follow-Up of Girls with Precocious Puberty and Their Mothers: Do Psychological Assessments Change over Time or with Treatment? Schoelwer MJ et al. Horm Res Paediatr 2017;88:347–353

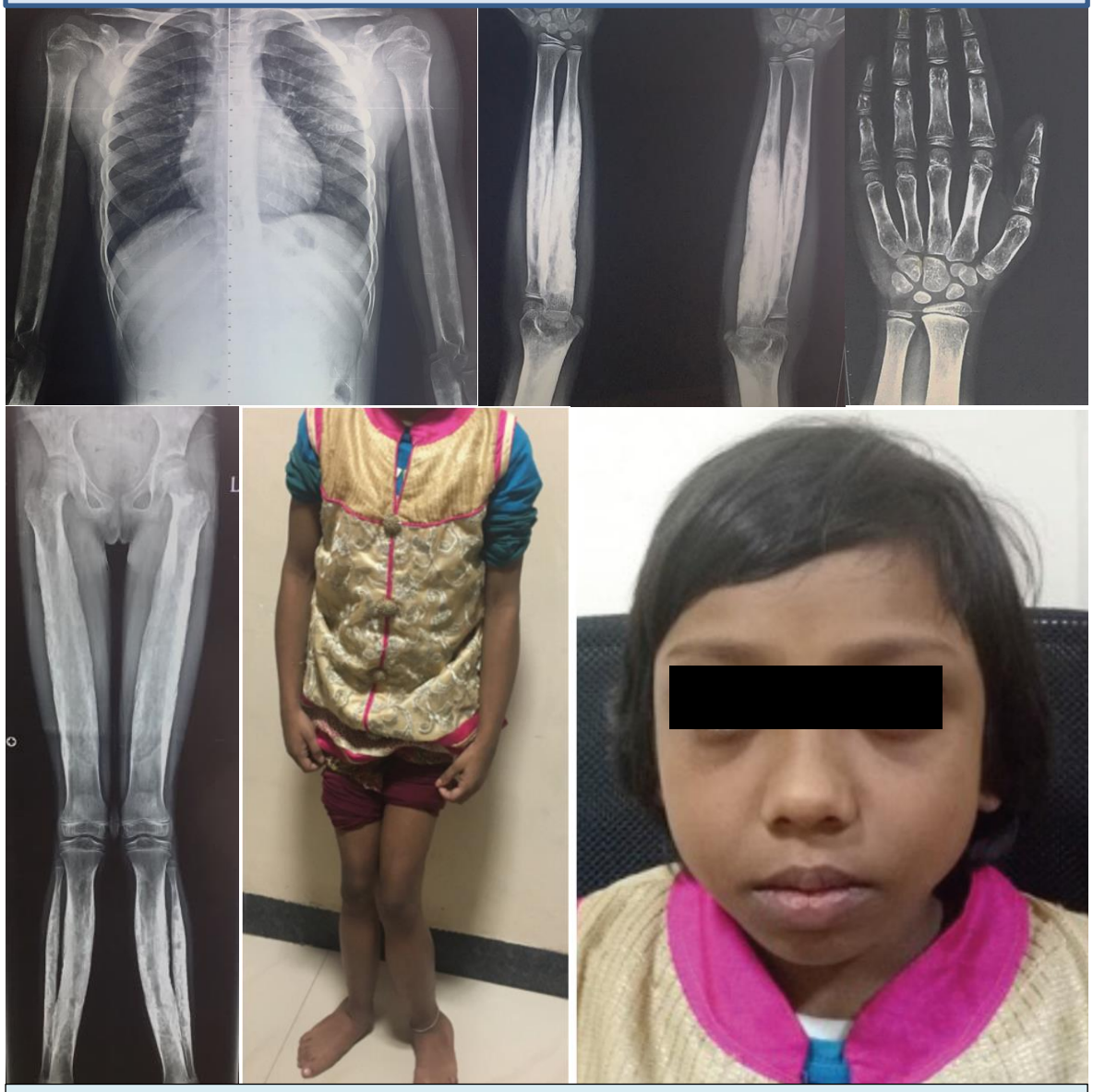
The current study aimed to assess if there are any abnormalities in psychological characteristics of girls with variations of early puberty. Psychological assessments were completed by girls with CPP, premature adrenarche (PA), and early normal puberty (ENP) at baseline and after 1 year, along with their mothers. All girls with CPP were treated with GnRH analogues. Sixty-two subjects aged 7.5 ± 1.4 years (range 4.8–10.5) were enrolled, of whom 36 (15 with CPP, 8 with PA, and 13 with ENP) completed 1-year follow-up assessments. Psychological measures were normal in all girls. No significant group differences were found for any measure of girls' psychological functioning at either time point. The authors concluded that there are no abnormalities in psychological functioning among girls with variations of early puberty, and all groups were in the normal range.

Quality of Life in Children with Disorders of Sex Development. M Selveindran etal. Horm Res Paediatr. 2017;88(5):324-330.

23 patients raised as males and 7 patients raised as females (aged 6-18 years), and a control group (siblings of matching age) was used to investigate the quality of life of children with DSD (Disorders of Sex Development) other than congenital adrenal hyperplasia. The study tool was Pediatric Quality of Life Inventory Version 4.0 (PedsQL) Generic Core Scales. The study revealed a poorer quality of life for patients with DSD, highlighting the need for a skilled multidisciplinary team to manage this group of patients.

Photo Quiz

Siddram J Patil,[1] Subramanian Kannan,[2] Venkataraman Bhat[3]
1 Consultant, Department of Genetics, 2 Consultant and HOD, Department of Endocrinology, 3 Consultant, Radiology, Narayana Health City, Bengaluru.



An 8yo girl, first-born to consanguineous parents (first cousins) presented with progressive difficulty in walking, and pain in limbs (lower limb > upper limb) since the age of 4 years. There was no history of fractures or family history of skeletal disorders. Both parents are apparently normal. Hearing and vision are apparently normal in the child.

On examination, head circumference was 49.3 cm, and height was 124 cm (50th centile). There was bilateral genu valgum with knee flexion contractures and clinically evident diaphyseal widening of long bones (both upper and lower limbs). Facial features included wide prominent eyes, depressed nasal bridge and micro-retrognathia. Biochemical parameters including serum calcium, phosphorus and alkaline phosphatase were normal.

What is the diagnosis?

5th Biennial Meeting of Indian Society for Pediatric and Adolescent Endocrinology: ISPAE 2017 - Coimbatore

Ahila Ayyavoo, Organizing secretary, ISPAE Biennial Meet, 2017

ISPAE-PET and APPES Joint Fellows School: 21-24 November 2017

ISPAE-PET and APPES Joint Fellows' School was held at Great Mount Resort by Coco Lagoon at Pollachi. This was the first Joint Fellows' Science School conducted by ISPAE and the Asia-Pacific Pediatric Endocrine Society (APPES) together, kindly supported by the European Society for Pediatric Endocrinology (ESPE) and International Society for Paediatric and Adolescent Diabetes (ISPAD). Prof Maria Craig from Australia, the APPES Fellows' School convener, and Prof Sudha Rao from India, the ISPAE-PET convener, conducted the meeting with the help of the Organising Chairperson, Prof Palany Raghupathy and Organising Secretary Dr Ahila Ayyavoo.

The program started with an ice breaking session with "Uriyadi", drawing "kolams" and making "garlands", as faculty and fellows were introduced to each other in a coconut grove. The 59 Fellows from all over Asia and Oceania interacted with 15 faculty from around the world - including Prof Noriyuki Namba (Japan), Prof Nick Bishop and Dr Chizo Agwu (UK), Prof Wayne Cutfield (New Zealand), Prof Suttipong Wacharasindhu, Dr Jeerunda Santhiprabhob and Dr Prapai Dejkhamron (Thailand), Prof Nalini Shah (Mumbai), Dr Vaman Khadilkar (Pune), Dr Archana Arya (Delhi) and Prof Sarah Mathai (Vellore).

Intense teaching sessions were conducted from sunrise to sunset. Fellows presented pre-selected cases, covering all relevant topics in pediatric endocrinology - bone & calcium disorders, thyroid,

adrenals, puberty, obesity, hypoglycaemia, diabetes, growth, small for gestational age infants etc. A lecture on each theme by an expert followed the case presentations. In addition, there were hour long group discussions with 7-8 fellows and 2 faculty per group.

Mixed with the academics was fun. A trip to Topslip and the Tiger Reserve on 23rd morning was followed by a special freshly prepared lunch with local delicacies served in the forest! It was kindly sponsored by a pediatrician, Dr Uthraraj. Some participants went trekking while others went on an elephant ride after visiting a tribal hamlet and elephant camp within the forest. Another special activity was a bonfire dinner with some games. The meeting wrapped up with a Quiz for the Fellows. The whole team then returned to Coimbatore from Pollachi on 24th November morning.

Main Meeting, ISPAE 2017: 24-26 November 2017

The main meeting was conducted at the Main Auditorium of the PSG Institute of Medical Sciences and Research, Coimbatore, from 24-26 November 2017. There were 289 delegates from across India, and international delegates from Bangladesh, Singapore, and Australia. Pediatric endocrinologists, pediatricians, adult endocrinologists and of course the trainees benefitted greatly from the expertise of faculty from all over the world and India.

The Organising Chairperson, Prof Palany Raghupathy and Organising Secretary Dr Ahila Ayyavoo were ably supported by the Coimbatore chapter of Indian Academy of Pediatrics, along with APPES, ESPE and ISPAD. The ISPAE President, Prof Anju Seth and Secretary-Treasurer Dr Anurag Bajpai, along with the Scientific Committee Chairperson, Dr Subrata Dey, made important contributions for the success of the meeting.

International faculty included faculty from the Fellows' School - Prof Cutfield, Prof Bishop, Dr Agwu, Prof Wacharasindhu, and also Prof Margaret Zacharin (Australia), Prof Reiko Horikawa (Japan), Prof Maria Craig (Australia), Prof Joel Ehrenkranz (USA), Prof PSN Menon (Kuwait), and Dr Senthil Senniappan (UK). Experts from India including Prof Nalini Shah, Dr Shaila Bhattacharya, Dr Vaman

Khadilkar, Dr Anju Virmani, Prof Anna Simon, Prof Rajesh Khadgawat, Prof Sangeeta Yadav and others contributed their enormous experience to enrich the delegates' knowledge.

The program started with an Insulin Pump Workshop, followed by sessions spread over 3 days on growth, novel therapeutics, bone & calcium, gut microbiome, DSD, thyroid, diabetes, PCOS, genetics, endocrine disruptors, obesity, puberty, electrolyte disorders, hypoglycemia, neonatal endocrinology and SGA. Recent research and advances were highlighted in lectures, panel discussions, "Meet the Professor" sessions, and one on "Year in Review". The keynote lecture by Prof Wayne Cutfield on "Bottoms up: the gut microbiomes and obesity and diabetes" and other lectures such as "Novel therapy in adrenoleukodystrophy" by Prof Joel Ehrenkranz, "Closing the loop: artificial pancreas" by Prof Maria Craig, "Genotype phenotype correlation in hypogonadotrophic hypogonadism with special reference to emerging treatment regimens" by Prof Nalini Shah, "Newer therapies in bone diseases" by Prof Nick Bishop, "Molecular genetics of growth hormone deficiency and response to treatment in India" by Dr Vaman Khadilkar, "Genetic diagnosis in infantile/ childhood obesity" by Dr Meenakshi Bhat, "Endocrine disruptors in the Indian environment" by Prof Sudha Ramalingam were greatly appreciated by all.

A traditional dance program was performed by the troupe from "Natyalaya" which included young children, during the inaugural ceremony on the night of 24th November 2017. The ceremony was graced by the presence of the Chief Guest Dr Nalla G Palaniswamy, the Chairman of Kovai Medical Center and Hospitals. The Guest of Honour was Prof Suttipong Wacharasindhu, APPES President. Prof P Raghupathy welcomed the audience, Prof Anju Seth delivered the Presidential address, Dr Anurag Bajpai presented the Secretary's report, and Dr Ahila Ayyavoo delivered the vote of thanks.

A banquet at Hotel Radisson Blu on 25th November 2017 was enlivened by a sparkling musical performance by Ms Rithvika Sunku. The last day had special attendees from the pediatric fraternity, with topics focussing on clinical practice. The program wrapped up on 26th November 2017 with great appreciation for the scientific content and the fantastic local delicacies.

ISPAE - PET / APPES Joint Fellows' School 2017: an Enriching Unforgettable Experience.

Sarita Ann Bosco, Fellow in Pediatric Endocrinology, Indira Gandhi Institute of Child Health, Bengaluru.

An intensive 3-day residential program, held in a beautiful resort in Pollachi, orchestrated by eminent endocrinologists from across the world, sharing their experience and knowledge with 54 of us who are just beginners in the field of pediatric endocrinology!! This describes the Fellows' School 2017, which was indeed a truly inspirational event organized by Drs Maria Craig, Sudha Rao, Ahila Ayyavoo and P. Raghupathy, from 21-24 November 2017 in the Great Mount Resort, Coco Lagoon, in Pollachi, Tamil Nadu. It was unique also because ISPAE PET and APPES had a joint Fellows' School for the first time, with international faculty and participants.

The faculty included Drs. Nalini Shah, Sudha Rao, Sarah Mathai, Archana Arya, Vaman Khadilkar, Ahila Ayyavoo and P Raghupathy from India, Drs. Nicholas Bishop and Chizo Agwu from UK, Maria Craig from Australia, Wayne Cutfield from New Zealand, Jeerunda Santiprabob and Suttipong Wacharasindhu from Thailand, and Noriyuki Namba from Japan. The faculty shared their expertise in their areas of specialization, which made for a splendid program.

There were 54 trainees from India, Sri Lanka, Australia, Thailand, South Korea, Vietnam, Singapore, and even Ethiopia. The diverse background of the participants further enriched the international flavor of the event.

The program started with an ice-breaking session, followed by the academic feast. At the beginning of each session, three participants would present their interesting cases relevant to the topic, which would be followed by the faculty presentation.

There were many learning points from the meeting. Dr Maria Craig pointed out that reduced appetite in hypothyroidism resulted in only mild weight gain and not obesity. Hyperthyroidism in children, especially < 5 years, was associated with higher relapse rate and would require long term anti-thyroid therapy at the lowest possible dose. Dr Sarah Mathai emphasized the role of pediatric endocrinologists in the long-term monitoring of childhood cancer survivors. Dr Nalini Shah asserted that just a diagnosis of "adrenal insufficiency" is never enough; detailed workup to identify the etiology is mandatory. She also said that pediatric pheochromocytoma may be a part of a syndrome, and detailed assessment is warranted, including a genetic profile. Dr Nicholas Bishop enlightened us about the new emerging therapies in the treatment of fragile bones, though current treatment is limited to bisphosphonates. The role of physiotherapy in osteogenesis imperfecta was also highlighted. The need for awareness of phenotypes of other types of diabetes like monogenic diabetes to avoid misdiagnosis was underscored by Dr Chizo Agwu. Dr Vaman Khadilkar spoke about the importance of genetic testing in the diagnosis and monitoring of children with growth hormone deficiency. The role of Burosumab monoclonal antibody against FGF-23 in the treatment of X linked hypophosphatemic rickets was discussed by Dr Noriyoki Namba. In her lecture on childhood obesity, Dr Archana Arya mentioned that tests and pharmacological treatment for insulin resistance are no longer recommended. Dr Sudha Rao, in her talk on neonatal endocrinology, indicated that preterms are likely to be in a state of adrenal insufficiency and aldosterone resistance till 36 weeks, and emphasized the role of hydrocortisone for these infants in shock. Dr Raghupathy unravelled the mysteries of DSD for us. The participants also presented very interesting cases and discussed the challenges faced during management.

We had also group discussions, with each group consisting of 6-7 participants, moderated by two faculty members. These group discussions were really beneficial as it gave us an opportunity for closer interaction with both the faculty and other fellows in the group. A quiz was held on the last day which was won by Dr Ankita Maheshwari from Pune. The prize for the best case presentation was awarded to Dr Akanksha Gandhi from Bangalore.

The highlight of the Fellows' School was the faculty who were so enthusiastic to share their knowledge and vast experience with us. All of them were cordial, friendly, accessible and ever so willing to help us with our queries and difficult cases. The opportunity for interaction with fellows from different parts of India and other parts of the world was definitely another highlight. Being from different parts of the world, we were able to get an overview of management in different settings. It was a congenial atmosphere of a Gurukul, giving us also a feeling of home away from home, which embellished the event.

Apart from the academic programs, we had a few fun activities as well, in the evenings. The visit to Top Slip located 800 feet above sea level in the Anamalai mountain range was truly awesome, and the forest trek and elephant rides were enjoyable.

I am sure that every participant has left Pollachi not only highly enlightened and confident, but also motivated to reach greater heights in the field of pediatric endocrinology.

Pearls from ISPAE 2017 – A Fellow's perspective

Akanksha Gandhi, Fellow in Paediatric Endocrinology, Indira Gandhi Institute of Child Health, Bengaluru.

Growth

1. SGA children are not growth hormone (GH) deficient, but may have partial growth hormone resistance and possibly IGF-1 resistance as well. Puberty in such children is on time but at a faster pace.
2. Exon 3 deletion of the GH receptor gene is not associated with responsiveness to GH therapy as was presumed earlier.
3. GH deficiency type 1B is associated with SGA at birth.
4. Contrary to what western literature reports, an Indian study has shown correlation between a small pituitary size and GH/ multiple pituitary hormone deficiency.
5. Wrist circumference may be an alternative to BMI in predicting risk of metabolic abnormalities in children.

Adrenals

1. Adrenoleukodystrophy, a progressive, debilitating fatal disorder can present as a childhood cerebral form with adrenal insufficiency, as adrenomyelopathy with long tract signs or with involvement of zona reticularis only with Addison disease.
2. Hematopoietic stem cell transplant should be done as soon as MRI brain changes are seen.
3. Gene therapy with Lentivirus carrying the wild *ABCD1* gene is a promising alternative mode of treatment.
4. Triiodothyronine (T3) agonists like Sobetirome which regulate *ABCD2* gene indirectly affecting ABCD1 gene levels, are currently undergoing clinical trials.
5. Around 40% of pheochromocytomas are familial, and 80% of them are associated with a germline mutation.
6. *KCNJ5* mutation is an ACTH independent cause of hyperaldosteronism and hypercortisolism, and is associated adrenal hyperplasia, with low *CYP11B1* levels.
7. A close differential of pseudohypoaldosteronism type 1 is congenital adrenal hyperplasia. Hence looking at basal and stimulated cortisol and 17OHP levels is paramount.

Diabetes and hypoglycemia

1. The Freestyle Libre Flash Glucose Monitoring system was recently approved by the FDA as a CGMS in adults, not requiring finger prick calibration.
2. The Medtronic 670G, a closed loop system is FDA approved too with a mean absolute relative difference (MARD) of 9.6%.
3. Smart insulin, a glucose responsive insulin patch and the implantable Encaptra device instituting stem cell therapy are novel therapies on the horizon.
4. The PECARN fluid trial is the first randomized control trial to compare various fluid regimens and sodium concentrations in the acute management of DKA and correlating them to the incidence of cerebral edema and neurological deficits.
5. Infants on diazoxide for PHHI must have a 2D-ECHO done to rule out any underlying cardiac disease, as pulmonary hypertension can occur as a side effect of treatment.

Puberty and related disorders

1. The recommended treatment of hypogonadotropic hypogonadism includes a slowly escalating regimen of recombinant FSH and hCG injections which stimulates spermatogenesis as well as secondary sexual characteristics, as compared to therapy with testosterone injections, which has no effect on fertility in males.
2. Kartagener syndrome and cystic fibrosis are two medical conditions associated with azoospermia.

Thyroid

1. Many new genes for thyroid development like *BOREALIN, GLIS3, DUOX2, JAG1* have been found, whereas *TBLX1* and *IGSF1* are among the new genes implicated in congenital central hypothyroidism.
2. Remission in Grave's disease is considered as persistence of normal thyroid function tests even after a year of stopping medical therapy.
3. The approach to a thyroid nodule can be given by the mnemonic PTUFG - Physical examination, Thyroid function test, Ultrasonography of the neck, FNAC of the nodule, and Genetic and molecular testing.
4. Lymph nodes to be examined in a suspected case of thyroid cancer include central, lateral and posterior triangle of neck.
5. Newborn screening for congenital hypothyroidism in sick, LBW, multiple births should be repeated after 2-4 weeks.

Calcium and bone

1. Bolus intravenous calcium therapy (6 - 8hourly) is no longer recommended for treatment of acute symptomatic hypocalcemia. Intravenous calcium infusion from a peripheral line up to a maximum dose of 50mg/kg/day is now advised.
2. For persistent hypercalcemia, low calcium containing formulas (2.9 mg/100 cal) can be tried as supportive treatment.
3. Newer therapies:
    a. Denosumab – A RANKL inhibitor, is currently under trial as a novel therapy with a better pharmacokinetic and pharmacodynamic profile compared to bisphosphonates, in the treatment of osteogenesis imperfecta, albeit associated with a higher risk of rebound hypercalcemia.
    b. Sclerostin antibody – Sclerostin being a LRP5 inhibitor, its antibody is a promising anabolic therapy for disorders of osteoporosis like osteogenesis imperfecta.
    c. Anti-TGFβ antibody as a treatment for osteogenesis imperfecta is currently under trial.
    d. KRN23-A FGF-23 antibody (Burosumab) promises a more definitive treatment for hypophosphatemic rickets.
    e. CNP and Meclozine - both inhibitors of the FGFR3 pathway are possible future therapies for conditions like achondroplasia.
    f. Calcilytic therapy with agent NPS 2143 holds promise in future for autosomal dominant hypocalcemia.
4. Indomethacin can be given for prevention of hyperplastic callus in OI type V.

PCOS

1. The AACE guidelines (2015) on PCOS define polycystic ovaries as more than 25 follicles (2 – 9 mm) in the whole ovary (using a probe of 8 mHz frequency); however, since multicystic ovaries are common in adolescents the criteria of ovarian volume more than 10 ml should be used.

Activities by ISPAE Members

Shaila Bhattacharyya, Shivajoyti Clinic, Bengaluru

On the occasion of "World Diabetes Day" and the festivity of Christmas "Sweet 1 India" diabetes camp was organised by Shivajoyti Clinic under the guidance of Dr Shaila Bhattacharyya on 17th December 2017. In view of the proximity to the joyous season of Christmas, the theme of the camp was "Sweet Jingle" and the colour code was "RED"! This camp was held at Shivajoyti Clinic, in the city of Bengaluru. Our main aim was to bring all these children suffering from diabetes together along with their parents to experience the ways to live healthier and merrier.

There were elaborate sessions on nutrition by experienced dieticians which included carbohydrate counting, food exchanges and ways of planning a meal while dining out. The parents also interacted well, asking their queries on various foods and their composition. They even witnessed a prototype display of the most common food exchanges including low glycemic index cereals like millets in its raw form and its healthy savouries. We also presented educational videos on the etiology of diabetes and the newer insulin devices available like I-port and CSII. HbA1c was tested free of cost for all children who attended the camp.

For the children, we conducted exciting games which tested their memory and skill. The winners were rewarded. Skilled artistes were called to enthuse the children by adding more shine and colour in the form of "Face painting". There was an amazing Magic show organised, which kept the children and their parents thrilled all through. The children were so much a part of this celebration that we had a 16 year old adolescent girl, with diabetes for 7 years, being the compere for this function and many more children, right from the age of 3 years perform dances, sing classical songs, demonstrate yoga and give extempore speeches. We were awestruck to see so much enthusiasm.

And finally, as we all know "ALL IS WELL THAT ENDS WELL" we had SANTA CLAUS coming in with his goodies for the children followed by a healthy sumptuous lunch. All in all, it was a day we would cherish in our lives forever.

World diabetes day, Dr Raghupathy P, Indira Gandhi Institute of Child Health, Bengaluru

A comprehensive educational programme was arranged on 11th November 2017, along with observance of World Diabetes Day, at the modern, spacious auditorium of Rajiv Gandhi Institute for Chest Diseases, as an annual event. There was enthusiastic participation from the children and their parents this year. 175 children with diabetes attended the function. Professor P. Raghupathy, with the team of doctors (Drs Vani, Sarita, Akanksha, Soundaram, Sugandha), dietitian (Ms Rachitha), nurses (Ms Neelamma and others) and volunteers (Ms Jamuna and others) from the Institute conducted the program, which was well received by the children and their parents.

During this meeting, the parents and children were provided educational sessions in daily management of diabetes, and their questions and problems regarding low or high blood sugar values, sick day management, insulin action and adjustment of daily dose, self-monitoring of blood glucose at home, etc. were addressed in detail. News about advances in diabetes was also discussed. Nutritious, healthy, well-balanced meal planning was discussed by Ms Rachitha, with clear explanation of all aspects of nutrition that the children need to follow. The children and their parents actively took part in quiz competitions testing their knowledge in diabetes, bagging prizes.

To make the occasion more memorable and lively, a drawing/painting competition for the children was held and prizes given. They were also encouraged to take part in singing and dancing. Entertainment was provided by a Magic show, which was enjoyed by all the children.

All those who attended the function enjoyed the learning experiences, while also relishing the opportunity to participate in singing, dancing, narration of stories, etc.

The free monthly supplies of insulins, syringes, glucostrips, lancets etc. were distributed as usual to all the children who attended. Such annual events have helped the children to develop self-confidence in managing their diabetes, independently, all by themselves, complemented with the help and support from their parents and family members.

The function was held under the auspices of Indian Society for Pediatric and Adolescent Endocrinology and supported by Changing Diabetes in Children (CDiC) Programme of Novo Nordisk Education Fund.

Carbohydrate Counting Workshop for Children with Diabetes, Dr Tushar Godbole, Nashik

Harmony Health Hub Nashik, in association of IAP Nashik, organized a workshop for children with diabetes and their families on Nutritional aspects of Type 1 diabetes care on 11th of June 2017. It was a free-of-charge workshop, sponsored by Medtronics India. Ms **Sheryl Salis** [Nutritionist, Mumbai] spoke about the relationship between food and insulin, basic concepts like glycemic index, carbohydrate counting and calculating bolus insulin dose as per the carb count. **Ms Mayuri Sahasrabudhe** [Nutritionist, Nashik] gave away simple low carb snack recipes**. Dr Tushar Godbole** organized and conducted the program. Fifty-five beneficiary children/ families participated in this workshop.

World Diabetes Day celebration at SGPGI, Dr Preeti Dabadghao, SGPGI, Lucknow

World Diabetes Day was celebrated at the Sanjay Gandhi Postgraduate Institute of Medical Sciences on Sunday November 12th. Two hundred and ten members from 79 families of children and adolescents with diabetes, not only from Lucknow and nearby districts, but far off from Champaran, Bihar also, gathered at the telemedicine department auditorium at 9.30 am. They were very punctual this time as they were keen not to miss the talk by Dr Aspi Irani, who had very kindly agreed to come and share his experiences with our families. Starting with sharing of reactions when their child got diagnosed with diabetes, going on to hypoglycemia and sick days, he drew wide participation from the audience and kept them interested and engaged for more than an hour. Pragya Mangla, Suchit Gupta, Chaitra Ravi and Sapna Nayak, our SRs, took passionate talks and prepared a lovely quiz (highlight: video clips of insulin injection, testing, etc, asking the team to spot out all the errors in the procedure!). Our educators Sunita and Sayda and dieticians Zainab, Nirupama and Archana, saw to meal and snack arrangement, celiac diets, and kept the little toddlers engaged so that parents could listen and learn.

Carrying out the program in the telemedicine department allowed us to beam out the sessions to Gorakhpour and Rae Bareli. With the help of our "senior" families and our educators, such arrangements were made that no medical or paramedical staff was present in these 2 locations. The responsible families themselves welcomed the newer ones, and "looked after" them, and made arrangements beforehand for hypo management. Furthermore, a first for our telemedicine colleagues, they could achieve live streaming of our session on the internet. We managed to alert a few our patients who live far away, and could enjoy the proceedings with live streaming!

Last but not the least, we released a Hindi video on You Tube (please google SGPGI Insulin Diabetes or click on link https://youtu.be/0OY-EXBEHWc on Insulin A to Z).

Priti Phatale, Samrat Endocrine Institute of Diabetes, Obesity and Thyroid, Aurangabad

In 2013, we founded a club named 'Energy Health Club' for children weighing more than normal. Through this club we conduct monthly activity on 4th Sunday of every month. Each activity consists of one hour-motivational session on physical activity and one hour session to boost up the confidence of overweight and obese children.

On 26th November 2017, on the occasion of 'World Diabetes Day' and 'Children's Day', we conducted a motivational program 'Unleash the star in you' in association with the world-renowned 'Dale Carnegie'. The program was conducted in partnership with Lupin Pharma. Dale Carnegie worked to create personal vision and aim, build self-confidence and manage stress in overweight and obese children. Before starting the activities, we conducted an awareness campaign for childhood and adolescent obesity and measured the anthropometry of every child. The program received an overwhelming response. It was concluded with important take home messages regarding childhood and adolescent obesity to the parents and family members. Children and families were enrolled in the mission of not only fighting with childhood obesity but also preventing it and proceeding towards 'Healthy India'.

Celebrations by Yog Dhyan Foundation, Anju Virmani, New Delhi

Yog Dhyan Foundation is a trust working in Delhi for children with T1D all year long. They have weekly yoga-cum-diabetes education sessions in a central Delhi location, where T1D children from poor families are provided blood glucose strips and syringes, and A1C and few other tests on a quarterly/ annual basis, at highly subsidised prices. Children from very poor families are also given monetary help by a fixed bank transfer every month. Many of the older patients come here as volunteers. The classes thus are a place where all families, poor and rich, get an opportunity to give each other psychological support and to network. The underlying philosophy is to enable capacity building of children and their families so that they become independent, rather than providing only free facilities.

YDF celebrated the International Yoga Day on the 21st June 2017, with the theme 'Yoga for Health and Health for all' highlighting the contribution of Yoga in holistic development and achieving mind-body equilibrium. Chief Functionary, Mr Anil Vedwal, and Ms Srishti Puri (psychologist, certified diabetes educator) welcomed everyone, followed by a 40 min Yoga session for the children and parents, and then a drawing competition, giving freedom to use their creative imagination around the theme "Yoga for Health". Prizes were given for the 3 best drawings. Then came a question- answer session, in which the children picked out chits with questions related to diabetes, and answered them. Everyone enjoyed the game which contributed to their diabetes education in a fun manner. Finally, the snacks served were boiled black chana with dhania chutney, amaranth (choolai) laddoos and peaches – a combination of protein, carbohydrate and fibre

healthy enough to satisfy Dr Anju Virmani, and tasty enough for all of us to enjoy, also conveying the message that fruits and tiny amounts of sugar are not forbidden.

The festival of lights, Diwali, was celebrated by YDF with all the children and families on 15th October, 2017. We had a noisy but eco-friendly Diwali by not burning fire crackers, but by bursting balloons!! The parents inflated the balloons; the children formed groups age-wise, and stamped on the balloons with their feet to burst them. The group which burst the most balloons won. It was followed by a Rangoli making competition, where again children were divided into groups along with their parents. The floor was soon decorated with beautiful designs and colours! We all had our snacks together after the activities. It was a day filled with joy, fun and laughter! Diwali with our Type 1 diabetes family was a wonderful experience.

On 24th December, the children were taken by surprise when they saw Santa Claus just after they finished their yoga! Santa came singing “Jingle Bells” and distributed gifts. Children shared their experiences about their diabetes management in the past year, and pledged to have better and tighter control in the coming year. Mr Vedwal explained how important it was for all to carry the diabetes I-card provided with the help of Aventis, at all times. He also described how YDF is collating the data of the children to track degree of monitoring and A1C levels, so that those children who were in poorest control could be identified and offered more psychological support. Thus, we ended 2017 and prepared to welcome 2018 by combining joy with health.

Hemchand Prasad, Mehta Children's Hospital, Chennai

Grow day

Grow day was celebrated in Mehta Children's Hospital on 01.05.2017 by department of paediatric endocrinology for the 4th consecutive year. 30 children with GH deficiency participated in the program and were given education on GH therapy. A booklet called my "Grow book" was released.

Thyroid day CME

A CME was organised on 'Thyroid day' (24.05.2017) at Mehta Hospital. It was attended by paediatricians, practitioners and postgraduate students.

Diabetes Day celebrations in Mehta Children's Hospital, Chennai

The Department of Pediatric Diabetes has been celebrating Diabetes Day along with children with type 1 diabetes mellitus under the care of the Unit since 2012. This year, for the 6th consecutive year, about 50 families with T1D were taken on an educational tour by bus to Shelter Resort in Mahabalipuram on the outskirts of Chennai. The program was funded by Dr Mehta Medical Trust and consisted of:

1. Talks by diabetes educators on insulin administration and self-monitoring of blood glucose.
2. Motivational talk by parent Mrs Ancy - on celebrities and successful people with T1D.
3. Motivational talks and sharing of experiences, by our senior parents who have been living with T1D for 1-15 years.
4. Pump demonstration by an educator, and the experiences of a family with T1D using a pump.
5. Practical tips on carbohydrate counting and how t0 count carbs by using a weighing machine and MS Excel, by a parent Mrs Saranya.
6. Distribution of prizes and rewards to the child with the lowest HBA1C, the best log book maintenance, highest SMBG frequency etc.
7. Cultural program by children with T1D.
8. Magic show organized for the children.
9. Quiz program for the children with T1D.
10. Distribution of free insulin, glucostrips for poor children under the care of the Unit.

Workshop for Teachers

A workshop for teachers was arranged by Dr Mehta Hospital for schools in and around Chennai. 40 teachers from various government and private schools in and around Chennai participated in the program. We plan to work with these teachers in schools to look after the children with diabetes and plan to conduct three monthly workshops for teachers.

State conference for nurses in Tamil Nadu on T1D

A state level conference was organized for nurses on T1D management. The morning session consisted of lectures on an overview of T1D, in-patient management of hypoglycemia and hyperglycemia, glucometer usage and log book maintenance. The afternoon session included 6 skill stations: glucagon administration, insulin infusion preparation, syringe usage, pump usage, insulin pen usage and glucometer usage. The Tamil Nadu Nursing Council awarded this program 6 credit points. The program was attended by 60 nurses from all over the state and south India.

Santhosh Olety, Karnataka Institute of Endocrinology and Research, Bengaluru

Insulin pump workshop

A half day workshop was organised in October 2017 for children using insulin pumps and those who were keen to know about the pumps. It included a lecture on insulin pumps, ways of healthy living, yoga, practical demonstration of different pumps, CGMS, i-port advances etc. This was followed by parental interaction, sharing of parental and children's experience of using pumps, nonmedical practical challenges of using pumps, and motivational talks from parents and children who have excelled in academics, careers and other activities.

World Diabetes Day 2017

World Diabetes Day was celebrated at Karnataka Institute of Endocrinology and Research (KIER) on 12th November with the objectives of rising awareness about childhood diabetes, and creating a platform for parental and children's interaction to empower them and increase psychological well-being. We also took this opportunity to entertain them through drawing and various age appropriate educational fun filled activities.

It was well attended by 125 members, including families. The event also included a mini walkathon by children and parents carrying placards displaying messages on diabetes awareness and regular monitoring for a better health outcome. We ended the event by parental feedback, talent show by children in the form of reciting slokas, singing, dance and relishing of healthy meals by all the attendees.

Shalmi Mehta, Endokids Clinic, Ahmedabad

Dr Shalmi Mehta and Dr Ruchi Shah at Endokids Clinic, Ahmedabad celebrated World Diabetes Day on 26th November 2017. About 60 children with Type 1 Diabetes and their parents attended the event. The key events included a food based fashion show presented by toddlers, various skits prepared by kids on different experiences in real life (new diagnosis, bullying at school, hypoglycemia, sick day management etc.), a recipe competition for mothers and an *antakshari* with a mix of diabetes and Bollywood. This program helped a lot to build a stronger bond amongst kids and parents and also between doctors and kids.

Sandeep Julka, Indore

We conducted a type 1 diabetes support group meet in November 2017. Around 58 kids with type 1 diabetes and their parents participated in the program. We supported 15 kids with free glucometers and glucostrips through the 'Life For A Child Foundation'. Insulin was provided free for all the underprivileged children with type 1 diabetes.

Awards and Fellowships

Dr SriNagesh from Hyderabad has received the prestigious AR Seth award at ESICON 2017, Thiruvanathapuram for his research on 'Neonatal Diabetes'.

Dr Aniket Kumbhojkar, Sangli, had received a Travel Grant award for the 10th International Joint Meeting of Pediatric Endocrinology, held at Washington DC in September 2017.

Oral paper and Poster winners at 5th Biennial Meeting of Indian Society for Pediatric and Adolescent Endocrinology: ISPAE 2017 - Coimbatore

Oral papers

1. **Dr Praveen G Paul** from CMC, Vellore for "Ideal cord blood TSH level for screening of congenital hypothyroidism in the south indian population"
2. **Dr Nikhil Lohia** from Pune for "Reference centile curves for wrist circumference for Indian children age 3-18 years"

Posters

1. **Dr Rajni Sharma** from AIIMS, New Delhi for "Long-acting intramuscular ACTH stimulation test for the diagnosis of adrenal insufficiency in children"
2. **Dr Preeti Singh** from LHMC, New Delhi for "Impact of using different growth references on interpretation of anthropometric parameters of children aged 8-15 years"
3. **Binay Kumar Pramanik, Debashini Angelin and Vineeth John Mathai**, CMC, Vellore for "Smart phone app as a motivational intervention in adolescents with type I diabetes mellitus"

Answers to Photo Quiz:

X-rays of the extremities demonstrate gross sclerosis and thickening of diaphyses of long bones and metacarpal bones but the epiphyses are spared. Chest and bony thorax appeared normal. Skull examination showed thickening of bones of skull base. Overall findings suggested the diagnosis of Progressive Diaphyseal Dysplasia (Camurati-Englemann syndrome, CES)

CES is an autosomal dominant disorder caused by herterozygote mutation in *TGFβ1* gene. Medical management includes use of corticosteroids, losartan and analgesics. Corticosteroid and losartan therapy need standard monitoring protocols. Surgical procedures are done to relieve symptoms related to several cranial sclerosis, and bilateral myringotomy to improve conductive hearing loss due to serous otitis. DNA mutation analysis of *TGFβ1* gene, would be helpful for further confirmation of diagnosis, genotype-phenotype correlation and response to medical management.

ISPAD
International Society for Pediatric and Adolescent Diabetes

ISPAD
Pre-meeting Symposium on Childhood Diabetes

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Venue: Hotel Park Hyatt, Hyderabad
Date: 4th Feb 2018

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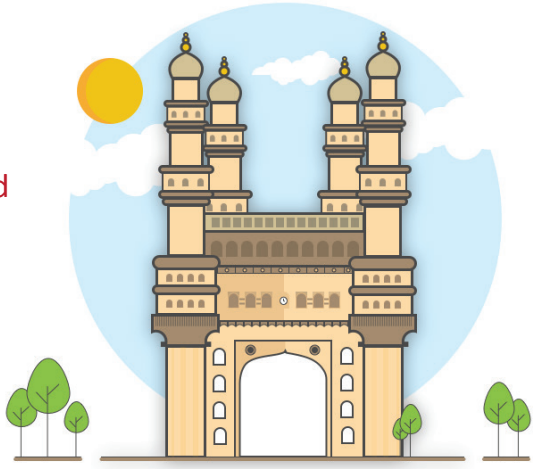

ISPAD 2018 (11-14 Oct 2018) brings renowned international and National experts in childhood diabetes to Hyderabad.

As a prologue, we invite you for a one day appetizer

With ***Prof. Joseph Wolfsdorf (Harvard)***, ***Prof. David Maahs (Stanford)*** and national speakers on 4th Feb 2018.

Time to update your clinical expertise!

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Anju Virmani, Banshi Saboo

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PREMEETING SYMPOSIUM ON CHILDHOOD DIABETES
4TH FEB 2018

	Early Bird (Up to 31st December)	Standard (Up to 3rd Febraury)	On the spot (Febraury 4th)
ISPAD MEMBER	800 INR	1000 INR	1200 INR
ISPAD NON-MEMBER	1200 INR	1500 INR	1800 INR
PG TRAINEE	800 INR	1000 INR	1200 INR

Scientific Programme: ISPAD Pre – meeting symposium

Time	Topics	Speaker
9:00 to 9:20	Types of diabetes in children. Burden of the disease in India & the world	A. Mythili
9:20 to 9:40	Adjusting Insulin doses and Monitoring Treatment	Leena Priyambada
9:40 to 10:00	Hypoglycemia in Diabetes	Sirisha Kusuma B
10:00 to 10:30	**Inaguration and Tea break**	
10:30 to 10:50	Diabetes in toddlers and adolescents	Hemchand Prasad
10:50 to 11:20	T1D staging and oral insulin trials	David Maahs
11:20 to 11:50	Recent advances in T1 DM management	Joseph Wolfsdorf
11:50 to 12:10	Issues in diabetes management: Indian scenario	P V Rao
12:10 to 12:40	Indian Diabetic diet?? Busting myths	Sheryl Salis
12:40 to 01:30	**Lunch**	
01:30 to 02:00	Sick day and DKA : current guidelines	Anurag Bajpai
02:05 to 02:20	Growth and puberty in Type 1 Diabetes	Leenatha Reddy
02:25 to 02:50	Long term complications of poor glycemic control	Jayanthy Ramesh
02:50 to 03:15	When is it Type 2 Diabetes in children	Rakesh Sahay
03:15 to 03:30	**Tea Break**	
03:30 to 04:30	Workshop	Co - ordinators
	1. Insulin: types, mixing, injecting, rotation of sites 2. Glucometers and Blood Glucose Monitoring 3. Continous Glucose Monitoring System 4. Insulin pump 5. Glucagon	Anju Virmani Banshi Saboo J Jayaprakash Sai Amarnath Kulkarni Kavitha Sakamuri Sirisha Kusuma
04:30	**Vote of Thanks**	

Postal Address: Dr Sirisha Kusuma B
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www.premeetingispad2018.com

General Information

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2018.ispad.org (available autumn 2017)

Conference Centre

Hyderabad International Convention Centre
HICC Complex
Hyderabad – 500 081 India
www.hicc.com

ISPAD 2018

Reaching the Unreached

Thursday, October 11–
Sunday, October 14, 2018
Hyderabad, India

FIRST ANNOUNCEMENT

2018.ispad.org

Hyderabad | India

ISPAD
International Society for Pediatric and Adolescent Diabetes

ISPAD 2018
HYDERABAD | INDIA

Welcome Message

Welcome Message from ISPAD

Dear friends,

On behalf of the International Society for Pediatric and Adolescent Diabetes, we warmly invite you to the 44th Annual Conference of ISPAD, from October 11-14, 2018. This will be unique in many ways: ISPAD comes to India for the first time, to a city rich in history, art, jewellery, spices.... Hyderabad, the city of pearls, founded in 1589, is the capital of the southern state of Telengana, and a major hub of the technology industry. It is the perfect flavorful combination of old and new, where we discuss what is new in diabetes research and also how to take this care to benefit each child with diabetes: "**reaching the unreached**". The meeting aims to bring together endocrinologists, diabetologists, diabetes educators, dietitians, psychologists, and experts from allied fields, from all corners of the world. We welcome you to join us in this opportunity to update ourselves on basic and clinical research, and exchange ideas on how to make it work in the real world. The final aim of course, is a child with diabetes anywhere on this planet, who can grow up to be a happy, healthy, productive adult.

Do come to Hyderabad and join us on this exciting journey!

Looking forward to seeing you there,

Anju Virmani
Conference Co-President

Banshi Saboo
Conference Co-President

Joseph Wolfsdorf
ISPAD President

David Maahs
ISPAD Secretary-General

About ISPAD

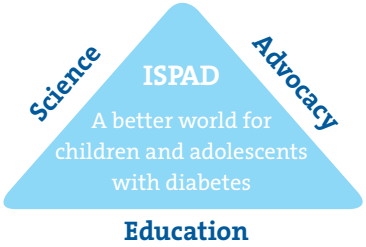
The **INTERNATIONAL SOCIETY for PEDIATRIC and ADOLESCENT DIABETES (ISPAD)** is a professional organization whose aims are to **promote clinical and basic science, research, education and advocacy in childhood and adolescent diabetes**. The strength of ISPAD lies in the **scientific and clinical expertise** in childhood and adolescent diabetes of its members. ISPAD is the only international society focusing specifically on **all types of childhood diabetes**.

ISPAD publishes Clinical Practice Consensus Guidelines for the management of diabetes in children and adolescents. These are published in ISPAD's official journal Pediatric Diabetes and the 2014 Guidelines are freely accessible through our website www.ispad.org.

Who can become an ISPAD member?

Full Members of ISPAD are medical healthcare professionals (pediatricians, internists and other disciplines), non-medical healthcare professionals (diabetes nurses, dieticians, psychologists, social workers and other members of diabetes teams) and scientists committed to clinical care, education, research or advocacy relevant to children and adolescents with all forms of diabetes mellitus. The Pediatric Diabetes Journal is included in the membership fee. Become a member here: **www.ispad.org/?page=ISPADMembership**

More information on registration fees, deadlines, abstract submission and travel grant applications will be available from autumn 2017 on **2018.ispad.org**



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