CAPE NEWS

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

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Contents

From the Editor's Desk

Dear ISPAE Members,

Greetings from the newly appointed CAPE NEWS editorial team!

With the new team of ISPAE executive members, the new CAPE NEWS team has also been appointed. With two members from the north, three from the south and one from the western part of India, I believe it's a well-balanced representation. Further, two senior members from the previous team are also retained which would go a long way in carrying forward the time-honoured views and providing valuable guidance to the new members.
CAPE NEWS, the official quarterly newsletter of ISPAE, started in 1997, has progressed and grown immensely with the hard work of former editorial teams. We need the support of all you to maintain and upscale the standards set by our predecessors.
We would make all possible efforts to keep up the quality of the newsletter as it is mouthpiece and mirror of our Society. Further, with the support of ISPAE Executive, we would wish to transmute the CAPE NEWS to a Journal. Although this seems an ambitious project, I firmly believe that now is the time to start working in this direction. Also, we would strive to widen the readership of CAPE NEWS.
We seek suggestions, guidance and support from all ISPAE members to make CAPE NEWS even more successful!

With warm regards,
Rakesh Kumar and Team

Message from ISPAE office bearers

Dear Friends,

Greetings from the Executive Council for 2019-2020!

The new EC took charge on 1st January 2019. This Council is a good mix of young and experienced members from all over the country. We aim to carry on the good work of our predecessors. One of the most important goals for the current Council and members of the Society is to make "Newborn Screening for Congenital Hypothyroidism" universally available to all newborns. The first step in this direction was the publication of guidelines by ISPAE for NBS in the Indian Journal of Pediatrics in 2 parts. The links for these 2 articles were freely available for 2 months till March 2019. The next task is to get obstetricians, neonatologists and pediatricians on board, by having continuous interaction with their Societies on various platforms. This should also become a part of the curriculum for undergraduates and postgraduates. Finally we need to spread awareness among the general public so that they demand that screening is available to their newborns. Dr Vijayalakshmi Bhatia, with help from Dr Margaret Zacharin of Royal Children's Hospital, Melbourne, managed to get financial aid from GPED for promotion and awareness of NBS in the lay public in India. It is up to us to utilize it optimally to make NBS for CH universal.

We will have our biennial conference ISPAE 2019 and ISPAE-PET in Kolkata with Dr Subrata Dey as Organizing Chairperson of ISPAE 2019, and Dr Sudha Rao as the ISPAE-PET Convener. The midterm meeting with ISPAD will be held in Chandigarh in 2020.

We have a new Editor of Cape News, Dr Rakesh Kumar from PGI Chandigarh, along with new members in his team - we hope to see new ideas and changes in Cape News. Dr Ravikumar has been a steady force to keep the website going. With inputs from members we should try to make the website vibrant and more active. The current Executive is always keen to hear from you about new ideas and initiatives. We will try our best to achieve them along with you.

With regards

Preeti Dabadghao, Ahila Ayyavoo and Leena Priyambada

ISPAE Fund for charity activities by members

In accordance with our Rules and Regulations, ISPAE spends a significant proportion of its income each year for charity and educational activities.

The educational activities include conduct of the Biennial meeting, PET (Pediatric Endocrine Training) program, publishing Practice Guidelines on specific diseases, publishing the quarterly newsletter (Cape News) with its educational content, maintenance of the ISPAE website (for communication & patient and physician education) and the Grant for ISPAE Short Term Observership Award.

The charity activities include

(a) Using a part of our interest earned from fixed deposits to reimburse charity activities of the Society. This includes the charitable activities conducted by the members in the calendar year, and

(b) Encouraging individual members to motivate donors to donate to the Society for pediatric endocrine and diabetes related activities (availing 50% income tax exemption under section 80 G). The donation amount would be used by the member for a charity activity and the amount reimbursed to the member.

The Executive invites members who want to apply for reimbursement of up to Rs 25,000, under the above-mentioned process, for the financial year 2018-2019. The member must show evidence of the charity activity conducted by him/ her, in the form of a short write up and photographs (by email). The activity should have occurred between 1st April 2018 and 31st March 2019. The last date for application is May 31st 2019.Members may kindly note that the same activity would continue in FY 2019-20.

Hearty Welcome to New ISPAE Members

Name	Place
Life Members	
Pradeep Kumar	Asst. Professor, Pediatrics, AIIMS, Patna, Bihar
Bharathi Das	Asst. Professor, Pediatrics, SCB Medical College, Cuttack, Odisha
Sowjanya GT	Ped endo Fellow, IGICH, Bengaluru
Thrupthi S	Ped endo Fellow, IGICH, Bengaluru
KavithaSakamuri	Pediatric Endocrinologist, Rainbow Children's Hospital, Hyderabad
ShrutiAppaji	Ped endo Fellow, IGICH, Bengaluru
ProteekSen	Ped endo Fellow, IGICH, Bengaluru
PinkiVedavanam	Consultant Pediatrician, KanchiKamakotiChildTrust Hospital,Chennai.
Riddhi Patel	Ped endo Fellow, Regency Hospital, Kanpur
ThahseenNilofar S	Consultant Pediatrician, Vadamalayan Hospital, Madurai
Vidhu Ashok	Asst. Professor, Malabar Medical College, Kozhikode
Nikhil Avnish Shah	Fellow, Jehangir Hospital, Pune
Meghdeep Mukherjee	Pediatrician, Kolkata
Associate Members	
VenkatarakeshChintala	DM Endocrinology trainee, Narayana Medical College, Nellore
SagarArjanbhaiBarasara	DM Endocrinology trainee, BLY Nair Hospital, Mumbai
PrudwirajSanamandra	DM Endocrinology trainee, BLY Nair Hospital, Mumbai
SabinkarGayatri	DM Endocrinology trainee, Narayana Medical College, Nellore

Excerpts from ISPAD Clinical Practice Consensus Guidelines 2018- What's New?

Compiled by: Nikhil N Lohiya, Research and Clinical Fellow (Ped Endo) at Hirabai Cowasji Jehangir Medical Research Institute & Jehangir Hospital, Pune.

Epidemiology & Classification of Diabetes

1. Emerging evidence suggests that trends in the incidence of type 1 diabetes (T1D) vary markedly from country to country.
2. Recent genome-wide association and whole genome/exome sequencing studies have increased clinical understanding of monogenic forms of diabetes that are distinct from the major classes of T1D and type 2 diabetes (T2D).
3. Based on key gene variants associated with T1D, compositeT1D genetic risk scores have also been explored as novel tools to differentiate T1D from monogenic diabetes and T2D.

Stages of T1D

"Phases" of diabetes have been renamed as "stages".
Stage 1.Multiple islet antibodies, normal blood glucose, and presymptomatic.
Stage 2. Multiple islet antibodies, raised blood glucose, and presymptomatic.
Stage 3.Islet autoimmunity, raised blood glucose, and symptomatic.
Stage 4.Long standing T1D.

Monogenic Diabetes

1. Next-generation sequencing (NGS) enables the simultaneous analysis of multiple genes at a lower cost and has already become a feasible alternative to traditional genetic testing.
2. Variants identified through genetic testing should be classified according to the 2015 American College of Medical Genetics and Genomics (ACMG) and the Association for Molecular Pathology (AMP) guidelines.

Glycemic Control Targets & Glucose Monitoring

1. Emphasis on individualizing blood glucose (BG) and glycemic targets for children, adolescents, and young adults aged <25 years.
2. Discussion of the impact of increased use of continuous glucose monitoring (CGM) and intermittently scanned CGM (*is*CGM) technology.
3. Target hemoglobin A1c (HbA1c) <53 mmol/mol (<7.0%) for children, adolescents, and young adults who have access to comprehensive care.

Nutrition in T1D

1. The importance of meal-time routines with limitations on snacking has been emphasized in order to improve dietary quality and optimize glycemic outcomes.
2. The impact of dietary fat and protein should be considered in the calculation of the meal-time insulin dose and how it is delivered.
3. CGM is a useful tool for educating both the clinician and young person with diabetes on food related behaviors and the impact of specific meals on glucose levels.

DKA Management

Recommendations concerning fluid management have been modifiedto reflect recent findings from a randomized controlled clinical trial showing no difference in cerebral injury in patients rehydrated at different rates with either 0.45% or 0.9% saline.

Sick Day Management

1. The tried and true "Back to the Future" approach of frequent monitoring of BG and ketones, preferably of blood over urine ketones, with timely administration of supplemental insulin along with 24 hours, 7 days a week access to expert health care team advice can successfully manage sick days and prevent progression to diabetic ketoacidosis (DKA) in young persons with insulin-treated diabetes.
2. Use of CGM devices may aid in sick day management; greater penetration of CGMs with use of CGM trend arrows for insulin dose adjustments can reduce glycemic excursions and provide benefit.
3. There are particular clinical situations when ketogenesis can be common, such as in the setting of disordered eating behaviors, use of SGLT1/2 inhibitors, and low carbohydrate diets, when frequent glucose and ketone monitoring, along with sick day management, are needed to prevent development of DKA.

Exercise Management

1. In the field of technology, isCGM offers the opportunity to obtain glucose values more easily than with self-monitored BG monitoring (SMBG). This technology also provides the user with information on the direction and the rate of glucose value changes. However, the individual must actively scan the sensor to receive a value. Alerts or alarms are not currently linked to this technology.
2. Real-time CGM (rtCGM) is a technology also including the possibility to use individualized alerts and safety alarms, besides information on glucose values on a continuous basis, along with information on the direction and the rate of glucose value changes.
3. Technology allows access to applications in smart phones to enable the user, and followers, for example, a parent, legal guardian, teacher and coach, to view BG levels and trends, which may increase safety during and after exercise. However, recent clinical studies and clinical experience suggest that exercise itself may be a setting in which both isCGM and rtCGM could misrepresent the true dynamic changes in actual BG concentrations because of apparent lag time between BG levels and interstitial glucose levels.
4. Insulin pumps that include predictive low-glucose management (PLGM) systems may be advantageous as physical activity is associated with increased risk of hypoglycemia, not only during but also afterwards. The system being currently evaluated is the hybrid closed loop; physical activity clearly represents one of the biggest challenges for such a system.
5. A variety of wearable technologies offer the possibility to track BG values (e.g., smart watches) as well as level of physical activity (e.g., wrist bands), heart rate, sleep quality, etc. The current trend is that the different wearables are used to an increasing extent where device connectivity and data openness might create new opportunities in the future.

Diabetes technologies

1. Continuous subcutaneous insulin infusion (CSII) pump therapy can be used safely and effectively in youth with T1D to assist with achieving targeted glycemic control.
2. Insulin pump therapy helps reduce episodes of hypoglycemia.
3. Insulin pumps reduce chronic complications of T1D in youth, even when compared to those with similar HbA1c levels on multiple daily injection (MDI) therapy.
4. Insulin pump therapy is appropriate for youth with diabetes, regardless of age.
5. Infusion set failures are common, and must be recognized early so as to avoid episodes of diabetic ketoacidosis (DKA).
6. rtCGM can be used effectively for lowering HbA1c, reaching target HbA1c, reducing glucose variability (both for insulin pumps and MDIs), and increasing time in range (TIR) in the pediatric population with T1D.
7. Assessing clinically meaningful outcomes beyond HbA1c is possible through the use of CGM technologies to determine both glycemic variability and TIR, which encompasses time in target (often defined as 70-180 mg/dL [3.9-10.0 mmol/L]), as well as time spent in hypoglycemia (level 1: <70-54 mg/dL [<3.9-3.0 mmol/L]and level 2: <54 mg/dL [<3.0 mmol/L]) and time spent in hyperglycemia (levels 1: >180 mg/dL [>10 mmol/L] and level 2: >250 mg/dL [>13.9 mmol/L]).
8. rtCGM can be used effectively for reducing mild to moderate hypoglycemia and shortening the time spent in hypoglycemia in the pediatric population with T1D.
9. The effectiveness of CGM in children and adolescents with T1Dis significantly related to the amount of sensor use.
10. Intermittent, retrospective or real-time CGM use may be useful for diagnostic purposes and in evaluating the effects of major changes in treatment regimens.
11. Use of isCGM, also known as flash glucose monitoring, in the pediatric population, is safe.
12. Sensor augmented pump (SAP) therapy is superior in children and adolescents over MDI with SMBG in reducing HbA1c, without an increase in hypoglycemia or severe hypoglycemia (A). However, this benefit is mediated by adherence to sensor therapy, with at least 60% use being associated with these findings.
13. Low glucose suspend (LGS) systems reduce the severity and duration of hypoglycemia, while not leading to deterioration of glycemic control, as measured by HbA1c.
14. Predictive LGS (PLGS) systems can prevent episodes of hypoglycemia and have been shown to reduce hypoglycemia exposure.
15. Automated insulin delivery (closed loop) systems improve TIR, including minimizing hypoglycemia and hyperglycemia. Commercial availability of automated insulin delivery systems is currently limited, but patient access to these systems is anticipated to improve in the near future.
16. Automated insulin delivery systems have proven to be especially beneficial in attaining targeted control in the overnight period.
17. There exists a wide spectrum of cell phone apps to aid patients with diabetes. Use of evidence-based apps has shown glycemic benefit for adult patients with T2D, but not T1D.
18. Bolus calculators, either on insulin pumps or as phone apps for MDI users, aid patients with diabetes in determining carbohydrate and correction dosing. Their use is associated with improved glycemic control in patients with T1D and should be encouraged for all patients.
19. Automated algorithmic adjustment of open-loop pump settings and insulin dosing parameters is an emerging area of research and clinical care in diabetes technology. The first

system for automated dosing adjustment with health care provider approval has just received regulatory approval.

20. Routine downloading of diabetes devices (BG monitors, pumps, or CGM) is associated with better glycemic control, though overall rates of patients downloading their devices are extremely low.
21. Telemedicine, whereby patients or providers receive care from a specialist remotely through video conferencing, may assist with improving glycemic control and increase the frequency of visits for patients with diabetes living in remote or rural locations.
22. Setting realistic expectations for the integration of diabetes technologies is paramount to the success of patients as they adopt new technologies.
23. Identification and counselling of potential barriers to adoption of new technologies or continued use of devices is critical.

Management and support of children and adolescents with T1D in school

1. The number of young people with diabetes attending school is increasing, placing a significant burden on families, health care systems, and schools.
2. Children may spend more than 30 hours per week in the school environment.
3. Many children with diabetes worldwide do not have ready access to insulin, diabetes supplies, or education. They should be given the same opportunity as other children to obtain an education.
4. Irrespective of age and ability, all students with diabetes at school must receive the support, encouragement, and supervision of school personnel.
5. Optimal management of diabetes at school is a prerequisite for optimal school performance, including learning, and for the avoidance of diabetes-related complications.
6. Maintaining normoglycemia during school hours is important and day-to-day glycemic targets should not differ from any other setting.
7. The type of insulin regimen used at school should be tailored to the needs, ability, and wishes of the child/family and should not be dictated by the school resources.
8. Diabetes is classified by “common law” as a disability, and legal frameworks exist in many nations to ensure the child has equal opportunity to participate in all aspects of school life.
9. Schools should make “reasonable adjustments” to facilitate prescribed medical care to allow for children with T1D to participate in education on the same basis as their peers.
10. “Reasonable adjustments” include school personnel support with insulin administration, as well as understanding and knowledge of diabetes technologies (including CGM devices and insulin pump settings).
11. Administration, or careful supervision of insulin administration, requires school personnel to be legally authorized with informed parental consent.
12. Schools are responsible for adequately training their personnel about diabetes, but the content of the training is the responsibility of the health care team and the parents.
13. Whether children can self-manage certain aspects of their diabetes and/or self-administer insulin is not necessarily age dependent and can only be determined by the parents and health care team.
14. Schools have a non-delegable duty of care to their students, and school personnel should take reasonable care to protect them from harm that is reasonably foreseeable.
15. BG monitoring is central to achieving optimal glycemic control at school and school personnel must be familiar with it.
16. School personnel should be able to manage appropriately the effects of low and high BG levels according to the parents’ and health care team’s instructions.

17. Access to food in schools is an integral part of enabling children to grow normally and balance their insulin and food intake.
18. Use of food pictures may help school personnel assess food servings and their estimated carbohydrate content.
19. All young people with T1D should be given the same opportunities as their peers to participate safely in all sports and physical activity.
20. School personnel should be aware of the signs/symptoms of hypoglycemia, and a "first-aid hypoglycemia" management pack should be available at all times. Clear instructions for managing hypoglycemia should be provided.
21. Young people with diabetes must be allowed to monitor their BG levels, administer insulin, and to treat low/high BG values at any time during the school day, with adult supervision if needed.
22. All young people with diabetes at school should have an individualized diabetes management plan (DMP) in place which must be developed and agreed with parents in advance.
23. The DMP should be reviewed and amended as and when necessary, according to the needs of the young person with diabetes, and/or at least annually.
24. Some studies report higher rates of psychological problems such as depression and eating disorders in young people with diabetes.
25. Schools provide a unique opportunity to identify and treat psychological problems in young people with diabetes and close liaison between school personnel and health care professionals is recommended.
26. Successful diabetes management at school heavily depends on effective communication and problem-solving with the family, and schools should clarify expectations and coordinate communication.
27. Peer relations, local social stigma, racial and religious perspectives can be a burden to patients and families with T1D.
28. Young people with diabetes have a significantly increased risk of being exposed to issues of discrimination, which may impact on self-esteem and cause feelings of stigmatization.
29. School exams or other assessment situations are associated with stress and increased risk of acute transient episodes of hypoglycemia or hyperglycemia that can affect performance.
30. Specific arrangements may need to be put in place (including access to BG testing equipment; hypoglycemia first-aid pack) for exams.
31. Parents cannot be expected to "fill the gap" of school resources and attend to their child's medical management during the school day.
32. With a mutually supportive, collaborative approach between parents, the health care team, and schools, and with advancements in communication technology, e.g. providing sensor glucose data in real time to parents, there is a real opportunity for a truly cooperative approach.

Managing diabetes in preschool children

1. The target HbA1c for all children with T1D, including preschool children, is recommended to be <7.5% (<58 mmol/mol).
2. This target is chosen with the aim of minimizing hyperglycemia, severe hypoglycemia, hypoglycemic unawareness, and reducing the likelihood of development of long-term complications.

3. Intensive insulin therapy, i.e. as close to physiological insulin replacement as possible with preprandial insulin doses and basal insulin, should be used, with frequent BG monitoring and meal-adjusted insulin regimens.
4. Insulin pump therapy is the preferred method of insulin administration for young children (aged <7 years) with T1D. If pump therapy is not available, multiple daily injections (MDIs), with consideration of use of an injection port, should be used from the onset of diabetes.
5. For preschool children using intensive insulin therapy, preprandial administration of bolus insulin given for correction if BG is high and for at least part of the meal is preferable to giving the whole dose during or after the meal.
6. Carbohydrate counting is best introduced at onset of diabetes.
7. The small insulin doses of preschool children may necessitate diluting insulin for precise dosing.
8. Syringes with ½ unit marking and pens with at least ½ unit dosing increments should be used to facilitate more accurate insulin dosing if a pump is not used (or as a back-up to pump use).
9. CGM can be helpful as an approach to adjusting insulin doses. Some CGM devices are approved for this use. If CGM is not available, 7 to 10 plasma glucose checks per day are usually needed for satisfactory glucose control.
10. Injection, infusion, and CGM sites should be properly prepared and regularly rotated in order to reduce the likelihood of lipohypertrophy, scarring, infection, rashes, skin reaction, and dry skin.
11. Injection, infusion, and CGM sites should be inspected by diabetes team members at every clinic visit to detect and treat any skin problems, such as skin reactions, lipohypertrophy, or lipohypotrophy.
12. The use of pumps and CGM are often limited by skin reactions to the adhesive. A skin moistener that preserves water can be used to prepare the site a few days prior to insertion. Topical corticosteroid (group I or II) can be used to treat skin reactions and to manage itching after removal.
13. Life style interventions designed to reduce the risk of subsequent cardiovascular disease in children with T1D are needed, and should be directed toward the entire family, not just the individual child with T1D.
14. Family-centered meal routines with restrictions on continuous eating habits (grazing) are important to ensure dietary quality and optimize glycemic control in preschool children.
15. Diabetes education should be provided to staff at preschools and schools where children with T1D are enrolled, in order to ensure that equal participation in all preschool/school activities occurs and is safely managed.
16. Optimal glycemic control, involving the minimizing of both hypoglycemia and hyperglycemia, will give the child the best opportunity to concentrate, participate, and learn while at preschool and school.
17. Weight, height (or length if <18 months), and Body Mass Index Standard Deviation Score (or percentiles) should be monitored on growth charts in all children with T1D.

Mini-Review

Commercially available blood steroid profile assays in India

Dr Vijaya Sarathi, Associate Professor, Department of Endocrinology Narayana Medical College, Nellore, Andhra Pradesh, India

21α-hydroxylase deficiency is the most common form of CAH and is the most common cause of 46XX disorder of sex development (DSD). Serum/plasma 17α-hydroxyprogesterone (17OHP) is the most useful test to confirm or exclude the condition (1). However, serum 17OHP may not help in the diagnosis of rarer forms of CAH. Steroid profile that comprises quantification of multiple steroids in blood or urine is a useful test to detect rare forms of steroidogenesis defects. The recent position statement on steroid profile suggests it as an important first-line approach to the diagnosis of DSD (2). Steroid profile provides fast and comprehensive results and thus allows for a rapid differential diagnostic orientation. Moreover, it has good phenotype-genotype correlation in CAH cases (3).

These steroid profiles provide the levels of multiple intermediate molecules in the steroidogenesis and their metabolites, the latter especially in urine steroid profile (4). Few blood steroid profiles (BSP) have recently become available on commercial basis in India (5-9). We have recently reported our initial experience with the use of a commercially available steroid profile in the evaluation of DSD and suspected cases of CAH. (10). Here, I summarise the merits and demerits of commercially available BSP in India.

Presently, to the best of my knowledge, three laboratories (Thyrocare Technologies Ltd, Lal Path Labs Ltd, and Anand Diagnostic Laboratory) are offering commercially available cost-effective BSP in India. The utilities of “BSP” by Thyrocare Technologies Ltd, ”Steroid Panel 3 by Lal Path Labs Ltd, and ”Comprehensive Steroid Profile” by Anand Diagnostic Laboratory (ADL) are summarised below:

- BSP is useful in patients with suspected CAH but normal or slightly elevated 17OHP which is incongruent with the diagnosis of 21-hydroxylase deficiency.
- Among rare forms of CAH, BSP is most accurate in the diagnosis of 11β-hydroxylase deficiency, with measurement of serum 11-deoxycortisol being the most useful test. ADL is the only lab offering the test for less than 2500 (Rs 1080) at present (9).
- BSP is also useful in the diagnosis of 17α-hydroxylase deficiency, but BSP by ADL may be less useful in this scenario since corticosterone is not included in their panel.
- BSP provides useful biochemical clues to the diagnosis of 3β-hydroxysteroid dehydrogenase deficiency (DHEAS/Androstenedione ratio). However, the ratio of serum 17-hydroxy pregnenolone to 17OHP, the most accurate biochemical parameter for the diagnosis of this condition cannot be derived from BSP.
- BSP has limited accuracy in the diagnosis of P450 oxidoreductase deficiency, which is best diagnosed by urinary steroid profile.
- BSP is a cost-effective approach for biochemical monitoring of CAH due to 21α-hydroxylase deficiency when the desired evaluation includes measurement of total testosterone, 17OHP and androstenedione (11).

- BSP can be used to reduce recall rates in new-born screening program for CAH if the labs offer the test in a filter paper sample; however, none of the labs appear to be offering this facility at present in India.
- BSP has limited utility in the evaluation of 46XY DSD except for testosterone biosynthetic defects (2).The profile by Dr Lal Pathlab may also be useful to differentiate AIS from 5α-reductase deficiency since the profile includes DHT (12). However, in patients younger than 3 months,even their BSP may not be beneficial. It is the urinary steroid profile that provides the ratio of 5α to 5β steroid metabolites (13).

Table 1: Commercially available blood steroid profiles in India

	Thyrocare Technologies Ltd	**Lal Path Labs Ltd**			**Anand Diagnostic Laboratory**	
	Steroid profile	**Steroid panel 1**	**Steroid panel 2**	**Steroid panel 3**	**Comprehensive steroid panel**	**PCOD steroid panel**
Price(INR)	2500	3000	3500	4000	3500	3000
Testosterone	LC MS/MS		LCMS/MS	LC MS/MS	LC MS/MS	LC MS/MS
Cortisol	LC MS/MS	LC MS/MS		LC MS/MS	LC MS/MS	LC MS/MS
Dihydrotestosterone	Not included		LC MS/MS	LC MS/MS		
17OHP	LC MS/MS		LC MS/MS	LC MS/MS	LC MS/MS	LC MS/MS
Androstenedione	LC MS/MS		LC MS/MS	LC MS/MS	LC MS/MS	LC MS/MS
DHEAS	LC MS/MS		LC MS/MS	LC MS/MS	LC MS/MS	
DHEA	LC MS/MS		LC MS/MS	LC MS/MS	LC MS/MS	LC MS/MS
Progesterone	LC MS/MS		LC MS/MS	LC MS/MS	LC MS/MS	
Deoxycortisol	LC MS/MS	LC MS/MS		LC MS/MS	LC MS/MS	
Corticosterone	LC MS/MS	LC MS/MS		LC MS/MS		
Cortisone	Not included	LC MS/MS		LC MS/MS		
Estradiol	LC MS/MS		LC MS/MS	LC MS/MS		
Aldosterone	Immunoassay	LC MS/MS		LC MS/MS		

Table 2: Comparison of blood steroid profile by Thyrocare Technologies Ltd and Steroid Panel 3 by Lal Path Labs Ltd.

	Thyrocare Technologies Ltd	Lal Path Labs Ltd steroid panel 3
1	Aldosterone is measured by immunoassay, which may lead to falsely high aldosterone levels, especially in patients with marked elevation of serum 17OHP (21 hydroxylase deficiency)	Aldosterone is measured by LC MS/MS and provides an accurate measurement of serum aldosterone.
2	11 hydroxylation of the reported deoxycortisol is not specified in the report*	The report mentions the measured deoxycortisol as 11-deoxycortisol
3	Blood steroid levels are reported in the more familiar conventional units	Blood steroid levels are reported in SI units which are less familiar
4	Dihydrotestosterone and cortisone are not measured	Dihydrotestosterone and cortisone are reported, and the former is more useful in the evaluation of 46XY DSD cases

**mentioned as 'deoxycortisol' in the reports but it was confirmed to represent '11-Deoxycortisol' by personal communication with Dr AKalaiSelvan.*

Conclusion

BSP is most useful for the diagnosis of 11β-hydroxylase deficiency. It is a useful test to diagnose 17α-hydroxylase deficiency, and a useful adjunctive test to diagnose 3β-HSD deficiency. However, its utility is limited in the evaluation of 46,XY patients with under-virilisation (except for few testosterone biosynthetic defects).

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Case Report 1

PARATHYROID ADENOMA IN AN ADOLESCENT- A CHALLENGE TO TREAT

Sowjanya GT, Akanksha Parikh, Narendra Babu, Raghupathy Palany. Indira Gandhi Institute of Child Health, Bengaluru

A 17-year-old girl with intellectual disability, first born to a non-consanguineously married couple, was initially admitted at a private hospital with the chief complaints of back pain and progressive difficulty in walking for nearly one year, eventually leaving her bed-ridden in the last six months. During that admission, she was found to have hypercalcemia (serum calcium 11.7mg/dl and ionized calcium 6.5mg/dl). Her serum phosphorous level was low-normal (2.7mg/dl), while alkaline phosphatase (3996IU/L), and parathormone (2100pg/ml) were elevated. Ultrasonography of the neck had revealed a well-defined hypoechoic lesion with increased vascularity in the left infra-thyroid region suggestive of a parathyroid adenoma. Skeletal survey revealed severe osteopenia with brown tumors, favoring brittle bone disease(Fig. A-D). X-ray spine revealed moderate (L2 and L3) to severe (L1) compression fractures of lumbar vertebrae. She was diagnosed as a case of primary hyperparathyroidism due to a sporadic parathyroid adenoma and was advised excision of the adenoma but her parents refused for fear of neck surgery and presumed complications thereof.

Nearly eight months later, she was brought to our hospital with worsening symptoms and multiple pathological fractures. There was no prior history of fractures, polyuria and hematuria. On enquiry, there was no personal or family history suggestive of syndromic associations such as pituitary adenoma, pheochromocytoma or gastrinoma. There was no family history suggestive of primary hyperparathyroidism.

Duringher present hospitalization, her serum calcium, iCa, phosphorus, alkaline phosphatase and PTH were 13.7mg/dl, 7.4mg/dl, 1.6mg/dl, 2165IU/L, and 1572pg/ml respectively, while the spot urine calcium-creatinine ratio was >1. Her hemogram, liver function tests, renal function tests and electrolytes were normal.

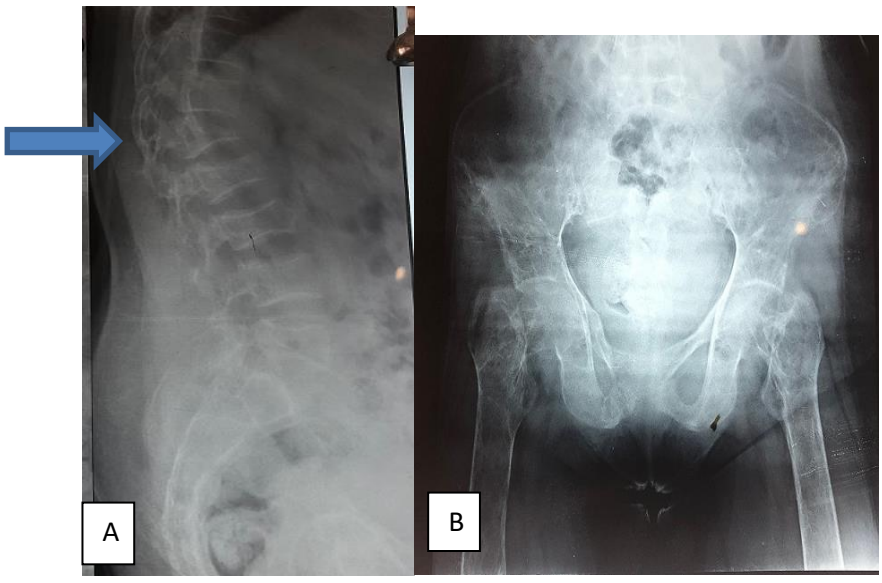

Fig. A- Anterior wedge fracture of L1 with severe osteopenia. Fig B- Pelvis x-ray with severe osteopenia; femora with very thin cortices and multiple cystic changes.

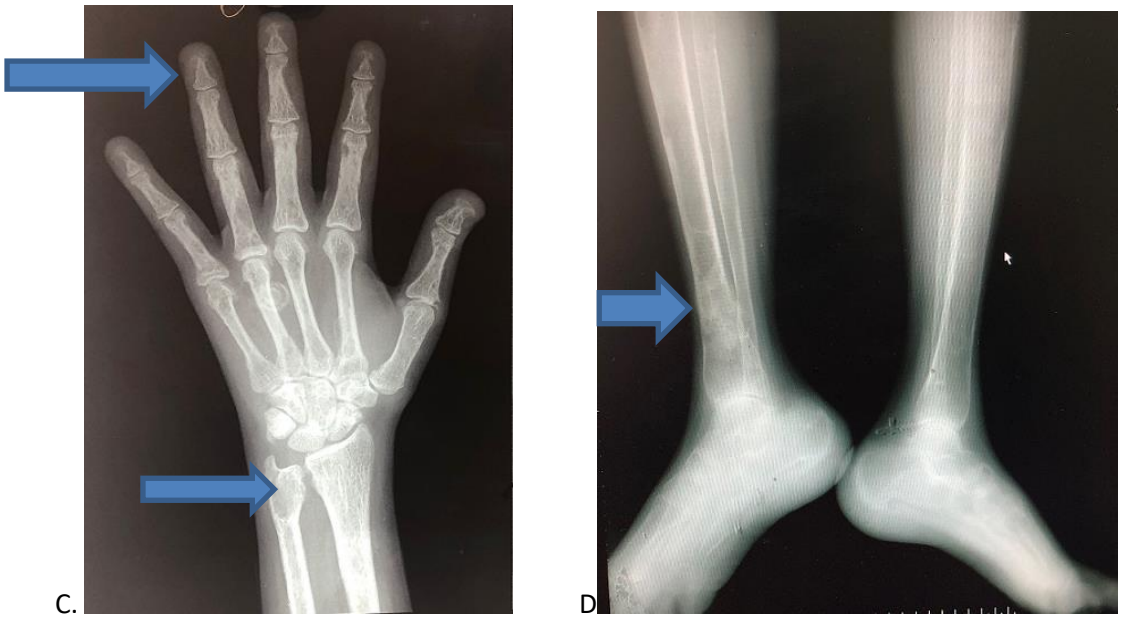

Fig. C- Complete resorption of distal phalanges and osteitisfibrosacystica (OFC) /brown tumor of ulnar end. Fig. D - Lower limbs with severe osteopenia and thinned out cortices with cystic changes.

Pre-operatively she received 1.5times her daily maintenance fluid.Left inferior parathyroidectomy was done (Fig. E) with intraoperative PTH sampling performed after 10minutes of resection.Serum PTH was 38pg/ml, demonstrating a significant drop of > 50% from the pre-op value,indicating a complete resection of the hyperfunctioning parathyroid tissue. Her intra-operative period was uneventful.

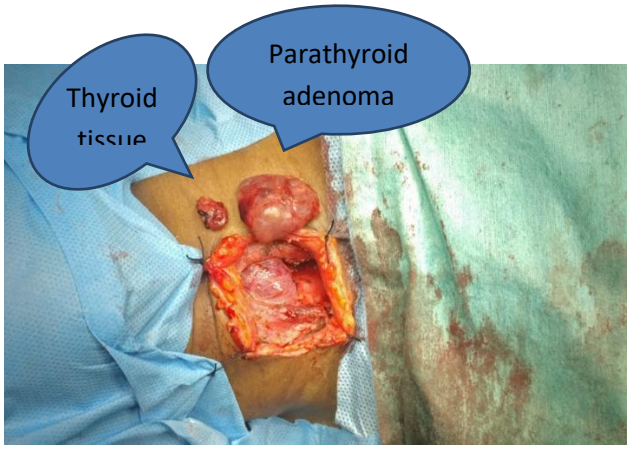

Fig. E - excised parathyroid adenoma and a smaller fragment of the adjacent thyroid tissue.

Histopathology report revealed features suggestive of parathyroid adenoma with focal capsular invasion; however, no lymph or vascular emboli were noted. A smaller fragment showed unremarkable thyroid gland tissue.

In view of the severe osteopenia, the development of hungry bone syndrome (HBS) was anticipated and she was post-operatively started on oral calcium at 2g/day, calcitriol at 0.5µg/day, cholecalciferol at 60000IU per week with a calcium rich diet. Despite these measures, her serum calcium dropped to 6mg/dl and iCal dropped to 2.5mg/dl on day 4 of surgery. She was started on IV

calcium infusion and oral calcitriol and oral calcium were increased to 2µg/day and 4g/d respectively. Gradually, by post-operative day 10, her iCal normalized and repeat serum PTH was 14pg/ml. She was discharged on a minimal dose of calcitriol (0.25µg/d)and maintenance oral calcium supplements(500mg/d). Genetic study for underlying syndromic conditions could not be done due to financial constraints.

DISCUSSION

Primary hyperparathyroidism is an unusual childhood disorder with an incidence of 2 to 5/1,00,000 children and female to male ratio of 1:1 as compared to adults where it is 100/1,00,000 adults and 3:1. In older children and adolescents, primary hyperparathyroidism is most often a sporadic disease and usually due to a single parathyroid adenoma, as in our patient. Rarely, adenomas or hyperplasia involving several parathyroid glandsand parathyroid carcinoma may also cause primary hyperparathyroidism. Syndromes associated with primary hyperparathyroidism include familial isolated hyperparathyroidism (CDK, MEN1 (*MENIN*), MEN2A (*RET*), MEN4 (*CDNK1B*)and hyperparathyroidism-jaw tumor syndrome(*HRPT2, aka CDC73*)).

Children and adolescents with primary hyperparathyroidism usually present with bone disease (bony pains, proximal muscle weakness and fractures), renal stones, pancreatitis or hypercalcemic symptoms (nausea, vomiting, constipation, polydipsia and polyuria). Recently, there has been an increase of asymptomatic presentation. Hypercalcemia, hypophosphatemia and elevated serum PTH are the classical laboratory findings.

Parathyroid carcinomas can be difficult to distinguish histologically from adenomas unless metastases are present. Retinoblastoma protein positivity in all parathyroid carcinomas (lacking in adenomas) as well as significantly different chromosomal alterations between the two, suggest that a carcinoma arises de novo rather than by malignant transformation of an existing adenoma. Genetic mutations of *CDC73*, are associated with an increased risk of parathyroid carcinoma. Although not diagnostic, presence of capsular invasion in our patient raises the possibility of carcinoma and necessitates regular monitoring with serum calcium, PTH and ultrasound neck.

Radiological imaging modalities such as USG, CT, MRI and radionuclide scanning can help to localize the hyperactive gland. ^{99m}Tc- sestamibi scanning is useful in localizing the adenoma, identifying multiglandular disease and ectopic PTH secreting tumors. Surgical exploration and excision of adenomas if found, is recommended in all pediatric cases of primary hyperparathyroidism. Adequate hydration, loop diuretics to promote calciuresis, and bisphosphonates may be used preoperatively to reduce hypercalcemia. Intra-operative PTH monitoring is helpful in assessing complete resection of hyperfunctioning parathyroid.

Less common but a serious adverse effect of parathyroidectomy is HBS, which refers to rapid, profound and prolonged hypocalcemia associated with hypophosphatemia and hypomagnesemia and exacerbated by suppressed PTH levels, which follows parathyroidectomy. Large adenomas, preexisting vitamin D deficiency, and radiological evidence of hyperparathyroidism are associated with increased risk of HBS. It usually lasts for a few days (1-4 days). It may persist for more than 4days in patients withtotal parathyroidectomy, devascularisation or longterm suppression of residual glands. The serum alkaline phosphatase level may take more than nine months to normalize. HBS is treated with IV Ca infusion, oral Ca (upto 6-12g/day), calcitriol, cholecalciferol

and parenteral magnesium if serum magnesium is low. Pre-operative treatment with bisphosphonates or vitamin D may reduce the occurrence of HBS.

In conclusion, parathyroid adenoma is a rare, mostly sporadic cause of hypercalcemia in adolescents and older children that needs timely surgical management and continuous vigilance for complications both pre and post operatively.

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Case Report 2

Aniket Kumbhojkar,[1] Sudhakar Jadhav[2]

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INTRODUCTION

Disorders of sex development (DSD) are a group of disorders of varied etiologies which present with discordance between phenotypic and genetic sex. The newer classification underscores the importance of karyotype in the evaluation of these disorders. Congenital adrenal hyperplasia is the most common cause of virilisation among 46XX DSD patients (1). Other etiologies such as aromatase deficiency, glucocorticoid resistance syndrome, maternal androgen secreting tumors and maternal exposure to exogenous androgens can also lead to virilisation of a 46XX fetus. 46XX testicular DSD is a rare clinical condition with a reported prevalence of 1:20.000 births (2). Here, we present a rare case of SRY Negative 46XX testicular DSD (OMIM 400045). .

CASE REPORT

A 2-month-old infant, first by birth order, full term, appropriate for gestational age and born to nonconsanguineous parents, presented with atypical genitalia. Antenatal history was unremarkable with no history of maternal virilisation or androgen exposure.

There was no history of atypical genitalia or infertility in family. On physical examination, weight (4.4 kg), length (57 cm) and head circumference (31 cm) were between 3rd and10th percentiles. The infant had micropenis (stretched penile length 15 mm) and penoscrotal hypospadias with gonads palpable in the scrotal sac. There were no hyperpigmentation, salt wasting features, skeletal anomalies or syndromic features. Ultrasound revealed right hemiuterus and scrotal gonads (right: 14*6 mm; left: 10*5.8 mm) without discernable follicles. Initial laboratory evaluation revealed normal serum electrolytes and 17α-hydroxyprogesterone. At day 67 of life, serum FSH, LH, total testosterone and AMH were 3.48 mIU/ml, 1.77 mIU/ml, 164 ng/dl and > 23 ng/ml respectively, suggesting normal function of Leydig and Sertoli cells.

Peripheral blood karyotype was 46XX, and fluorescent in situ hybridization for SRY was negative. Gonadal biopsy revealed testicular tissue with small seminiferous tubules containing immature Sertoli cells, small abortive lumina and absence of spermatogonia.

DISCUSSION

46XX (ovo)testicular DSD is a rare form of DSD presenting with a spectrum of phenotypes ranging from atypical genitalia, and normal female genitalia with slight clitoral hypertrophy, to normal male phenotype (3). 46XX karyotype is observed in 70% patients, with (ovo)testicular DSD. Abnormal translocation of SRY gene to X chromosome or more rarely to an autosome is detected in 35% of 46XX (ovo)testicular DSD (4). Recently various other mechanisms have been proposed to explain 46XX, SRY-negative (ovo)testicular DSD. In contrast to the previous concept of ovarian development being a default process, recently many genes regulating ovarian differentiation have been discovered. These genes may function as pro-ovarian or anti-testis genes. Increased expression of pro-testis genes such as SOX9, SOX3, SOX10 and DMRT1 can lead to testicular differentiation in the absence of the SRY gene (5). Insufficient expression of pro-ovarian genes such as WNT4, RSPO1 and FOXL2 is also implicated in the pathogenesis of 46XX (ovo)testicular DSD (6).

The exact diagnosis of our patient was intriguing, since the patient had overlapping features of 46XX testicular DSD and (ovo)testicular DSD. 46XX testicular DSD is characterized by presence of a 46XX karyotype; male external genitalia ranging from normal to ambiguous; two testicles; azoospermia; and absence of müllerian structures (7). Approximately 85% of individuals with nonsyndromic 46XX testicular DSD present after puberty with normal pubic hair and normal penile size but small testes, gynecomastia, and infertility, whereas approximately 15% present at birth with ambiguous genitalia, typically with penoscrotal hypospadias (7). As observed in our patient, ambiguous genitalia are more frequently reported among SRY-negative than SRY-positive 46XX (ovo)testicular DSD. However, our patient had a persistent hemiuterus which is against the diagnosis of 46XX testicular DSD. Hence, a diagnosis of 46XX (ovo)testicular DSD was considered. However, presence of descended bilateral gonads (rare in (ovo)testicular DSD patients) and absence

of ovarian tissue on gonadal biopsy were not in favor of this diagnosis. Hence, the exact diagnosis cannot be assigned in this patient.

Both testicular and (ovo)testicular DSD have been described in families with 46XX males. This suggests that these two disorders may represent the same genetic entity and continuum of the same disorder, which may explain the overlapping features in our patient. However, distinguishing the two conditions is important, as their potential outcomes differ, thus affecting management. The presence of ovarian tissue, however minimal, in a self-identified boy may lead to feminization of physical characteristics (reduced facial hair, gynecomastia, menstrual flow), a possible indication for surgical excision of the ovarian portion of the gonad. Although, no ovarian tissue was identified in our patient, there is a need for peripubertal monitoring for manifestations of functional ovarian tissue.

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Photo Quiz 1

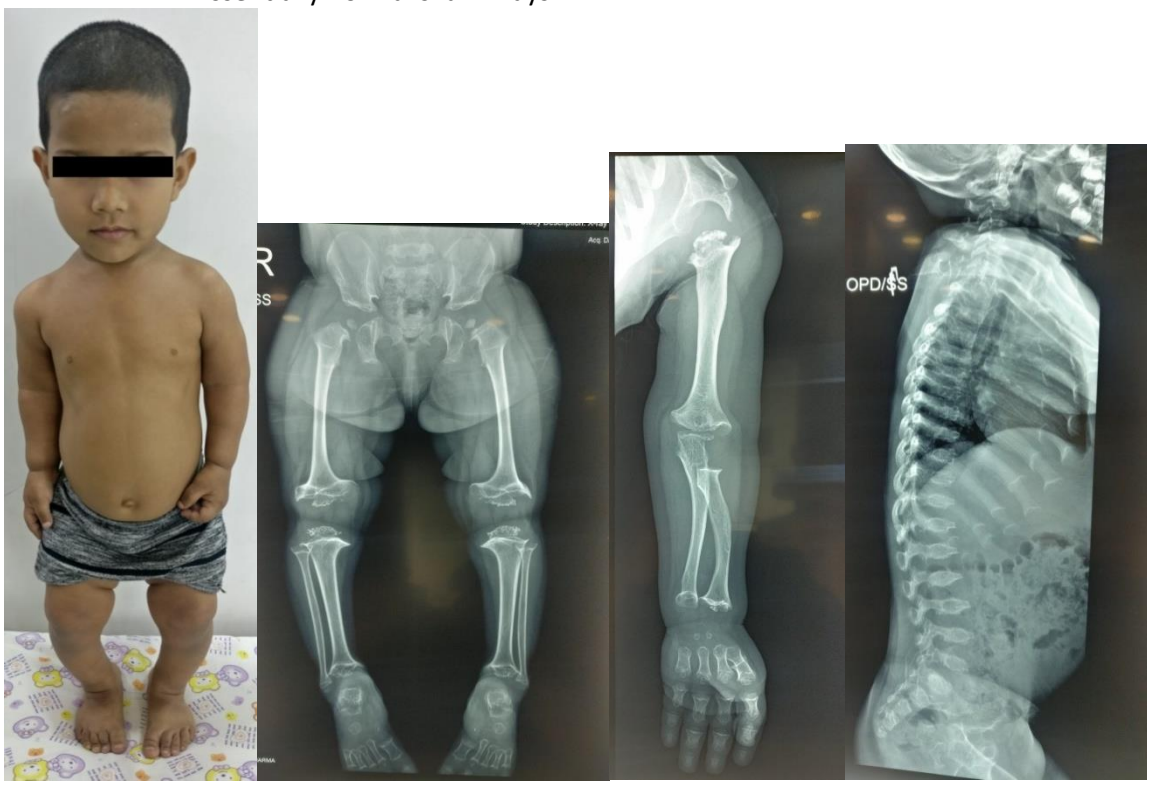
Dr Manpreet Sethi, Consultant Pediatric Endocrinologist, Max Hospitals, Patparganj and Vaishali. Delhi-NCR

Clinical presentation (Figure)

1. 4.5 year old girl with disproportionate short stature
2. Enlarged and hyperextensible wrist and ankle joints
3. Lumbar lordosis

X ray picture (Figure)

1. Spine: oval shaped vertebral bodies with anterior beaking with normal inter-peduncular distance
2. Paddle or oar shaped ribs
3. Flared and irregular proximal and distal epiphyses of long bones in upper and lower extremities
4. Flared Iliac bones with inferior constriction (Wine glass appearance). Enlarged, shallow acetabular cavities with deformed femoral epiphyses and widened femoral necks. Coxavalga also seen.
5. Flattening of glenoid cavities in upper limb
6. Broad, short metacarpals
7. Essentially normal skull X rays



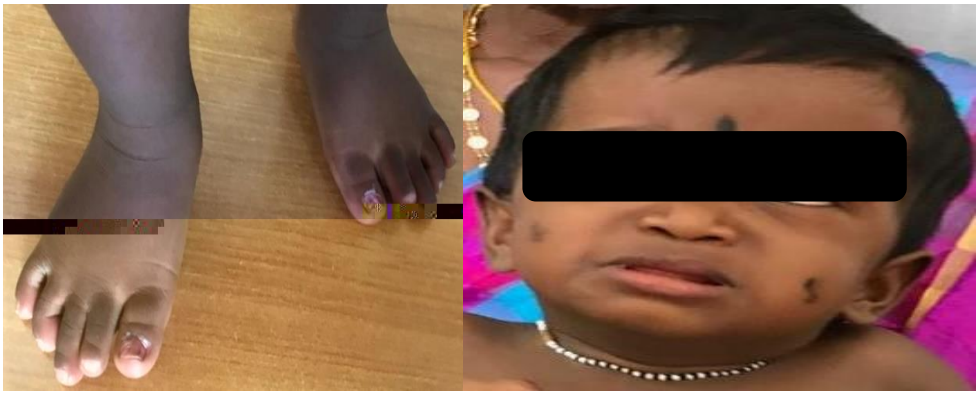
What is the diagnsosis?

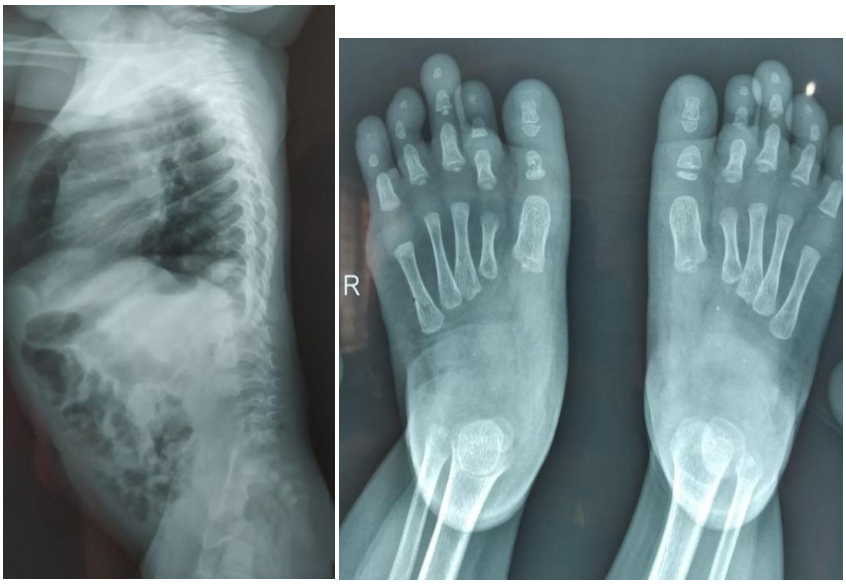
Photo Quiz 2

Thrupti S, Akanksha Parikh, Raghupathy P. Department of Pediatric & Adolescent Endocrinology, Indira Gandhi Institute of Child Health, Bengaluru

A 1 year 5 month old girl born to a non-consanguineously married couple with no significant family history was referred to our endocrinology department with deformities of both hands and legs since birth. Clinical examination revealed a disproportionately short upper segment, wide anterior fontanelle, depressed nasal bridge, long philtrum, short second fingers, short 1st and 2nd toes, and thoracic kyphosis. The child's development was normal. Her clinical and radiological findings are displayed below.

What is the diagnosis?





Kindler JM et al. Adiposity, Insulin Resistance, and Bone Mass in Children and Adolescents. J Clin Endocrinol Metab. 2019 Mar 1;104(3):892-899. doi: 10.1210/jc.2018-00353.

Fat mass is negatively associated with bone mass, after adjustment for confounders, and insulin resistance might be an intermediary in this relationship. The authors aimed to determine whether insulin resistance is an intermediary in the relationship between adiposity and bone mass in adolescents. It was a cross-sectional secondary analysis of a previous trial. DXA scans were done and BMC, aBMD, lean mass, and fat mass were assessed, and HOMA-IR was calculated. A total of 240 children (68% girls) in the age group of 7-15y were studied. The results showed that fat mass ($r = 0.467$; $P < 0.001$) and waist circumference ($r = 0.487$; $P < 0.001$) correlated positively with HOMA-IR. Controlling for race, sex, maturation, the lean mass, and height, fat mass, waist circumference, and HOMA-IR were negatively associated with LS BMC and total body aBMD ($P < 0.05$ for all). Additionally, path models for fat mass (95% CI, 25.893-20.956) and waist circumference (95% CI, 215.473-22.124) showed a negative relationship with LS BMC via HOMA-IR. Hence the results support an intermediary role of insulin resistance in the relationship between adiposity and LS bone mass.

Huffnagel IC et al. The Natural History of Adrenal Insufficiency in X-Linked Adrenoleukodystrophy: An International Collaboration. J Clin Endocrinol Metab. 2019 Jan 1;104(1):118-126. doi: 10.1210/jc.2018-01307.

Clinical manifestations of X-linked adrenoleukodystrophy (ALD) include adrenal insufficiency, spinal cord disease and/or inflammatory demyelinating cerebral disease. The authors did a retrospective review of medical records in male patients with ALD followed at the centers between 2002 and 2016, to delineate the natural history of adrenal insufficiency (AI) in male patients with ALD and to assess associations between the risk for developing AI, spinal cord disease, or cerebral disease and plasma C26:0/C22:0 and C24:0/C22:0 ratios, which are diagnostic biomarkers for ALD. Data was available on 159 male patients; the probability of developing AI was described with survival analysis. Median time until AI was 14 years (95% CI, 9.70-18.30 years). The cumulative proportion of patients who developed AI was age-dependent, and highest in early childhood [0-10 years, 46.8% (SEM 0.041%); 11-40 years, 28.6% (SEM, 0.037%); >.40 years, 5.6% (SEM, 0.038%)]. No association between clinical manifestations and plasma ratios was detected with Cox model or Spearman correlation. Hence, they concluded that lifetime prevalence of AI in male patients with ALD is ~80%. AI risk is time-dependent and warrants age-dependent follow-up. Besides on-demand testing if symptoms manifest, it was suggested a minimum of adrenal testing every 4-6 months for patients age ≤10 years, annual testing for those 11-40 years, and solely on-demand testing for those age >40 years.

Scherdel P et al. Algorithms to Define Abnormal Growth in Children: External Validation and Head-To-Head Comparison. J Clin Endocrinol Metab. 2019 Feb 1;104(2):241-249. doi: 10.1210/jc.2018-00723.

Growth monitoring of apparently healthy children aims at early detection of serious conditions by use of both clinical expertise and algorithms that define abnormal growth. As 7 existing algorithms provide contradictory definitions of growth abnormality and have a low level of validation, an external validation study with head-to-head comparison of the 7 algorithms, combined with study of the impact of use of the World Health Organization (WHO) vs. national growth charts on algorithm performance were done. With a case-referent approach, the authors retrospectively applied all algorithms to growth data for children with Turner syndrome, GH deficiency, or celiac disease (n = 341), as well as apparently healthy children (n = 3406). Sensitivity, specificity, and theoretical reduction in time to diagnosis for each algorithm were calculated for each condition by using the WHO or the national growth charts. Among the two algorithms with high specificity (98%), the Grote clinical decision rule had higher sensitivity than the Coventry consensus (4.6%-54% vs. 0%-8.9%, $P < 0.05$) and offered better theoretical reduction in time to diagnosis (median: 0.0-0.9 years vs. 0 years, $P<0.05$). Sensitivity values were significantly higher with the WHO than the national growth charts at the expense of

specificity. In conclusion, the Grote clinical decision rule had the best performance for early detection of the 3 studied diseases, but its limited potential for reducing time to diagnosis suggests the need for better-performing algorithms based on appropriate growth charts.

Whyte MP et al. Efficacy and safety of burosumab in children aged 1-4 years with X-linked hypophosphataemia: a multicentre, open-label, phase 2 trial. Lancet Diabetes Endocrinol. 2019 Mar;7(3):189-199. doi: 10.1016/S2213-8587(18)30338-3. Epub 2019 Jan 9.

Children with X-linked hypophosphatemia (XLH) have high concentrations of circulating phosphatonin fibroblast growth factor 23 (FGF-23), which causes renal phosphate wasting and hypophosphatemia, rickets, skeletal deformities, and growth impairment. Burosumab, a human monoclonal antibody against FGF-23, improved phosphate homoeostasis and rickets in children aged 5–12 years with XLH. The study aimed to assess the safety and efficacy of burosumab in younger children with XLH. In this open-label, phase 2 trial at three hospitals in the USA, children (aged 1–4 years) with XLH received burosumab (0·8 mg/kg) via subcutaneous injection every 2 weeks for 64 weeks. The dose was increased to 1·2 mg/kg if two consecutive pre-dose serum phosphorus concentrations were below 1·03 mmol/L (3·2 mg/dL), serum phosphorus had increased by less than 0·16 mmol/L (<0·5 mg/dL) from baseline, and a dose of burosumab had not been missed. Participants could continue to receive burosumab for up to an additional 96 weeks during the extension period. Key inclusion criteria were age 1–4 years at the time of informed consent; fasting serum phosphorus concentration of less than 0·97 mmol/L (3 mg/dL); serum creatinine 8·8–35·4 μmol/L (0·1–0·4 mg/dL); radiographic evidence of rickets; and a confirmed PHEX mutation or a variant of unknown significance in the patient or direct relative also affected with XLH. Conventional therapy was stopped upon enrolment. The co-primary endpoints were safety and change from baseline to week 40 in fasting serum phosphorus concentrations. Changes in rickets severity from baseline to weeks 40 and 64, and recumbent length or standing height, were key secondary outcomes. This trial is ongoing. Between May 16, 2016, and June 10, 2016, the study enrolled 13 children with XLH. All 13 children completed 64 weeks of treatment and were included in the efficacy and safety analysis; none exceeded 70 weeks of treatment at the time of analysis. Serum phosphorus least squares mean increase from baseline to week 40 of treatment was 0·31 mmol/L (SE 0·04; 95% CI 0·24–0·39; 0·96 mg/dL [SE 0·12]; p<0·0001). All patients had at least one adverse event. 14 treatment-related adverse events, mostly injection site reactions, occurred in five children. Two serious adverse events considered unrelated to treatment were tooth abscess which occurred in a child with a history of tooth abscess, and a severe food allergy. All other adverse events were mild to moderate. No instances of nephrocalcinosis or noteworthy changes in the results of a standard safety chemistry panel emerged. Total Thacher Rickets Severity Score decreased by a least squares mean of –1·7 (SE 0·1; p<0·0001) from baseline to week 40 and by –2·0 (SE 0·1; p<0·0001) by week 64. The Radiographic Global Impression of Change score also indicated significant improvement, with a least squares mean score of +2·3 (SE 0·1) at week 40 and +2·2 (0·1) at week 64 (both p<0·0001). Mean length or standing height Z score was maintained from baseline to week 64. Burosumab had favourable safety profile, increased serum phosphorus, improved rickets and prevented early declines in growth in children aged 1–4 years with XLH. These findings could substantially alter the treatment of young children with XLH.

Gong LF et al.A pilot study on newborn screening for congenital adrenal hyperplasia in Beijing. J Pediatr Endocrinol Metab. 2019 Mar 26;32(3):253-258. doi: 10.1515/jpem-2018-0342.

A provisionary screening program for 21-hydroxylase deficiency (21-OHD) was initiated in Beijing in 2014. The aim of this study was to investigate the incidence and the associated clinical characteristics of neonatal congenital adrenal hyperplasia (CAH) in Beijing and to provide evidence-based guidance for its application in CAH screening. Live birth newborns (n=44,360) were screened for CAH in Beijing from July 2014 to April 2018. The levels of 17-hydroxyprogesterone (17-OHP) in the blood were estimated using the time-resolved fluoroimmunoassay. Neonates with a positive result and a level >30 nmol/L of 17-OHP were called for a retest. CAH was diagnosed based on further laboratory findings combined with clinical signs, such as weight loss, feeding difficulties, skin pigmentation, and atypical genitalia. Through a review of medical records, the clinical findings including molecular data were reported. Of the 44,360 neonates screened, 280 cases were deemed positive. Of these, 203 neonates were recalled for further tests and six (three boys and three girls) were

diagnosed with CAH. Five cases of classic salt-wasting and one case of simple virilising 21-OHD were identified. The incidence of CAH in Beijing was 1:7393. The most frequent 21-OHD mutation was c.293-13C/A>G. The incidence of CAH in Beijing was higher than the national average. The results support the need for neonatal CAH screening in Beijing. This pilot study demonstrates the clinical characteristics of 21-OHD detected through newborn screening. Early detection and treatment through neonatal screening may reduce mortality rates and optimise developmental outcomes.

Zhu J et al. Determination of Pubertal Status in Youths with Type 1 Diabetes Using Height Velocity and Trajectories. J Clin Endocrinol Metab. 2019 Jan 1;104(1):74-82. doi: 10.1210/jc.2018-01737.

Assessment of pubertal change is important for the management of chronic pediatric diseases such as type 1 diabetes (T1D). Physical and/or laboratory assessments of pubertal status are often unavailable, impractical, or costly. The objective of this study was to develop and validate a practical and objective method to assess pubertal status using longitudinal linear growth in youths with T1D. Participants (n = 123) were part of a 2-year study assessing continuous glucose monitoring in youths with T1D at a tertiary diabetes center. Pubertal status at visits was assigned by a tiered approach using clinical Tanner staging or indicators of pubertal maturation from the electronic medical record, when available. For other visits, independent evaluations of height velocities and growth chart trajectories provided data for pubertal status assignments. Sensitivity analysis confirmed the validity of the pubertal status assignments. The sample (50% female, 95% white) had a mean age of 12.7 ±2.7 years, diabetes duration of 6.0 ±3.6 years, and hemoglobin A1c of 7.9 ±0.8%. Of 985 study visits, 50% received a pubertal status assignment based on clinical Tanner staging, 29% on additional medical record review, and 22% on an evaluation of height velocity and growth chart trajectory. For the sensitivity analysis, pubertal status assignments based on height velocity and growth chart trajectory matched clinical Tanner staging in 87% of visits. Our practical and objective method to assess pubertal status based on height velocity and growth chart trajectory highlights growth as a reliable and objective bioassay for pubertal onset, status, and progression.

Child CJ et al. Safety Outcomes During Pediatric GH Therapy: Final Results From the Prospective GeNeSIS Observational Program. J Clin Endocrinol Metab. 2019 Feb 1;104(2):379-389. doi: 10.1210/jc.2018-01189.

Safety concerns have been raised regarding premature mortality, diabetes, neoplasia, and cerebrovascular disease in association with GH therapy. The objective of this study was to assess incidence of key safety outcomes. It was a prospective, multinational, observational study (1999-2015) where a total of 22,311 GH-treated children from 827 investigative sites in 30 countries were studied. Standardized mortality ratio (SMR) and standardized incidence ratio (SIR) with 95% CIs for mortality, diabetes, and primary cancer using general population registries were the main outcomes. Predominant short stature diagnoses were GH deficiency (63%), idiopathic short stature (13%), and Turner syndrome (8%), with mean + SD follow-up of 4.2+3.2 years (;92,000 person- years [PY]). Forty-two deaths occurred in patients with follow-up, with an SMR (95% CI) of 0.61 (0.44, 0.82); the SMR was elevated for patients with cancer-related organic GH deficiency [5.87 (3.21, 9.85)]. Based on 18 cases, type 2 diabetes mellitus (T2DM) risk was elevated [SIR: 3.77 (2.24, 5.96)], but 72% had risk factors. In patients without cancer history, 14 primary cancers were observed [SIR: 0.71 (0.39, 1.20)]. Second neoplasms occurred in 31 of 622 cancer survivors [5.0%; 10.7 (7.5, 15.2) cases/1000 PY] and intracranial tumor recurrences in 67 of 823 tumor survivors [8.1%; 16.9 (13.3, 21.5) cases/1000 PY]. All three hemorrhagic stroke cases had risk factors. GeNeSIS (Genetics and Neuroendocrinology of Short Stature International Study) data support the favorable safety profile of pediatric GH treatment. Overall risk of death or primary cancer was not elevated in GH-treated children, and no hemorrhagic strokes occurred in patients without risk factors. T2DM incidence was elevated compared with the general population, but most cases had diabetes risk factors.

Decker R et al. GH Dose Reduction Maintains Normal Prepubertal Height Velocity after Initial Catch-Up Growth in Short Children. J Clin Endocrinol Metab. 2019 Mar 1;104(3):835-844. doi: 10.1210/jc.2018-01006.

GH responsiveness guides GH dosing during the catch-up growth (CUG) period; however, little is known regarding GH dosing during the prepubertal maintenance treatment period. The objective was to evaluate whether SD score (SDS) channel parallel growth with normal height velocity can be maintained after CUG by reducing the GH dose by 50% in children receiving doses individualized according to estimated GH responsiveness during the catch-up period. Prepubertal children (n = 98; 72 boys) receiving GH during CUG (GH deficient, n = 33; non-GH deficient, n = 65), were randomized after 2 to 3 years to either a 50% reduced individualized dose (GHRID; n = 27; 20 boys) or unchanged individualized dose (GHUID; n = 38; 27 boys). Another 33 children (25 boys) continued a standard weight-based dose [43 μg/kg/d (GHFIX)]. For the intention-to-treat population at 1 year, 85% of the GHRID group maintained Δ height SDS within ±0.3 vs 41% in the GHUID group (P = 0.0055) and 48% in the GHFIX group (P = 0.0047). The ΔIGF-ISDS in the GHRID group was -0.75 ± 1.0 at 3 months (P = 0.003) and -0.72 ± 1.2 at 1 year compared with the GHUID group (0.15 ± 1.2; P = 0.005) and GHFIX group (0.05 ± 1.0; P = 0.02). Channel parallel growth (i.e., normal height velocity) and IGF-ISDS levels within ±2 were maintained after completed CUG using a 50% lower individualized dose than that used during the CUG period.

Inoue-Lima TH et al. IGF-1 assessed by pubertal status has the best positive predictive power for GH deficiency diagnosis in peripubertal children. J Pediatr Endocrinol Metab. 2019 Feb 25;32(2):173-179. doi: 10.1515/jpem-2018-0435.

When evaluating peripubertal short stature patients, the interpretation of insulin-like growth factor 1 (IGF-1) levels based on chronological age (CA) can be inaccurate due to the influence of sex steroids. Presently, there is no evidence to support the assessment of IGF-1 values according to bone age (BA) and pubertal status (PS). This study's objective was to assess the discriminatory performance of IGF-1 levels based on CA, BA and PS in the diagnosis of growth hormone (GH) deficiency. IGF-1 levels from 154 peripubertal short stature patients classified as GH deficient (GHD, n=23) or non-GHD (n=131) were evaluated. IGF-1 was assayed by a chemiluminescentimmunometric assay and transformed into standard deviation scores (SDS) according to CA (IGF-1-SDS-CA), BA (IGF-1-SDS-BA) and PS (IGF-1-SDS-PS). Results: The performances of IGF-1-SDS-CA, IGF-1-SDS-BA and IGF-1-SDS-PS in the receiver operator characteristics (ROC) curves were similar. There were greater accuracy and specificity of IGF-1-SDS-PS (98.4% and 93.3%, respectively) and IGF-1-SDS-BA (92.7% and 90.1%, respectively) when compared to IGF-1-SDS-CA (65.6% and 69.5%, respectively). The post-test probability of the IGF-1-SDS was also improved when compared to PS and BA - 44.8% (IGF-1-SDS-PS), 16.8% (IGF-1-SDS-BA) and 5.1% (IGF-1-SDS-CA), with similar negative predictive values. The evaluation of IGF-1 levels based on CA has a higher sensitivity than those based on BA or PS, which justify its use as a screening tool. Additionally, IGF-1 assessed by PS has the best positive predictive power for GHD diagnosis in peripubertal age and could reduce the necessity of a second GH stimulation test.

Ciresi A et al. Circulating Irisin Levels in Children With GH Deficiency Before and After 1 Year of GH Treatment. J Clin Endocrinol Metab. 2019 Mar 1;104(3):801-808. doi: 10.1210/jc.2018-01440.

The purpose of this study was to evaluate circulating irisin levels in children with GH deficiency (GHD) and any relation with clinical and metabolic parameters. Fifty-four prepubertal children (mean age, 7.4 ± 0.8 years) with idiopathic GHD treated with GH for at least 12 months and 31 healthy short children as control subjects were included in the study. Body height, body mass index (BMI), waist circumference (WC), IGF-I, HbA1c, lipid profile, fasting and after-oral glucose tolerance test glucose and insulin, insulin sensitivity indices, and irisin levels were evaluated at baseline and after 12 months of GH replacement (GHR). At baseline, children with GHD, in addition to having lower growth velocity (P < 0.001), GH peak after stimulation tests (both P < 0.001), and IGF-I (P < 0.001), showed significantly lower irisin (P < 0.001) and higher BMI (P < 0.001) and WC (P = 0.001), without any difference in metabolic parameters, than control subjects. After GHR, children with GHD showed a significant increase in height (P < 0.001), growth velocity (P < 0.001), IGF-I (P < 0.001), fasting glucose (P = 0.002) and insulin (P < 0.001), homeostasis model assessment estimate of insulin resistance (P < 0.001), and irisin (P = 0.005), with a concomitant decrease in BMI (P = 0.001) and WC (P = 0.003). In multivariate analysis, the independent variables significantly associated with irisin were BMI (P = 0.002) and GH peak (P = 0.037) at baseline and BMI (P = 0.005), WC (P = 0.018), and IGF-I (P < 0.001) during GHR. They conclude that GHR leads to an increase in irisin levels, strongly related to a decrease in

BMI and WC, and to an increase in IGF-I; these changes are among the main goals of GHR. These data confirm the favorable effects of GHR in children.

Bongers-Schokking JJ. Relation between Early Over- and Undertreatment and Behavioural Problems in Preadolescent Children with Congenital Hypothyroidism. Horm Res Paediatr. 2018;90(4):247-256. doi: 10.1159/000494056. Epub 2018 Nov 8.

Congenital hypothyroidism (CH) per se, when not treated or undertreated, may lead to severe behavioural problems (cretinism), whereas overtreatment of CH seems associated with attention problems. For 55 CH patients, prospectively followed from birth until 11 years, parents rated the Child Behaviour Checklist and teachers the Teacher's Report Form at children's ages 6 and 11 years. Authors related scores regarding Attention, Delinquency, and Aggression (ADA scores, indicative for attention deficit hyperactivity syndrome, ADHD), and scores regarding Withdrawn, Anxious, Social, and Thought problems (WAST scores, indicative for autism) to the occurrence of over- and under treatment in five age periods. Over- and under treatment were defined as free thyroxine (fT4) concentrations above/below the range of the patient's individual fT4 steady state concentration. ADA scores at 6 and 11 years for patients over treated in the period 1-3 months postnatally were higher than those for patients who were not over treated. Patients with severe CH undertreated in the period 3-6 months postnatally had higher WAST scores at 6 and 11 years than all other patients. It is the first study suggesting that permanent ADHD as well as autism in CH patients at ages 6 and 11 years are the result of early overtreatment and under treatment, respectively.

Iughetti Let al. Thyroid function in patients with Prader-Willi syndrome: an Italian multicenter study of 339 patients. J PediatrEndocrinolMetab. 2019 Feb 25;32(2):159-165. doi: 10.1515/jpem-2018-0388.

PWS is characterized by peculiar signs and symptoms and many endocrine abnormalities have been described (growth hormone deficiency, hypogonadotropic hypogonadism). The abnormalities of thyroid function are discussed in literature and published data are discordant. The aim of this study was to report the thyroid function in patients with PWS to identify the prevalence of thyroid dysfunction. Thyroid function tests were carried out in 339 patients with PWS, ages 0.2-50 years. A database was created to collect personal data, anthropometric data, thyroid function data and possible replacement therapy with L-thyroxine. Subjects were classified according to thyroid function as having: euthyroidism (EuT), congenital hypothyroidism (C-HT), hypothyroidism (HT - high thyroid-stimulating hormone [TSH] and low free thyroxine [fT4]), central hypothyroidism (CE-H - low/normal TSH and low fT4), subclinical hypothyroidism (SH - high TSH and normal fT4), and hyperthyroidism (HyperT - low TSH and high fT4). Of the 339 patients, 243 (71%) were younger than 18 years. The prevalence of thyroid dysfunction was 13.6% - C-HT was found in 4 children (1.18%), HT in 6 (1.77%), CE-H in 23 (6.78%), SH in 13 (3.83%), and HyperT in none. All other subjects were EuT (86.4%). Hypothyroidism is a frequent feature in subjects with PWS. Thyroid function should be regularly investigated in all PWS patients both at diagnosis and annually during follow-up.

OzsuE at al. Maturity Onset Diabetes of the Young due to Glucokinase, HNF1-A, HNF1-B, and HNF4-A Mutations in a Cohort of Turkish Children Diagnosed as Type 1 Diabetes Mellitus. Horm Res Paediatr. 2018;90(4):257-265. doi: 10.1159/000494431. Epub 2018 Nov 27.

The purposes of this study were: to identify any patients followed in a large Turkish cohort as T1D, with an atypical natural history, who may in fact have MODY, and to define the criteria which would indicate patients with likely MODY as early as possible after presentation to allow prompt genetic testing. Urinary C-peptide/creatinine ratio (UCPCR) was studied in 152 patients having a diagnosis of T1D for at least 3 years. Those with a UCPCR ≥0.2 nmol/mmol were selected for genetic analysis of the Glucokinase (GCK), Hepatocyte nuclear factor 1a (HNF1A), Hepatocyte nuclear factor 4a (HNF4A), and Hepatocyte nuclear factor 1b (HNF1B) genes. This UCPCR cut-off was used because of the reported high sensitivity and specificity. Cases were also evaluated using a MODY probability calculator. Of 152 patients, 23 (15.1%) had a UCPCR indicating persistent insulin reserve. The mean age ± SD of the patients was 13.6 ± 3.6 years (range 8.30-21.6). Of these 23, two (8.7%) were found to have a mutation, one with HNF4A and one with HNF1B mutation. No mutations were detected in the GCK or HNF1A genes. Hence it was concluded that in Turkish children with a

diagnosis of T1D but who have persistent insulin reserve 3 years after diagnosis, up to 9% may have a genetic mutation indicating a diagnosis of MODY.

Wolfgram PM et al Practice Variance in Thyroid Screening of Youth with Type 1 Diabetes Mellitus. Horm Res Paediatr. 2018;90(4):266-269. doi: 10.1159/000494727. Epub 2018 Nov 29.

There are differences between current American Diabetes Association (ADA) and International Society for Pediatric and Adolescent Diabetes (ISPAD) guidelines, and clinical practice regarding use of thyroid antibody and thyroid function screening in pediatric patients with new-onset type 1 diabetes (T1D). North American Pediatric Endocrine Society (PES) members were surveyed regarding their thyroid screening practices of euthyroid youth with T1D. An institutional analysis of the ability of antithyroid peroxidase (aTPO) and antithyroglobulin antibodies (aTG) to predict the subsequent use of levothyroxine was performed. Of 374 survey respondents,48% tested both aTPO and aTG at diagnosis of T1D, but 35% performed no baseline antibody testing. If antibodies were positive, 89% of the respondents would perform annual thyroid function testing, but if antibodies were negative, 62% would follow thyroid function annually and 29% biannually. Institutionally, aTPO had significantly greater sensitivity ($p = 0.04$) but lower specificity ($p = 0.008$) than aTG, for predicting the use of levothyroxine. Variance exists among North American PES members regarding thyroid disease screening for pediatric patients diagnosed with T1D, and this appears to reflect differences between ADA and ISPAD guidelines. A prospective multicenter observational study which shares electronic medical record data and compares aTPO and TSH as primary screening tests may allow for more uniform guidelines and address the possibility of using TSH alone.

Growth & Diabetes - Assessment to Management Workshop- Dr Ravindra Kumar and Dr Richa Arora- Delhi

Dr Ravindra Kumar (course director, diabetes) and Dr Richa Arora (course director, growth) organised a workshop on "Growth & Diabetes - Assessment to Management " at BSA Medical College and Hospital Delhi, on 23rd March during the Annual Conference of North Delhi IAP. It was attended by 46 delegates from Delhi, Haryana, Dehradun and UP.

Pediatric Diabetes for Post-Graduates - Rainbow Children's Hospital, Hyderabad - 24th Feb 2019 (Dr SirishaKusuma B. and Dr Leenatha Reddy J)

The first pilot programof Pediatric Diabetes for Post-Graduates (PDP) on 24th February 2019, was conducted at Rainbow Children's Hospital, Hyderabad, by five pediatric endocrinologists, and attended by 15 DNB pediatrics trainees.It ran for a duration of 4 hours and included interactive lectures on types of diabetes, basics of insulin therapy, and diabetic ketoacidosis, followed by hands-on workstations. Workstations covered the topics of Insulin, Glucagon, blood glucose checking, blood and urine ketones checking, monitoring plans, dietary advice, hypoglycemia treatment, initiating insulin therapy, adjusting doses, adjusting for activity and sick days etc., with the help of props, info cards and practice scenarios. The program was well received. Going by the feedback of students, for future PDP courses we have decided to cut down the standard lecture sessions even further, and incorporate that time into workstations. We hope to conduct future PDP courses on a regular basis in medical colleges having pediatric postgraduate training, and expand the program beyond Hyderabad.

OBSERVANCE OF WORLD DIABETES DAY

Department of Pediatric Endocrinology, Indira Gandhi Institute of Child Health, Bangalore - 17th November 2018.

A comprehensive educational program arranged along with observance of WDD, is conducted in the modern, spacious auditorium of Rajiv Gandhi Institute for Chest Diseases, as an annual event. There was enthusiastic participation from the 174 children with diabetes and their parents who attended this year. Professor P. Raghupathy, with his team of doctors (Drs.Vani, Akanksha Parikh, Zalak Upadhyay, Pavithra Nagaraj, Soujanya, Proteek Sen, Thrupti, G, Shruti Appaji), dietitian (Ms.Rachitha), nurses (Ms.Neelamma and others) and volunteers (Ms.Jamuna and others) from the Institute conducted the program, which was held under the auspices of ISPAE, and Growth Hormone Research Society, and supported by Changing Diabetes in Children (CDiC) Program of Novo Nordisk Education Fund.

This year's theme being FAMILY AND DIABETES, educational sessions were conducted in daily diabetes management, and 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. addressed in detail. News about recent advances in diabetes was also discussed. Nutritious, healthy, well-balanced meal planning and carbohydrate counting were discussed by Ms.Rachitha. To make the occasion memorable and lively, a drawing/painting competition and a diabetes quiz program for the children were held and prizes given, in which the children and parents took part actively. They also participated enthusiastically in singing and dancing too. The talent among them was amazing. One of the girls acted as the "Newspaper", attired entirely in newspapers, including her frock with frills, an umbrella, a crown and handbag. She urged everyone to move away from mobile phones, TV, etc., and to get back to newspapers to gather news. An NGO called LITTLE DREAMS entertained all with a puppet show, which was a great hit with the younger children, who enjoyed it thoroughly with very active participation. Popular Kannada actor, Mr. Raghu Ram, encouraged the children with his presence. All the participants enjoyed the learning experiences, singing, dancing, and narration of stories, and received the usual free 2-monthly supplies of insulins, syringes, glucostrips, lancets etc. This annual event has helped the children to develop self-confidence in managing their diabetes and to be independent, with help and support from their parents and family members.

PAED ENDO 2019 - Sri Ramachandra Institute of Higher Education and Research, Chennai – 6th January 2019.

The premier annual full day pediatric endocrine CME, PAED ENDO was conducted in SRIHER, Chennai on 6th January 2019,with a good turnout of about 180 people. It aimed to improve the practice of pediatric endocrinology and also sow the seeds of endocrinology in fertile young minds. It was jointly organized by the Department of Endocrinology and the Department of Pediatrics - Division of Pediatric Endocrinology in association with Indian Academy of Pediatrics - Chennai City branch (IAP-CCB) and Endocrine Society of Tamil Nadu and Pondicherry chapter (ESTN). Dr.ShriramMahadevan (HOD, Dept. of Endocrinology) was the Organizing Chairperson, Dr.Dhivyalakshmi J (Asst. Professor, pediatric endocrinology) was the Joint Organizing Secretary.The attractions of the meeting included clinically relevant topics, eminent national and international speakers, the PAED ENDO oration (by Dr Vaman Khadilkar this year), and the Quiz and Poster sessions. The audience, mostly postgraduates in pediatrics, but also a substantial number of practicing pediatricians, appreciated the high quality of scientific content. Each session had two talks - one discussing the over-activity and the other the under-activity of an endocrine axis. By juxtaposing such endocrine mirror images, we sought to provide maximum contrast in content. To add variety, we also had two panel discussions (hyperandrogenism in adolescent girls; and calcium and bone metabolism disorders). The delegates were satiated by the academic feast and responded with some incisive questions. The Quiz and the Poster session had an overwhelming response, so much so that two halls had to be engaged (as opposed to the originally planned one).

Others: Dr.Dhivyalakshmi was invited to give a lecture on "How to live healthy" in the “Meet your medical expert” session organized by Tamil Nadu Science and Technology Center, Chennai, on 28th December 2018, as a part of their Winter Science Camp. The talk was on healthy eating habits and promoting physical activity. The 40-odd school and college students who attended the program participated with utmost enthusiasm - it was a different experience to stimulate the young minds in healthy living practices.

“Principles to practice - Carbohydrate Counting” – 31stMarch 2019 - Rainbow Children's Hospital, Hyderabad

On 31st March, we conducted a full-day workshop on principles and practice of carbohydrate counting at Rainbow Children's Hospital, Hyderabad. The primary faculty was Ms Sheryl Salis (Mumbai), and the organizers Dr Leenatha Reddy J and Dr Sirisha Kusuma B. The concept was received with much enthusiasm and the limited registration slots of 25 filled up rapidly, with many more wanting toattend. The workshop was planned specifically for the benefit of dietitians, who comprised most of the delegates. The scientific session started with an introduction to general principles of dietary advice in childhood diabetes (with a special stress on Type 1 Diabetes), followed by discussions on types of insulin and their action profiles, commonly used insulin regimens, and how to match insulin with meals, learning *insulin correction factor* and *insulin carbohydrate ratios,* and finally carbohydrate counting exercises. For many delegates learning about insulins and matching the meals with insulin regimes was an entirely new concept, and they expressed interest in learning more and willingness to incorporate the knowledge in their dietary advice for children with Type 1 Diabetes. Many wished for more practice scenarios –this was duly noted and will be taken into account while planning future such courses.

National CME on “Recent Advances in Pediatric Endocrinology” – 1stNovember 2018- Department of Pediatrics, Faculty of Medicine, JN Medical College and Hospital, Aligarh Muslim University, Aligarh

The Dept. of Pediatrics, Faculty of Medicine, JNMCH, AMU, Aligarh, in collaboration with GROW Society organized a “National CME on Recent Advances in Pediatric Endocrinology” on 1stNovember 2018. The scientific program was tailored to address common endocrine disorders faced by general pediatricians in day-to-day practice - in particular Growth charts, Growth Hormone Therapy, PCOS in adolescents, Vitamin D therapy, Type 1 Diabetes, and DKA. The faculty included eminent endocrinologists: Prof Jamal Ahmad, Prof Anju Seth, Dr Anurag Bajpai (also the Joint Organizing Secretary), Dr Vijay Jaiswal, Dr Aashima Dabas, Dr Hamid Ashraf and Dr Vikas

Mehrotra. It was well attended by over 100 delegates, including under- and post-graduate students and general practitioners, who appreciated the program.

The event was presided over by the Honorable Vice Chancellor of AMU, Prof Tariq Mansoor, Pro-Vice Chancellor, Prof MH Beg, and the Dean Faculty of Medicine, Prof SC Sharma – all of whom emphasized the need for specialist intervention for pediatric endocrine disorders, considering the ever-increasing graph of metabolic diseases. Prof FK Beig, Chairman, Department of Pediatrics and Chair of the scientific program, gave a brief overview of the program, and Dr Ayesha Ahmad, In-charge, Pediatric Endocrinology Clinic and the Organizing Secretary, thanked the Faculty and expressed the hope that it will be an annual affair.

Pediatric Endocrine Update - Pune - 31st March 2019- Dr Vaman Khadilkar

The Hirabai Cowasji Jehangir Medical Research Institute and IAP Pune organized a one day Pediatric Endocrine Update on 31st March 2019. The topics and speakers were Hypoglycemia:Dr Senthil Senniappan (Liverpool, UK), PCOD: Dr Preeti Dabadghao, DSD: Dr Subrata Dey, Pediatric Goiter: Dr Ahila Ayyavoo, Obesity: Dr Vaman Khadilkar, Resistant rickets and osteoporosis: Dr Anuradha Khadilkar, Gynecomastia: Dr Rahul Jahagirdar, and Growth failure in infants: Dr Supriya Gupte. There was a panel discussion on interesting cases, including all speakers. Dr V Khadilkar and Dr Supriya Gupte also highlighted newer advances in treatment of type 1 diabetes. The CME was well appreciated by the 150 delegates from across the country who attended.

T1D Support Group Meeting - PSG Institution of Medical Sciences and Research, Coimbatore – 21st January 2019- Dr Meena Mohan

A support group for T1D children and their families was conducted at the PSG IMSR auditorium on Sunday 21st January 2019. We started with HbA1c testing for all the children, followed by "Your questions answered" session by our diabetes educator. "Hands on experience of carb counting with South Indian food items" was delivered by dietician Ms Vijayalakshmi. I delivered a lecture on "Practical experiences with severe hypoglycemia, and how to avoid and prevent them". We introduced a system called D-mom, whereby moms facing difficulties in managing their children were introduced to another mom, the hope being that they might listen better to them!! Moms exchanged telephone numbers, and we planned to discuss progress during the forthcoming meet. A discussion on “Time in target” and the availability of Medtronic pumps was also held. In the afternoon, workshop stations were held on 1. Hypo/hyperglycemia; 2. Sick day management; 3. Insulin injection techniques; 4. Diet and carb counting in greater detail; 5. Blood glucose monitoring at home; 6. Insulin storage for travel; and 7. CGMS. Fifty five children and 95 family members graced the occasion.

Department of Pediatrics, LLR Medical College, Meerut - 24th Feb 2019 - Dr Vijay Jaiswal

The Dept. of Pediatrics, LLRMC, IAP Meerut, and GROW Society jointly conducted the PPEC IX workshop at the LLRMC auditorium on 24thFebruary. The program, intended for postgraduates and practicing pediatricians, was attended by about 100 delegates from various medical colleges of North India. It included core topics of Pediatric Endocrinology.

Pediatric Endocrine Meeting- Super Specialty Pediatric Hospital, Noida- 27th December 2018: Dr Bhanu Bhakhri

The Department of Pediatric Medicine, Super Specialty Pediatric Hospital and PG Teaching Institute, Noida organized an interactive academic meeting on issues related to pediatric endocrinology on 27th December 2018.The event was graced by Prof Surendra Varma from TTUHSC School of Medicine, Texas, USA. Prof Varma shared his views on the global perspective of newborn thyroid screening and ethical issues related with pediatric endocrinology practice. Several uncommon cases and issues were discussed in detail, in the meeting. The meeting was attended by ~40 participants including in-house faculty members, several practicing/trainee pediatriciansand endocrinologists from Delhi NCR region.

Publications by ISPAE members

ANJU SETH

1. Viraraghavan VR, Seth A, Aneja S, Singh R, Dhanwal D. Effect of high dose vitamin d supplementation on Vitamin D nutrition status of pre-pubertal children on anti-epileptic drugs - a randomized controlled trial. ClinNutr ESPEN. 2019 Feb;29:36-40. doi: 10.1016/j.clnesp.2018.11.007. Epub 2018 Nov 23.
2. Seth A. Do Healthy Pre-pubertal Girls Need Supplementation with Vitamin D? Indian Pediatr. 2018 Nov 15;55(11):943-944.
3. Seth A, Bhatia V. Vitamin D: For Whom and How Much? Indian Pediatr. 2018 Jul 15;55(7):614.
4. Dabas A, Seth A.Prevention and Management of Childhood Obesity. Indian J Pediatr. 2018 Jul;85(7):546-553.

VIJAYALAKSHMI BHATIA

1. Chopra A, Sudhanshu S, Chen Y, Mangla P, Dabadghao P, Bhatia E, Arora P, Bano S, Bhatia V. The impact of free medical supplies and regular telephonic contact on glycemic control in Indian children and adolescents with type 1 diabetes. Pediatric Diabetes 2019 Mar 12. doi: 10.1111/pedi.12844.
2. Vijayakumar M, Bhatia V, George B. Vitamin D status of children in Kerala, southern India. Public Health Nutr 2019; Jan 10:1-5. doi: 10.1017/S1368980018003622. [Epub ahead of print]
3. Sudhanshu S, Nair VV, Godbole T, Reddy SVB, DM, Bhatia E, Dabadghao P, Sharma K, Arora P, BanoS, Singh A, Bhatia V. Glycemic control and long-term complications in pediatric onset type 1 diabetes mellitus: a single centre experience form northern India (accepted, Indian Pediatr 2019).
4. Mangla P, Chopra A, Sudhanshu S, Bhatia E, Dabadghao P, Gupta S, Bhatia V. Validation of a diabetes knowledge test for Indian children, adolescents and young adults with type 1 diabetes mellitus. Prim. Care Diab. 2018. https://doi.org/10.1016/j.pcd.2018.12.001

RAKESH KUMAR

1. **Kumar R**, Pilania RK, Bhatia A, Dayal D.Acquired generalized lipodystrophy and type 1 diabetes mellitus in a child: a rare and implacable association. BMJ Case Rep. 2018 Aug 3;2018. pii: bcr-2018-225553. doi: 10.1136/bcr-2018-225553.
2. **Kumar R,** Yadav J, Sahoo J, Tripathi M, Ahuja C, Dayal D.Episodes of prolonged "Trans-like state" in an infant with hypothalamic hamartoma. Accepted in Annals of Pediatric Endocrinology.
3. Bhattacharya D, **Kumar R**, Dayal D. Prolonged neonatal hyperbilirubinaemia in a case of congenital hypopituitarism. BMJ Case Rep. 2019 Feb 7;12(2). pii:bcr-2018-228793. doi: 10.1136/bcr-2018-228793.
4. Raviteja KV, **Kumar R**, Dayal D, Sachdeva N. Clinical efficacy of Professional Continuous Glucose Monitoring in improving glycemic control among children with Type 1 Diabetes Mellitus: An Open-label Randomized Control Trial.Sci Rep. 2019 Apr 16;9(1):6120.

ANJU VIRMANI

1. Virmani A. Type 1 Diabetes in India: The Numbers Show the Way Ahead. Editorial. Indian Pediatr 2019; 56: 189-190

Awards and Fellowships

It is a proud moment for ISPAE that Professor P Raghupathy has been awarded ESPE's International Outstanding Clinician Award, 2018. He was awarded this prestigious award at the 57th Annual ESPE Meeting held on 27-29 September 2018 at Athens, Greece.

This award recognises an outstanding contribution and lifetime commitment to the practice of clinical paediatric endocrinology in a country outside Europe and the Mediterranean basin. The award aims to strengthen the relationship between ESPE and its sister societies and to acknowledge excellence in paediatric endocrinology around the world.

Answer to Photo Quiz 1

Answer: PSEUDOACHONDROPLASIA

D/Dx

- **Multiple Epiphyseal Dysplasia**- Clinically, joint and ligamentous laxity is present in Pseudoachondroplasia whereas painful and restricted joint movements characterize Multple Epiphyseal dysplasia. Secondly, in Pseudoachondroplasia, the dwarfism and shortening of limbs is much more dramatic than Multiple Epiphyseal Dysplasia.

- **Achondroplasia**- Pseudoachondroplasia has short limbed dwarfism with normal facial appearance and head size, unlike achondroplasia.

Radiological differences between Pseudoachondroplasia and Achondroplasia

Pseudoachondroplasia	**Achondroplasia**
Skull : Normal	Skull : Abnormal
Spine: Initially oval vertebrae with central anterior tongue appearance; followed by platyspondyly in late childhood.	Spine: Platyspondyly Interpeduncular distance decreased in lumbar spine
Interpeduncular distance normal	
Epiphyses and Metaphyses abnormal	Only metaphyses abnormal
Trident hand and champagne glass pelvis present	Trident hand and champagne glass pelvis absent

Answer to Photo Quiz 2

Answer: Hajdu-Cheney syndrome

This syndrome has an autosomal dominant inheritance, with sporadic cases presumably representing spontaneous mutations. It is characterised by short stature, thickened skull vault, coarse facies with midface hypoplasia, low-set ears, broad nose with anteverted nares and long philtrum. Spinal abnormalities include biconcave vertebrae, narrow lumbar intervertebral disc spaces, kyphoscoliosis. Limb involvement can be in the form of short distal digits due to acro-osteolysis, pseudo-clubbing, crowded carpal bones, limb length discrepancy with valgus deformity and osteopenia with fractures.

The characteristic facial dysmorphism, digital abnormalities and osteolysis of distal phalanges seen on x-rays led to the strong clinical suspicion of Hajdu-Cheney syndrome.A close differential is pyknodysostosis which has acro-osteolysis and wide anterior fontanelles. However, it can be differentiated by the additional presence of clinical features like small mandible, wrinkled skin over dorsa of fingers, grooved nails and radiological features in the form of frontal and occipital prominence, bone sclerosis and dysplasia of the acromial ends of the clavicles.

SAVE YOUR DATES

6th Biennial Meeting
Indian Society for Pediatric and
Adolescent Endocrinology (ISPAE)

ISPAE 2019

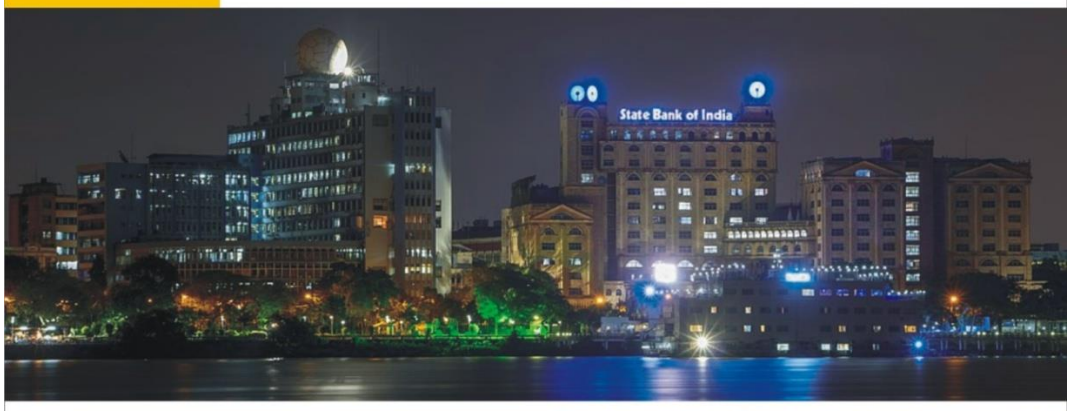
In collaboration with the West Bengal Academy of Pediatrics

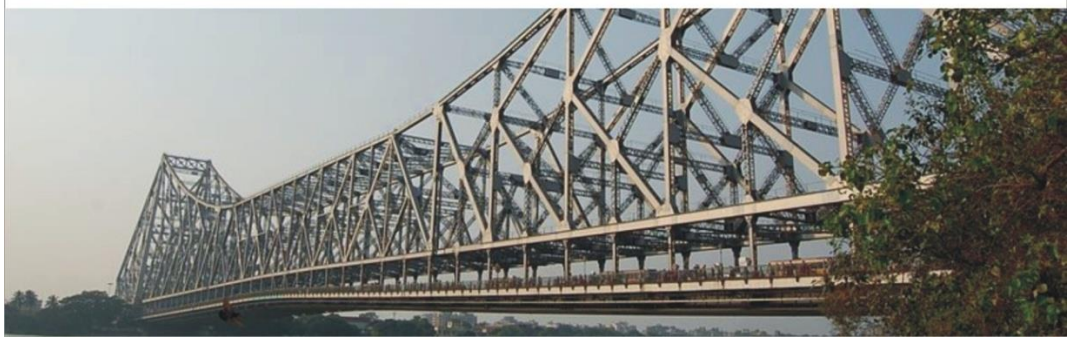
29th, 30th November & 1st December, 2019

KOLKATA

ISPAE-PET Fellows School

26th to 28th November, 2019





Registration link: http://marundeshwara.com/maruncms/user-register.php?conferenceID=177%20-%20ISPAE%202019

ACCOUNT DETAILS

Branch Name- Axis Bank Ltd, Sarat Bose Road, Kolkata; A/C No- 918010081461829
A/c Name- Indian Society For Pediatric and Adolescent Endocrinology A/c Conference 2019
IFSC Code- UTIB0000411

ISPAE PET Fellows School 2019

at The Vedic Village, Kolkata
Tuesday, 26 November to Thursday, 28 November 2019

ISPAE PET Fellows' School is a 3-day intensive residential training program for young entrants in pediatric endocrinology, and a refresher course for those already working in the field of pediatric endocrinology. This residential course is conducted in a secluded quiet environment with a student to faculty ratio of 5:1, aiming to promote maximum interactions between the trainees and the faculty members, both national and international. Registrations are limited to 30 seats only.

Course registration fees is Rs.7500/-**(to be paid only after selection)**

Applications are extended till 5th May 2019. ***Selected candidates will be notified by 21st July 2019. It is mandatory that all applicants become members of ISPAE.***

Dr Sudha Rao	***Dr Sarah Mathai***	***Dr Subrata Dey***
Convener ISPAE-PET	***Co-Convener ISPAE PET***	***Org Chair ISPAECON2019***

Other upcoming Endocrine Conferences

1. ADA, 7-11 June, 2019, San Francisco.
2. SLENDO (Sri Lanka Endocrine Society meeting) AUGUST 1 - 3, 2019 Colombo, Western, Sri Lanka
3. ESPE, 19-21 September, 2019, Vienna.
4. ISPAD, 30 October - 2 November,2019 Boston.
5. RSSDI, 7-10 November, 2019, Jaipur.
6. ESICON, 21-24 November, 2019 Nagpur.
7. PEDICON, 6-9 February, 2020, Indore.

6th Biennial Meeting

Indian Society for Pediatric and Adolescent Endocrinology (ISPAE)

ISPAE 2019

In collaboration with the West Bengal Academy of Pediatrics

29th, 30th November & 1st December 2019, Kolkata, India

REGISTRATION FORM

Name : ..... Qualification : .....

Designation : ..... Medical Council Reg. No. .....

Institution : .....

Address : .....

City : ..... State : ..... Country : .....

Pin Code : ..... Phone / Mobile : .....

E-mail : ..... ISPAE Membership No. .....

Amount Payable INR : .....

Mode of payment : ☐ Demand Draft ☐ Cheque ☐ Cash

DD No: ..... (In favour of **"ISPAE Conference 2019"** Payable at Axis Bank Ltd, Sarat Bose Road Branch, Kolkata)

Meal Preference: ☐ Vegetarian ☐ Non Vegetarian

THREE DAY PROGRAM			
Dates	ISPAE Members	Non-Members	Student & Accompanying Person
Up to 15-12-2018	Rs. 5,000	Rs. 6,000	Rs. 3,500
15-12-2018 to 31-03-2019	Rs. 6,500	Rs. 7,500	Rs. 4,000
01-04-2019 to 31-10-2019	Rs. 8,000	Rs. 9,000	Rs. 4,500
Nov 1st onwards	Rs. 9,000	Rs. 10,000	Rs. 5,000
International Delegates : **US $ 150**			
Spot Registration : TBA			
Registration Fees Inclusive of 18% GST			

SINGLE DAY PROGRAM	
Registration for (01/12/2019) PEDIATRICIANS / GEN. PRAC / PEDPGT	
Up to 15-12-2018	Rs. 1,800
15-12-2018 to 31-03-2019	Rs. 2,000
01-04-2019 to 31-10-2019	Rs. 3,000
Nov 1st onwards	Rs. 3,500

Bank Name : **Axis Bank Ltd** Branch Name : **Sarat Bose Road, Kolkata** A/C No : **918010081461829**

A/c Name : **ISPAE Conference 2019** IFSC Code : **UTIB000411**

Organizing Chairperson: **Dr. Subrata Dey**

32A/23, Suren Sarkar Road, Kolkata - 700010. Mob: +91 98365 42460 E-mail sbrtdey2@gmail.com

Local Conference Secretariat:
West Bengal Academy of Pediatrics
Oriental Apartments, 15C, Canal Street, Flat H1, Kolkata 700014
Phone: (033) 2265 4072 E-mail: wbap2013@gmail.com
Website: www.wbap.in

Conference Secretariat:
Marundeshwara Enterprises
A2, Shanthi Apartments, 18 TTK 1st Cross, Alwarpet,
Chennai - 600 018. E-mail: info@marundeshwara.com
Phone: +91 44 2435 3079, 2432 8152