DPT

DEVELOPMENTAL PEDIATRICS TODAY

January 2022

Monthly e-Newsletter of IAP Chapter of Neurodevelopmental Pediatrics

Inside

Editorial

Respected Seniors and dear friends,

Greetings from Neurodevelopmental chapter of IAP! Wish you all a very happy and healthy 2022.

There is a change of leadership at the CIAP. We will miss Dr. Piyush Gupta for being a pillar of support for all the academic activities through his tenure and steering us through the Pandemic so efficiently. Yet we whole heartedly welcome Dr. Ramesh Kumar and the new team and hope to achieve greater heights under his able guidance.

Due to Covid 3rd wave the Pedicon which was scheduled for January 2022 was postponed but now the dates for Pedicon have been decided by central IAP to be held from 19th March 2022 to 23 rd. March 2022. Hope it will be held uninterrupted now. It was supposed to be held in greater NOIDA in 2021 but was postponed due to the Pandemic twice.

Covid 3rd wave will ebb in March according to ICMR, although cases have already declined in four largest cities in the country Mumbai, Delhi, Kolkata and Chennai since 4th week of January.

As far as some important days are considered , 4th January is World Braille day and 18th January is National immunization day (polio).

This month we have a write up on 'Common visual problems in children -A practical approach ' by an Ophthalmologist and a Retina specialist.

Long live IAP and our chapter!

Dr. Lata Bhat
Chief Editor

Chairperson's Message

Dear Readers,

New Year Greetings to all of you. May health and happiness and good academic learning prevail the year through.

At the outset I would like to express my heartfelt congratulations to each one of you for being adjudged as the Third winner of the IAP Best Chapter award. All your commitment to the cause and sincerity, cooperation has taken the chapter to this height.

We play a pivotal role in developing the human resource of the country and I hope this year we strengthen habilitation of every individual at the appropriate time and address every minor deviation from becoming a disability and minimize rehabilitation.

We begin this year with vision care and immunization to prevent the potential causative factor of NDD. Vision as we all know is one of the first curves of sensory neurodevelopment. So watch for quality of eye contact which is important for good communication, motility and light reflex in the first year ,this will go along way to early detection of problems. Every month we try to have an article on our world designated awareness days, watch for them and we are looking for your contribution.

PEDICON is at the doorstep. Looking forward to refueling friendship and holding our trophy together.

Regards,

Dr. Shabina Ahmed MD, FIAP

National Chairperson

Neurodevelopmental Pediatrics Chapter of IAP

Snippets from the Secretary

'It is not the disability that defines you; it is how you deal with the challenges the disability presents you with.
We have an obligation to the abilities we DO have, not the disability.'
- Jim Abbott

Respected Seniors and dear friends,

Seasons greetings from the IAP Chapter of Neurodevelopmental Pediatrics. Wishing you and your families a happy, healthy & prosperous 2022!

The year also saw a change in guard at the central IAP with the new team of Dr Remesh Kumar taking over as IAP president from Dr Piyush Gupta Sir. I take this opportunity to thank Dr Piyush Gupta Sir for the guidance and support to the chapter throughout the year and look forward to working under the able guidance of Dr Remesh Kumar Sir in the year ahead.

The chapter has been adjudged the third best chapter for the year 2021 and this feat wouldn't have been possible without the hard work of all the chapter members in their respective zones as well as the efforts of past office bearers.

As we look back to the year gone by, we see a mix of despair and hope both - despair due to the second wave of the Covid-19 pandemic in the first half of the year and the slow but steady comeback over the second half. The hard work at all fronts has worked well in seeing us through the third wave. The PEDICON 2022 planned at Noida in January was postponed due to the covid wave and is now rescheduled in the month of March. Central IAP has done extremely well as it kept all of us together glued to the dIAP webinars as well as guidelines for Covid 19 management in children and school reopening guidelines. The children have been the silent sufferers in the lockdown and the resultant school closures and we all are seeing the effects of this now in our practice. We should look for early markers of mental health issues in children during visits to clinic as a stitch in time saves nine.

January month has many important health days like Birth defects prevention month, thyroid awareness month. We have some interesting articles and journal scan related to these topics. Happy reading.....

'...I have miles to go before I sleep.' - Robert Frost

Long live IAP,

Jai Hind!

Wg Cdr (Dr) KS Multani
National Secretary
IAP Chapter of Neurodevelopmental Paediatrics

Common Visual Problems in Children - A Practical Approach

DR. S.P. CHAUDHARY MBBS, MS, FMRF
Consultant Ophthalmologist
Vitreoretina Surgeon & Uveitis Specialist
Complete Eye Care Centre, Delhi

Child learns visually during first 6 years of life and promotes growth and development. A multidisciplinary, holistic approach and coordinated effort will make children with low vision maximize the residual vision for educational, recreational, social, developmental and quality of life.

Common eye problems in children are refractive errors, squint, nutritional deficiencies, congenital or developmental problems like Cataract, glaucoma, retinoblastoma, retinopathy of prematurity and trauma. Early detection and management of ocular visual needs might help in overall growth of children.

OPHTHALMIC CONSULTATION IN CHILDREN

If development is normal, a routine checkup can be done at 3-4 years of age, when child is verbal and able to understand pics or alphabets followed by annual checkup.

Children should have ophthalmic consultation irrespective of age, in case of poor school performance in absence of any other physical problem, having frequent headache or eyestrain when studying, watching TV/digital screen from too close distance, noticing any abnormal eye deviation or movements, presence of abnormal eye reflexes, preterm/premature children or any ocular trauma. Evaluation is needed in children with delayed physical and mental development which might be associated with ocular disorders.

EXAMINATION

• VISUAL ACUITY ASSESSMENT

Visual acuity assessment requires different approaches depending on the age and cooperativeness of the child. Ideally, measurements at distance with crowded Snellen or Sloan letter optotypes guide amblyopia diagnosis and management. Commonly, however, the child suspected of having amblyopia is preverbal, preliterate, or not fully cooperative. In such cases, clinical options include assessing fixation behaviour and using preliterate eye charts. Two major methods are used to quantitate visual acuity in preverbal infants and toddlers: Preferential looking (PL) and visually evoked potential (VEP).

• CYCLOPLEGIC REFRACTION

Refraction is generally performed after cycloplegia. Retinoscopy must be performed on axis in order to provide accurate refraction information. The 2 main methods for refraction are loose lenses for infants and younger children and the phoropter for those old enough to sit in an exam chair. A surprising number of 2-year-olds are interested in and willing to use the phoropter, especially if they can watch a cartoon

during the refraction.

Dynamic retinoscopy is a useful measure of accommodation. The child is given a distance fixation target and then quickly switched to a near fixation target while the retinoscopic reflex is observed

• INTRAOCULAR PRESSURE MEASUREMENT

It is not easy or always possible to perform formal tonometry in children. Ocular palpation, though not quantitative, can allow a gross assessment of whether pressure is normal or abnormal.

Young children may permit accurate testing when handheld devices such as the Tono-Pen (Reichert Ophthalmic Instruments, Depew, NY) or Icare (Icare Finland Oy, Helsinki, Finland) are used. The Tono-Pen or the Perkins Tonometer (Haag-Streit USA, Mason, OH) may be used to test infants when they are sleeping or feeding in the supine position.

• ANTERIOR SEGMENT EXAMINATION:

In children, a successful anterior segment examination is usually possible but often requires persistence and different techniques. Longer looks are possible if, while at the slit lamp, they watch a cartoon behind the examiner.

Younger children may also be placed at the slit lamp while in a parent's lap or held with the chin positioned in the chin rest. Children unable or unwilling to cooperate with standard slit-lamp examination can be examined with a portable slit lamp, surgical loupes, or a 20 D or 28 D handheld lens used with an indirect ophthalmoscope.

The pupillary light reflex is not reliably present until approximately 30 weeks' gestational age. New-borns usually have a miotic pupil that gradually increases in size until the preteen years.

• FUNDUS EXAMIANTION

Fundus examination can be challenging, particularly in young children, it is important to obtain an adequate view of the fundus regardless of the patient's age. After appropriate dilation, infants and small children can be examined with the indirect ophthalmoscope using decreased illumination and a 28 D or 20 D lens.

• VISUAL FIELD TESTING

Visual field information can be obtained in very young patients, once they have developed visual fixation (usually by 4 months of age), by presenting a peripheral target while the child fixates on an interesting central target.

GROWTH AND DEVELOPMENT OF THE EYE

The human eye undergoes dramatic anatomical and physiologic development throughout infancy and early childhood. Most of the growth of the eye takes place in the first year of life. The change in the axial length of the eye occurs in 3 phases. The first phase (birth to age 2 years) is a period of rapid growth. The axial length increases by approximately 4 mm in the first 6 months of life and by an additional 2 mm during the next 6 months. During the second (age 2 to 5 years) and third (age 5 to 13 years) phases, growth slows, with axial length increasing by about 1 mm per phase.

COMMON OCULAR CONDITIONS

• REFRACTIVE ERRORS

Emmetropia is the condition in which there is considered to be an absence of any refractive error because parallel beams of light come to focus on the retina, with the eye at rest. Overall, the eye of the newborn is hypermetropic. The degree of hypertmetropia varies but the slightly steep cornea compensates to some extent for the short axial length. The infant eye undergoes rapid growth in the first few years of life to reach an axial of length of about 23 mm by the age of 3 years, the cornea becomes slightly flatter, the anterior chamber deepens and the degree of hypermetropia reduces gradually.

Myopia, also known as 'short sight', is that

dioptric condition of the eye in which, with the accommodation at rest, incident parallel rays come to a focus anterior to the light sensitive layer of the retina. The refractive change appears in childhood, usually between the ages of 5 and 10 years, and increases steadily up to 25 years or beyond. Premature children and with family history have high risk of developing myopia. Pathological axial myopia is degenerative and progressive.

Hypermetropia is also known as 'far sight'. In this dioptric condition of the eye, with the accommodation at rest, incident parallel rays come to a focus posterior to the light sensitive layer of the retina.

Astigmatism- In this condition of refraction a point of light cannot be made to produce a punctate image upon the retina by any spherical correcting lens. Astigmatism can make far-away and nearby objects look blurry or distorted. It happens when the cornea or lens has a different shape than normal, which makes light bend differently as it enters the eye.

Refractive errors can be corrected in children using spectacles and contact lenses. Uncorrected refractive error has risk of developing amblyopia and squint. Refractive surgeries can only be performed when number is stabilized after age of 18 years.

• SQUINT

The term strabismus is derived from the Greek word strabismos -"to squint, to look obliquely or askance"-and means ocular misalignment. This misalignment may be caused by abnormalities in binocular vision or by anomalies of neuromuscular control of ocular motility.

Age of Onset of squint can be either infantile which is deviation documented before age 6 months, presumably related to a defect present at birth. Acquired squints are deviation with onset after 6 months of age, after a period of presumably normal visual development.

Squint can be corrected with timely assessment and intervention with refraction or surgical correction depending upon the type of strabismus.

• AMBLYOPIA (LAZY EYE)

Amblyopia is a unilateral or, less commonly, bilateral reduction of best-corrected visual acuity (also referred to as corrected distance visual acuity) that cannot be attributed directly to the effect of any structural abnormality of the eye or visual pathways.

Amblyopia signifies a failure of normal neural development in the immature visual system and is caused by abnormal visual experience early in life resulting from one of like strabismus, refractive error, anisometropia or high bilateral refractive errors (isometropia) visual deprivation.

Treatment of amblyopia involves elimination of (if needed) any obstruction of the visual axis, such as a cataract, correction of any significant refractive error (glasses) and forced use of the amblyopic eye by limiting use of the better eye (Occlusion therapy)

• NYSTAGMUS

Nystagmus is an involuntary, rhythmic oscillation of the eyes. In pendular nystagmus, the eyes oscillate with equal velocity in each direction. Jerk nystagmus denotes a movement of unequal speed. The prevalence of nystagmus in young children is approximately 0.35%. Nystagmus can

be due to a motor defect that is compatible with relatively good vision, an ocular abnormality that impairs vision or fusion, or a neurologic abnormality.

For the patient with nystagmus, use of prisms can improve head positions by shifting the retinal image toward the null point. Extraocular muscle surgery for nystagmus is indicated for correction of an abnormal head position, which is achieved by shifting the null point closer to the primary position.

• CATARACT (CONGENITAL/DEVELOPMENTAL)

Cataracts are responsible for nearly 10% of all vision loss in children worldwide. Cataracts in children can be isolated, or they can be associated with a number of conditions, including chromosomal abnormalities, systemic syndromes and diseases, infection, trauma, and radiation exposure. In almost all cases of cataract associated with systemic disease, the cataracts are bilateral; not all bilateral cataracts, however, are associated with systemic disease.

Once a decision has been made to remove the cataract(s), the next issues to be resolved are when to perform surgery and whether to implant an intraocular lens (IOL). In general, the younger the child, the greater the urgency to remove the cataract, because of the risk of visual deprivation amblyopia.

For optimal visual development in new born and young infants, a visually significant unilateral cataract should be removed before age 6 weeks; visually significant bilateral cataracts, before age 10 weeks. For older children with bilateral cataracts, surgery should be recommended when the level of visual function interferes with the child's visual needs.

• GLAUCOMA (CONGENITAL/JUVENILE)

Paediatric glaucoma are a heterogeneous group of diseases that may result from an isolated congenital abnormality of the aqueous outflow pathways (primary glaucoma) or from abnormalities affecting other regions of the eye (secondary glaucoma). Juvenile Open-Angle Glaucoma JOAG is an autosomal dominant condition that presents after 4 years of age.

The primary treatment for most childhood glaucoma is surgery. PCG is usually effectively treated with angle surgery (goniotomy or trabeculotomy). The treatment of most secondary childhood glaucoma is similar to that of open-angle or secondary glaucoma in adults. Medical treatment often has value prior to surgery and may have long-term benefit, particularly in JOAG and some secondary childhood glaucoma.

• RETINOBLASTOMA

Retinoblastoma is the most common malignant intraocular tumor of childhood and one of the most common paediatric solid tumors, with an incidence of 1:14,000–1:20,000 live births. It is equally common in both sexes and has no racial predilection. The tumor can be unilateral or bilateral; 30%–40% of cases are bilateral.

Retinoblastoma is typically diagnosed during the first year of life in familial and bilateral cases and between ages 1 and 3 years in sporadic unilateral cases. Approximately 90% of cases are diagnosed before 3 years of age; onset later than age 5 is rare but can occur. The most common initial sign is leukocoria (white pupil), which is usually first noticed by the family and described as a glow, glint, or cat's-eye appearance. Approximately 25% of cases present with strabismus (esotropia or exotropia).

The management of retinoblastoma has changed dramatically over the past decade and continues to evolve. Many specialists may be involved, including ocular oncologists,

paediatric ophthalmologists, geneticists, genetic counsellors, paediatric oncologists, and radiation oncologists.

Primary systemic chemotherapy (chemo-reduction) followed by local therapy (consolidation) has been used to spare vision for larger tumours. Small retinoblastoma tumours can often be treated with either laser photocoagulation or cryotherapy. When the likelihood of salvaging vision is low, primary enucleation of eyes with advanced unilateral retinoblastoma is recommended to avoid the adverse effects of systemic chemotherapy.

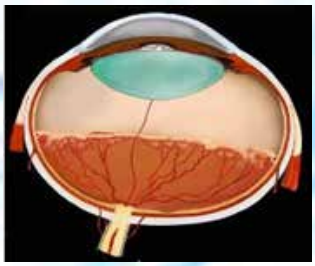


• RETINOPATHY OF PREMATURITY

Retinopathy of prematurity (ROP) is a Vaso proliferative retinal disorder unique to premature infants with incompletely vascularized retina. Gestational age and weight at birth, 2 of the strongest risk factors for ROP, are inversely correlated with the development of ROP: smaller babies and those born at an earlier gestational age are at higher risk.

Dilated fundus examinations should be performed to screen for ROP in infants who were born at a gestational age of 30 weeks or earlier or had a birth weight of less than 1500 g. They should also be performed in premature infants with an unstable course if the paediatrician believes that the child is at high risk for ROP. The first examination should be done at 4 weeks' chronologic (postnatal) age or at a corrected gestational age of 30–31 weeks, whichever is later (but not later than 6 weeks' chronologic age).

Regular follow up is needed to look for regression or progression of ROP. Babies with stage 3 or more and plus disease might require laser photocoagulation to the avascular retina. Aggressive posterior ROP might require intravitreal Anti-VEGF injections.

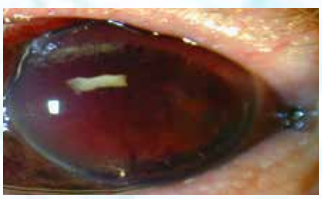



• OCULAR INJURIES

Trauma is one of the most important causes of ocular morbidity in childhood. In younger children, most accidental ocular trauma occurs during casual play with other children. Older children and adolescents are most likely to be injured while participating in sports.

In the Indian scenario common causes are wooden stick, iron rods, pencils, pens, scales, broken glass bangles, & tea cup injuries. Toys like tops, bat, ball, bows and arrows, sports and sharp-edged objects and furniture at home are other common causes.

Timely referral to ophthalmologist and intervention depending upon blunt or penetrating injury is the key to salvage the eye. Open globe injuries need urgent surgical repair under general anesthesia.

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1. Paediatric Ophthalmology and Starbismus. American Academy of Ophthalmology.

Journal Scan

Etiology and clinical presentation of birth defects: population based study Marcia L Feldkamp, John C Carey, Janice L B Byrne, Sergey Krikov, Lorenzo D Botto. BMJ 2017; 357 doi: https://doi.org/10.1136/bmj.j2249 (Published 30 May 2017)

Abstract

Objective To assess causation and clinical presentation of major birth defects.

Design Population based case cohort.

Setting Cases of birth defects in children born 2005-09 to resident women, ascertained through Utah's population based surveillance system. All records underwent clinical re-review.

Participants 5504 cases among 270 878 births (prevalence 2.03%), excluding mild isolated conditions (such as muscular ventricular septal defects, distal hypospadias).

Main outcome measures The primary outcomes were the proportion of birth defects with a known etiology (chromosomal, genetic, human teratogen, twinning) or unknown etiology, by morphology (isolated, multiple, minors only), and by pathogenesis (sequence, developmental field defect, or known pattern of birth defects).

Results Definite cause was assigned in 20.2% (n=1114) of cases: chromosomal or genetic conditions accounted for 94.4% (n=1052), teratogens for 4.1% (n=46, mostly poorly controlled pregestational diabetes), and twinning for 1.4% (n=16, conjoined or acardiac). The 79.8% (n=4390) remaining were classified as unknown etiology; of these 88.2% (n=3874) were isolated birth defects. Family history (similarly affected first degree relative) was documented in 4.8% (n=266). In this cohort, 92.1% (5067/5504) were live born infants (isolated and non-isolated birth defects): 75.3% (4147/5504) were classified as having an isolated birth defect (unknown or known etiology).

Conclusions These findings underscore the gaps in our knowledge regarding the causes of birth defects. For the causes that are known, such as smoking or diabetes, assigning causation in individual cases remains challenging. Nevertheless, the ongoing impact of these exposures on fetal development highlights the urgency and benefits of population based preventive interventions. For the causes that are still unknown, better strategies are needed. These can include greater integration of the key elements of etiology, morphology, and pathogenesis into epidemiologic studies; greater collaboration between researchers (such as developmental biologists), clinicians (such as medical geneticists), and epidemiologists; and better ways to objectively measure fetal exposures (beyond maternal self reports) and closer (prenatally) to the critical period of organogenesis.

Journal Scan

Utility of the New Indian Society of Paediatric and Adolescent Endocrinology (ISPAE) Guidelines for Congenital Hypothyroidism Screening in a High Risk Unit

Indian J Pediatr. 2021 Nov;88(11):1075-1079.

Lakshmi Venugopalan, Sugapriya Paranjyothi, Anupama Sankaran, Hemchand Krishna Prasad, Gnanabalan Murugesan, R Shanmughasundaram

Abstract

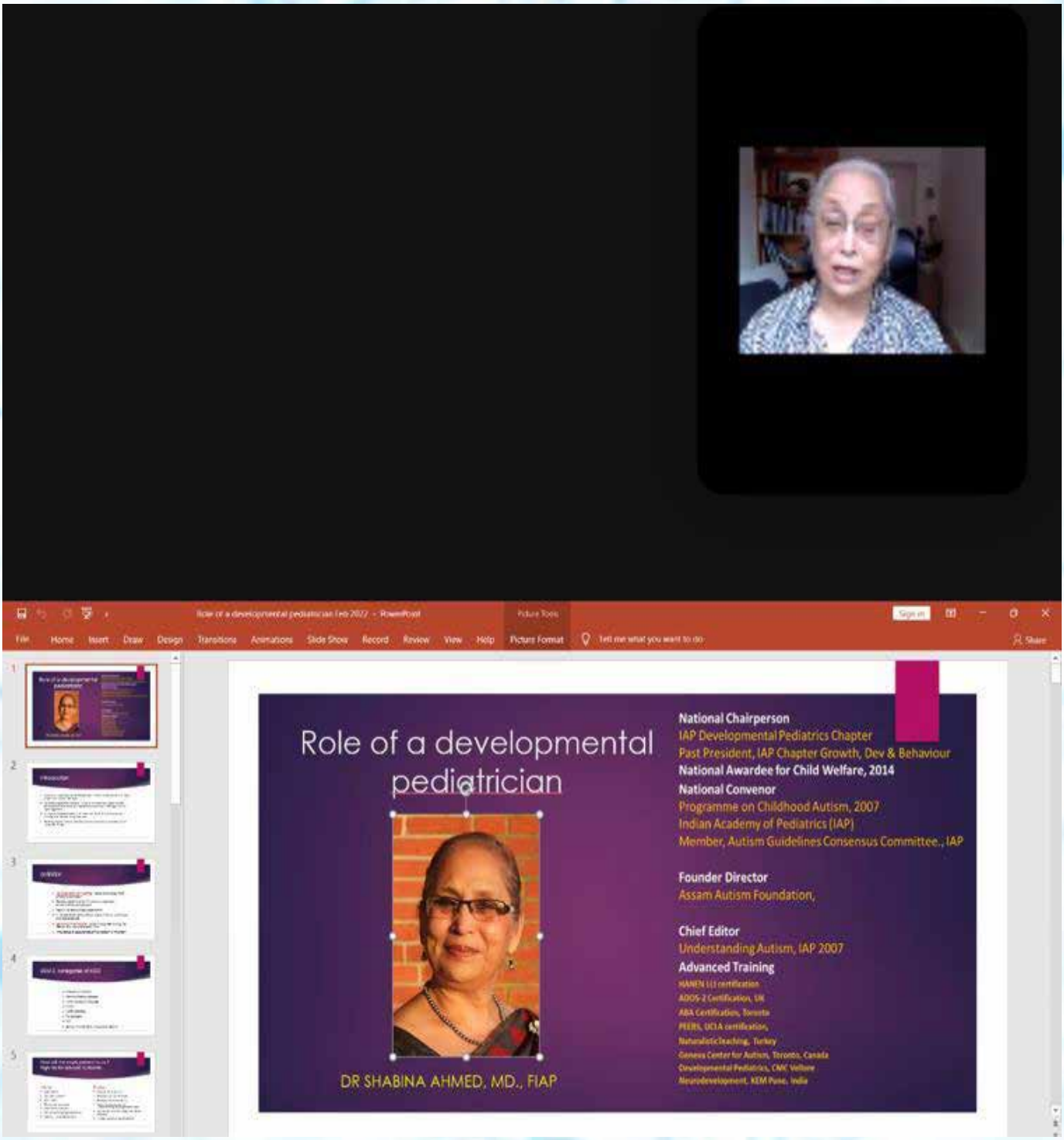
Objective: To study the new ISPAE guidelines in neonates with congenital hypothyroidism and present authors' experience in managing these neonates.

Methods: A retrospective review of all babies who were screened for congenital hypothyroidism in the institution over a period of 5 y was conducted. Details pertaining to maternal risk factors, neonatal risk factors, screening TSH, venous TSH and details of etiological evaluation including: ultrasound thyroid, technetium 99m scintigraphy and anti thyroid peroxidase antibody estimation were retrieved. The cases were assessed using the new ISPAE guidelines.

Results: During the study period, 8107 babies were screened for congenital hypothyroidism, 83 cases had confirmed disease and 47 had established etiology. There is a fair correlation between screening TSH and venous TSH ($r = 0.7$, $p < 0.05$). The estimated incidence of congenital hypothyroidism in present series is 1 in 97 cases. Out of the 83 cases, 36 (43.3%), 16 (19.2%) and 31 (37.3%) cases had screening TSH >20 µIU/mL, 6-20 µIU/mL and < 6 µIU/mL, respectively. Out of the 47 babies with screening TSH <20 µIU/mL, 23 (48.9%), 25 (53.1%) and 12 (25.5%) cases had prematurity, maternal thyroid disease and illness, respectively, as risk factors (some babies had more than one risk factor). Of the 83 cases, all of them had venous TSH >10 µIU/mL and five cases had low Free T4 (<1.1 ng/dl). Thus, none of the cases with congenital hypothyroidism were missed on the new ISPAE guidelines.

Conclusion: The new ISPAE guidelines for neonatal screening for congenital hypothyroidism are very useful and applicable in Indian neonates.

Month in pics



Introductory talk by Chapter chairperson Dr Shabina Ahmed for the fellowship students

Month in pics

Month in pics