6th BANGALORE PEDICON 2019

SOUVENIR

DATE : 8th & 9th JUNE 2019

VENUE : NIMHANS CONVENTION CENTRE

Hosur Road, Bengaluru

Theme : Harnessing Knowledge, Learning Unlimited

IAP – BANGALORE TEAM 2019

Dr. Srinivasa S
President

Dr. Sumitha Nayak
Hon. Secretary

Dr. Prasad S M
Vice President

Dr. Santosh S

Dr. Ravishankara M
President Elect

Dr. Shivaprakash Sosale
Treasurer

Dr. Dr. Rajashekar Murthy G R
Joint Secretary

EXECUTIVE COMMITTEE MEMBERS

Dr. Eash Hoskote

Dr. Harilal Naik

Dr. Md. Mousin Mallik

Dr. Ramesh M

Dr. Nithyananda S K

Dr. Syed Ahmed Mustafa

Dr. Ramitha Pai

Dr. Sanjay K S

Dr. Rashmi S Murthy

Dr. Sunil Kumar B M

Dr. Nandeesh B
Journal Editor

Dr. Priya Shivalli

Dr. Basavaraja GV
Zonal Co-ordinator

Dr. Naveen D Kini
Web Master

Dr. Govindaraj M
Historian

Dr. Mallikarjun H B

Dr. Raghunath C N

Dr. S. Fattepur

Dr Basavaraj Patil

Dr. Natesh B H

Dr Kushal Kumar K
Ex - Officio

Central EB Members

ORGANIZING COMMITTEE

Organizing Chairperson
Dr. Srinivasa S
Treasurer : Dr. Shivaprakash Sosale C

Organizing Secretary
Dr. Sumitha Nayak
Co-Ordinator : Dr. Ravishankara M

Patrons
Dr Mahadeviah
Dr DB Meundi
Dr PM Shetti
Dr H Paramesh
Dr Jayoji Rao
Dr Shivananda
Dr Nisarga R
Dr Govindarajulu PN
Dr AC Ramesh

Reception Committee
Dr Govindaraj M (Chairman)
Dr Gnanamurthy N (Co-Chairman)
Dr Ranjan Kumar Pejawer
Dr Shubha Badami
Dr Adarsh E
Dr Asha Benakappa
Dr Naveen Benakappa
Dr Kishore Baindur
Dr Shantharaj A
Dr Sarala Sabhapathy
Dr Natesh BH
Dr Mahesh BP
Dr Venkatachalapathy M
Dr Preethi M Galagali
Dr Sahana Devadas
Dr Gayatri Devi C

Scientific Committee
Dr Basavaraja GV (Chairman)
Dr Sumitha Nayak
Dr Srinivas G. Kasi
Dr Jagadish Chinnappa
Dr Yeshodha
Dr Mallikarjuna HB

Finance Committee
Dr Bhaskar Shenoy (Chairman)
Dr Sunil Subbaiah (Co-Chairman)
Dr Vasudev Dhananjay
Dr Kishore Baindur
Dr Girish Hadli
Dr Harilal Naik
Dr A Nagesh
Dr Kishore Kumar R

Registration Committee
Dr SM Prasad (Chairman)
Dr Chidananda NK (Co-Chairman)
Dr Geetha Patil
Dr Ravi Kumar
Dr Fulton D'Souza
Dr Prema R
Dr Poornima S

Master of Ceremony
Dr Rashmi S Murthy (Chairman)
Dr Priya Shivalli (Co-Chairman)
Dr Supraja C
Dr Ramitha Pai
Dr Naveen D Kini
Dr Gowri Somayaji
Dr Anuradha HS
Dr Anil MU
Dr Shalini Sharma
Dr Shilpa KL

Venue Committee
Dr Eash Hoskote (Chairman)
Dr Rajashekar Murthy (Co-Chairman)
Dr Sudhindra BK
Dr Capt Gopikrishna
Dr Nilima Rao
Dr Raghunath CN

Audio Visual committee
Dr Prabhakar Murthy V (Chairman)
Dr Rajeev D (Co-Chairman)
Dr Sunil kumar BM

Mementos & Certificates
Dr Madhu GN (Chairman)
Dr Girish N (Co-Chairman)
Dr Raghuramaiah KN
Dr Syed Ahmed Mustafa

Valedictory
Dr Nandeesh B (Chairman)
Dr Rashmi S Murthy
Dr Sunil Kumar BM

Transport & Accomodation
Dr Santosh S (Chairman)
Dr Sonia Kanitkar
Dr Harish J
Dr Srinivas HA
Dr Shanthakumar A
Dr Basavaraj C

Award Papers
Dr Nagabhushana S (Chairman)
Dr Ravichander (Co-Chairman)
Dr Pushpalatha K
Dr Mallesh K
Dr Shivsharanappa

Catering Committee
Dr Sanjay KS (Chairman)
Dr Kushal Kumar K (Co-Chairman)
Dr Mousin Mallick
Dr Mohan Kumar

Banquet & Cultural
Dr Sharath Chand S (Chairman)
Dr Dinesh KS
Dr Nithyananda SK

Trade Exhibition
Dr Ramesh M (Chairman)
Dr Ramesh S
Dr Susheela C
Dr Subramanya NK

Souvenir
Dr Priya Shivalli (Chairman)
Dr Nandeesh B
Dr Nagalatha S

Workshops
Dr Prahalad Kumar A
Dr Mallikarjuna HB
Dr Prashant Urs
Dr Kartik Nagesh

THANKS TO VACCINE AND PHARMA COMPANIES

- GSK Vaccine
- Pfizer Vaccine
- BBIL
- Sanofi Vaccine
- Signatura
- Curatio
- MSD
- Aster Hospital
- H & H
- Koyee
- Allegra Resp
- Reddy's Lab
- Serum Institute
- Micro Labs
- Sanofi Pharma
- GSK Pharma

Printing and Distribution Courtesy : UTIVAC HEALTHCARE PVT. LTD.

UTIVAC
HEALTHCARE PVT.LTD
WE CARE...FOR VACCINES AND PEOPLE!

 # 309, Shree Complex, 73, St. John's Road, Bangalore - 560 042
Tel. : 41235704 / 705 / 708 Fax : 25566499 Mobile : 98458-65701 / 65710

PREFFERED DISTRIBUTOR FOR THE FOLLOWING VACCINES COMPANIES

Pfizer · Bharat Serums & Vaccines Ltd. · Bharat Biotech Lead Innovation · Novo SINCE 1946 · MSD · gsk GlaxoSmithKline · Abbott · BE Biological E. Limited Celebrating Life Every Day · Panacea Biotec Innovation in support of life · Cadila Healthcare Ltd. · SERUM INSTITUTE OF INDIA Cyrus Poonawalla Group · Zuventus Healthcare Ltd. · SANOFI PASTEUR · WOCKHARDT LIFE WINS · BM BIO-MED Promise for healthier life

"VACCINES MARKET LEADER FOR MORE THAN 3 DECADES"

6th BANGALORE PEDICON 2019

SOUVENIR

Theme :

Harnessing Knowledge, Learning Unlimited

Date :

8th & 9th June 2019

Venue :

NIMHANS CONVENTION CENTER

Hosur Road, BENGALURU

6th BANGALORE PEDICON 2019

Contents :

Message

My Dear Pediatrician Friends,

Seasons Greetings!!

It is a usual concern of every parents that their child grows normally and healthy and for that they try to get best possible medical care within their available resources. While the child health is matter of concern for the individual parent, it is equally important for government as it is considered as one of the important parameter of development and quality of healthcare service.

Indian Academy of Pediatrics being one of the stake holder of child health is equally concerned about improving child health and quality of healthcare service through enhancing knowledge and skills of its members. With this motive on regular base it organizes city/district, state, regional and national conferences.

I am happy to know that the Bangalore Paediatric Society organizing Annual conference of BPS 8th & 9th June 2019 at Bangalore.

The unique aspect of this conference is that the selection of topics keeping pediatricians working in the periphery in mind and with Speakers of international repute sharing their knowledge to the delegates it will be highly successful event. I am sure that the scientific deliberations at this mega event will ultimately help in child survival and improvement in quality of healthcare in the region.

I wish the event grand success and am sure it will make a remarkable contribution in improving child health in the region.

With warm regards to one and all

In the service of Academy.

Dr. Digant D Shastri
IAP President 2019

Message

Dear Dr Srinivasa S, Dr Sumitha Nayak, Dr Basavaraja G V & Team BPS,

Really delighted to see the mega event Bangalore Pedicon nearing up to provide 3 days of crisp academics coupled with an equally cherished opportunity for socialisation. This annual science congress has made its stamp in the annals of Bangalore Pediatric Society. Am sure the vibrancy of the Bangaloreans will be reflected all through the conference proceedings.

The cream faculty from across the country are sure to enlighten the delegates with pediatric science from basics to the latest updates. And the organising Team of President BPS Dr Srinivasa S, Secretary Dr Sumitha Nayak & Scientific Committee Chairman Dr Basavaraj G V has left no stone unturned to make this conference a runaway success.

Wish the best for the conference and the souvenir being published alongside.

Warm & loving regards,

Jai IAP, Jai Hind !!!

Dr. Remesh Kumar R
Hon Secretary General, IAP

Message

Dear Colleagues,

I am delighted to know that IAP Bangalore Branch is hosting the 6th Bangalore Pedicon from 8th & 9th June 2019. I am sure a challenge taken by this branch will be a huge success. IAP Bangalore has been in the forefront of IAP activities and has given many tall leaders who have left their imprint during their journey in CIAP.

The Pedicon is a good way to develop team spirits among the members enabling better understanding. Moreover, this kind of a drill will mentally prepare us to shoulder greater responsibilities in the future.

This conference offers one of the best scientific programs of recent times. There is a fine array of speakers. I express my best wishes to all delegates and speakers and hope that you have a very enjoyable and fruitful conference experience. The IAP Bangalore district branch is well known for their hospitality and grandeur. I am sure with their experience and imagination, innovation and spirit of enterprise, they will be able to put up a splendid show and make this the best Pedicon ever.

All IAP members to support their endeavor by attending in large numbers.

Dr. N. K Kalappanavar
MD., DNB., MNAMS., FIPP., FIAP., FRCPCH (UK)
Karnataka State President 2019

Message

Dear Iapians,

Greetings from IAP Bangalore!

I expect, each of my colleagues to have overcome this hot summer and are eagerly awaiting the annual conference, Bangalore Pedicon 2019.

We have faced many hurdles this year, as we organize the annual conference amidst several other national conferences that are scheduled to be held in Bangalore this year. It has been a herculean task to find sponsors, but my team of committed members has worked very well to help us through. An array of well known and talented speakers have been invited to deliberate on many interesting topics.

The lady EC members this year are playing a very active role under the dynamic leadership of our lady secretary, and i am very fortunate to have them on my Team 2019. My friend, Dr Basavaraj has done an excellent job as the Chairman of the Scientific Committee. A big thank you to each and every member of my team who has worked to make this conference a great success.

I am happy to inform you that IAP Bangalore is regularly conducting free health check up camps at our RR Nagar site. We invite members of IAP Bangalore who wish to participate and provide free service to the needy and poor to join us in these monthly camps.

Thank you.

Jai Hind, Jai IAP BPS.

Dr Srinivasa S
President IAP Bangalore

6th BANGALORE PEDICON 2019

Message

Greetings from the Organizing Team of Bangalore Pedicon 2019!!

The annual conference of IAP Bangalore is a prestigious academic event which attempts to cover all aspects of interest to Pediatricians. This conference draws the best faculty from across the country. This year we have brought together an exciting scientific session with international and national faculty. Despite several constraints, the team has worked hard to put together this conference, and I am sure you will find it extremely useful.

Our monthly e–journal has been well appreciated. This newsletter carries academic as well as non –academic articles, and serves as a useful link between the association activities and the members. I take this opportunity to thank our webmaster, Dr Naveen Kini as well as our editors Dr Priya Shivalli and Dr Nandeesh for their involvement in the production of this monthly journal.

We cannot achieve anything without the support and cooperation of all our members. On behalf of Team 2019, I wish to thank each one of you from the bottom of my heart.

Warm regards,
Dr Sumitha Nayak
Hon Secretary, IAP Bangalore BPS 2019

Message

Dear academicians,

It is my privilege to present the Pediscan as Souvenir of Bangalore Pedicon 2019!

“Harnessing knowledge ,learning unlimited” the theme of our Bangalore Pedicon 2019 is very apt message to all academicians and students to keep learning.We should develop an ability to continuously acquire new and better forms of knowledge and skill which can be applied to our work and lives for a better future.

We are honoured to have amidst us a galaxy of speakers in this conference.

I take this opportunity to express my heartfelt gratitude to our President, Dr Srinivasa S. and Hon Secretary, Dr Sumitha Nayak who has left no stone unturned to make this conference a success.

I thank my editorial team whose undaunted spirits and support made this issue possible.

I sincerely thank our our esteemed authors ,who have taken their valuable time and experience in contributing interesting articles.

Happy Reading!!

Regards,
Dr Priya Shivalli
Editor-in-chief
Souvenir Committee
Bangalore Pedicon 2019

BANGALORE PEDICON 2019
Date : 08.06.2019 HALL A

Time	Topic	Speaker	Moderator	
8.00-9.00 am	Registration			
9.00-10.00 am	Issues in Breast feeding - Case Scenarios	Dr Mallikarjun H.B	Dr Padmavathi N Dr Pranitha Srinivas	17 Min Each
	Pediatricians Role - Management of Hematological Malignancy	Dr Intezar Mehandi		
	How do I Manage Status Asthmaticus?	Dr Prahalad Kumar A		
	Question & Answer Session			
10.01-10.40 am	**Dr Bopiah Endowment Lecture** *"Fetal Programming"*	Dr Ranjan Pejawar	Dr Govindarajulu P.N Dr Basawaraj Patil	30+10
10.41-11.20 am	Asthma Mimics in office practice ? Mission Lakshya 1000	Dr Remesh Kumar Dr Himabindu	Dr Shubha Badami Dr Nandeesh B	20 Min Each
11.21-12.20 pm	Immunisation Dialogue	Dr S.G Kasi Dr Santosh Soans Dr Surendranath M Dr Nisarga R Dr Sumitha Nayak	Dr Abhay K Shah	50+10
12.21-1.10 pm	**Inauguration**			
1.11-2.10 pm	Lunch			
2.11-2.40 pm	Usual Manifestation of unusual Disease	Dr Bakul J Parekh	Dr Eash Hoskote Dr Sharath Chand	25+5
2.41-3.10 pm	Nurture the Future	Dr Digant D Shastri	Dr Pushpalatha K Dr Geeta Patil	25+5
3.11-3.50 pm	**PEDICON ENDOWMENT LECTURE** Developmental Pediatrics - Current Scenario	Dr Mahadevaih M S	Dr Jayoji Rao Dr. Rajkumar Marol	30+10
3.51-4.10 pm	Pneumococcal Vaccine Update	Dr Kasi S G	Dr. Nithyananda S K Dr Susheela C	
4.11-5.15 pm	Panel Discussion - Medicolegal issues in Office practice	Dr Veerabhadrappa Dr Shrinath Mugali Dr Vasanth Khalatkar Dr Dnyanesh Kambli Dr Deepak C.E	Dr Dinesh Hegde	50+10

BANGALORE PEDICON 2019

Date : 08.06.2019 HALL B

Time	Topic	Speaker	Moderator	
8.00-9.00 am	Registration			
9.01-10.00 am	How do I manage croup ?	Dr Raghunath C N	Dr Prakash J	12 Min
	Newer Vaccines	Dr Sumitha Nayak	Dr Ramesh M	Each
	How do I manage Malaria ?	Dr Madhu S Pujar		
	Prevention of Obesity-Role of Pediatrician	Dr Sonia Kanitkar		
10.01-11.00 am	Panel discussion - Grand Rounds in Neonatololgy	Dr Sunil Bette Gowda Dr Niranjan H S Dr Sahana Devdas Dr Jagadish Somanna	Dr Chandrakala B S	50+10
11.01-11.20 am	Combination Vaccine - Infantrix Hexa	Dr Shafi Kolhapure	Dr Syed Mustafa Dr Ravi Nayak	
11.21-12.00 pm	The affordable Transplant Initiative A Child with Acute Liver Failure A Child with Chronic Liver Disease - Diagnosis Transplant & Management	Dr Sonal Asthana Dr Chetan G Dr Mallikarjun Sakpal		30+10
12.00-12.20 pm	Management of Functional Constipation	Dr S K Yachha	Dr Vivek Kustagi Dr Femine C R	20 Min
12.21-1.10 pm	**Inauguration**			
1.11-2.10 pm	Lunch			
2.11-3.20 pm	Oral Paper Presentation	Dr Nagabhushana S Dr Yashodha H T		
3.21-5.15 pm	Paediatrician - dielemma (Case Based)			8+2
	GERD	Dr Shivaprakash Sosale C	Dr Meundi D B	
	Bruxism	Dr Santosh S	Dr Mosin Mallick	
	Thumb sucking	Dr Sunil Kumar B M	Dr Harilal Nayak	
	Mesenteric Lymphadenitis	Dr Raghavendra G		
	Pica	Dr Rashmi S Murthy		
	Crying Child	Dr Ramitha Pai		
	Neonatal Jaundice	Dr Priya Shivalli		
	Probiotics in Pediatric Practice	Dr Ramesh M		
	Tics	Dr Poornima Shankar		

BANGALORE PEDICON 2019
Date : 09.06.2019 HALL A

Time	Topic	Speaker	Moderator	
9.00-10.00 am	Management of Infant exposed to HIV ?	Dr Rangaswamy K B	Dr Sudhindra B K Dr (Capt) Gopikrishna	17+3 Each
	Management of teen suicidal behaviour in office practice	Dr Preethi M Galagali		
	Hypothroidism - Are we missing something?	Dr Kumar Angadi		
10.01-11.00 am	PANEL DISCUSSION - Difficult case scenarios in office practice	Dr Subba Rao S D Dr Kishore Baindur Dr Gnanamurthy N Dr S R Fattepur	Dr Nagabhushana S	50+10
11.01-11.40 am	**TS Mallesh Memorial Oration** *"Present Answers to the Past questions in Airway Allergies"*	Dr Paramesh H	Dr Srinivas S *Dr Sumitha Nayak*	30+10
11.41-12.30 pm	Role of Prophylaxis in Febrile Seizures - Recent Concept Financial Prudence for Doctors	Dr Sudhindhra R Aroor Dr Dhananjay Shah	Dr Srinivas H A Dr Raghuramaiah K N	15 Min Each
12.31-1.30 pm	Panel Discussion - Investigations & Interpretation How to optimize ?	Dr Ravishankara M Dr Sanjay K S Dr Rajashekarmurthy Dr Basavaraja G V	Dr Upendra Kinjawdekar	50+10
1.31-2.10 pm	Lunch			
2.10-2.30 pm	Menigococcal Meningitis - A Vaccine Preventable Disease	Dr Suresh Kumar	Dr Arun Kumar A R Dr Girish N	
2.31-3.00 pm	What is New in typhoid Vaccination ?	**Dr Sushant Sahastrabuddhe** IVI, S.Korea		
3.01-3.40 pm	**Dr D G Benkappa Endowment Lecture** *"Lesson learnt in Pediatric practice"*	Dr Jagdish Chinappa	Dr Shantaraj A Dr Venkatachalapathy	30+10
3.41-4.15 pm	HPV Vaccine - Same Way & Same Day Practical Approach to Headache in children	Dr S G Kasi Dr Ravikumar	Dr Beeregowda Y C Dr Premalatha R	
4.16-5.15 pm	Panel discussion on latest RNTCP Guidelines	Dr Shivananda Dr Anil / Dr Manjula Dr Indumathi C K Dr Gayathri Devi C	Dr Kalappanavar N K	50+10

BANGALORE PEDICON 2019

Date : 09.06.2019 HALL B

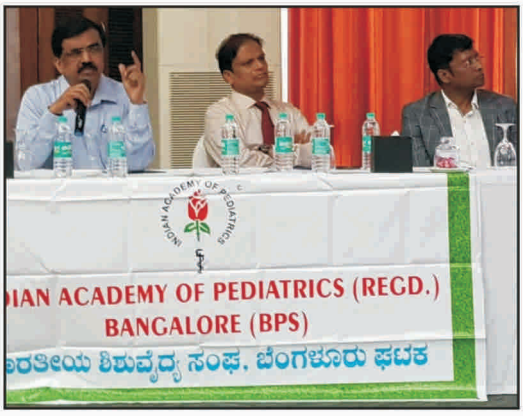
Time	Topic	Speaker	Moderator	
9.00-10.00 am	Panel Discussion on Ambulatory Management of Pediatric DM in office practice	Dr Raghupathy P Dr Sushma Rai Dr Santosh O S Dr Anjana Hulse	Dr Shyla Bhattacharya	50+10
10.01-11.00 am	Panel discussion on Pediatric emergencies	Dr Dayanand Nakate Dr Adarsh E Dr Harish Kumar Dr Gurudatt Dr Sunil Subbaiah	Dr Karunakara B P	50+10
11.01-11.40 am	**Dr T S Mallesh Memorial Oration**			
11.41-12.40 pm	Technology & the Pediatrician	Dr Mallesh Goudar Dr Maaz Ahmed Dr Chidanand N K Dr Chetan G	Dr Naveen D Kini	50+10
12.41- 1.40 pm	Panel discussion on Cardiovascular emergencies	Dr Natesh B H Dr Satish S Dr Uday Kumar Dr Sridhar M	Dr Kiran V S	50+10
1.41-2.10 pm	Lunch			
2.11-3.10 pm	Panel discussion - difficult case scenarios in adolescent practice	Dr Prema R Dr Neeli Ramachander Dr Somashekar A R Dr Neelima D Rao	Dr Prasad S M	50+10
3.11-5.15 pm	Debate - Experts Coments	Dr P.P. Maiya Dr Ravichander Dr Subramanya NK		7 Min Each
	Topic	In Favour	Against	
	1. Phimosis - Surgical intervention	Dr Narendra Babu	Dr Kushal Kumar K	
	2. VATS	Dr Deepak J	Dr Gowrishankar BC	
	3. Colloids - Resusitation in Dengue Shock	Dr Supraja C	Dr Durgappa H	
	4. Inhalation Steroids in Acute severe Asthma	Dr Bharath Reddy K R	Dr Srikanta	
	5. Oral Brochodilator in Cough	Dr Nagesh A	Dr Anil Kumar S	

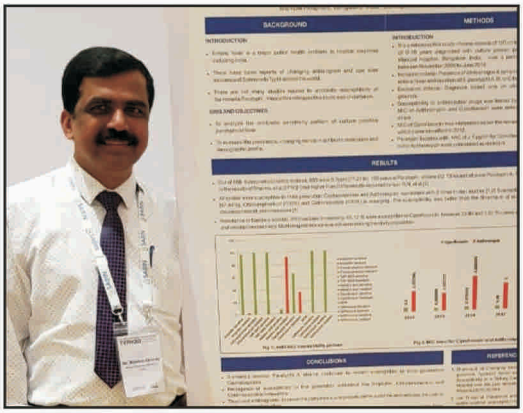
6th BANGALORE PEDICON 2019

6th BANGALORE PEDICON 2019

6th BANGALORE PEDICON 2019

6th BANGALORE PEDICON 2019





Dr. P. C. Bopaiah Memorial Endowment Lecture

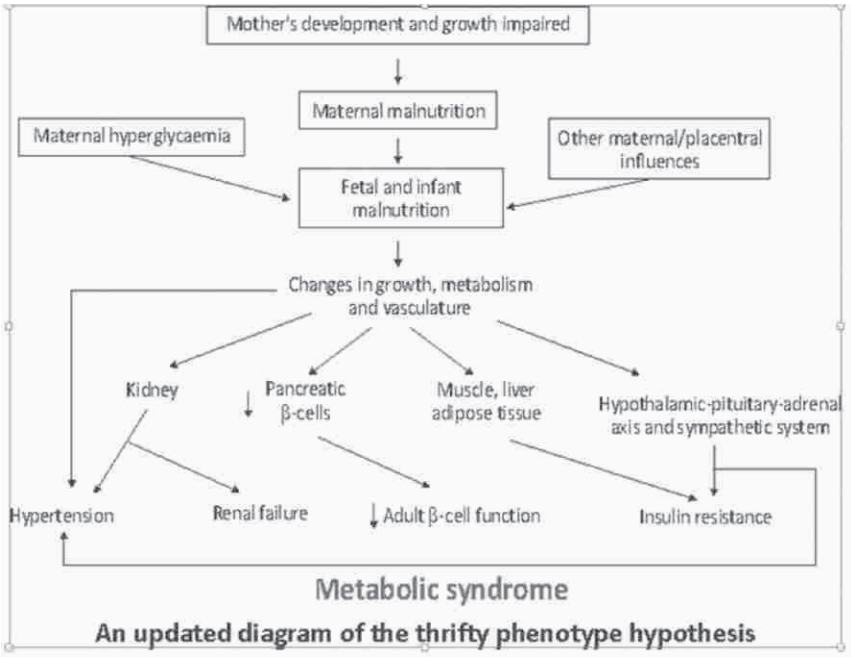
Fetal Programming : Past, Present And The Future

Dr Ranjan Kumar Pejaver,
FRCPCH (UK), FRCPI, FIAP, FNNF
Chief Neonatologist, People Tree,
Mennakshi Hospital
Honorary Professor of Neonatogy,
KIMS, Bangalore

Fetal programming occurs when normal fetal development is disrupted by an abnormal insult applied at a critical point in intrauterine life. Placenta assumes a pivotal role in programming the fetal experience in utero by adaptive changes in structure and function In recent years, elucidating the mechanisms involved in such kind of process has become the challenge of scientific research.

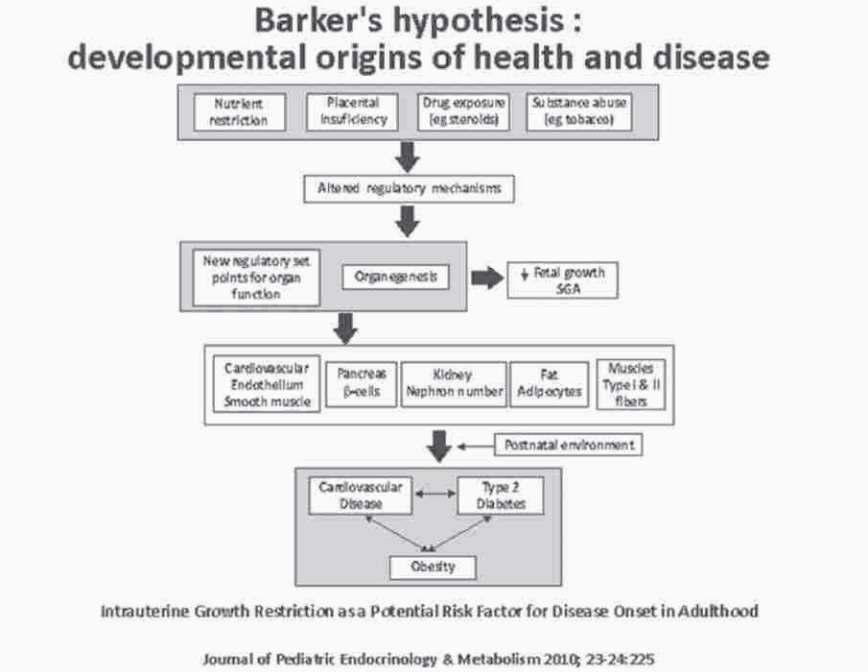
Non communicable diseases NCDs are a major global health problem. Diabetes, hypertension, obesity, cardio vascular disease, chronic respiratory disease, cancer, psychiatric diseases, immune mediated diseases (Allergy, celiac disease, auto immune diseases), neuro developmental and neuro degenerative disorders(autism,ADHD and Aleimher's) are some of them. Two out of three deaths globally are attributed to NCDs. Margaret Chan the WHO directior said that 'We are facing a slow motion disaster: pandemic of NCDs'. Low and middle income countries are hit the hardest. Diabetes is rising rapidly, globally in 2015 it was affecting 415 million and in 2040 it will be 642 million. Globally 1.5 billion adults are overweight or obese. 43 million children are overweight or obese. Why is this happening?

It all started with one hypothesis (Barker's hypothesis) which was proposed in the late 80s. Impeccable health static records of newborns between 1911 to 1915 and ischemic heart diseases in the 70s. Negative correlation between birth weight and ischemic heart disease. Undernutrition in fetal life and low birth weight programmed cardio metabolic disorders in adulthood, called Fetal origins of adult onset diseases. Within a decade he refined it and said a thrifty phenotype in the fetal life due to under nutrition and vascular compromise led to adulthood phenotypic outcomes with diseases like ,hypertension, insulin resistance, hyper leptinemia, increased adiposity and delayed puberty. The schematic drawing below explains it:



An updated diagram of the thrifty phenotype hypothesis

By 2010, the terminology changed to



Intrauterine Growth Restriction as a Potential Risk Factor for Disease Onset in Adulthood

Journal of Pediatric Endocrinology & Metabolism 2010; 23-24:225

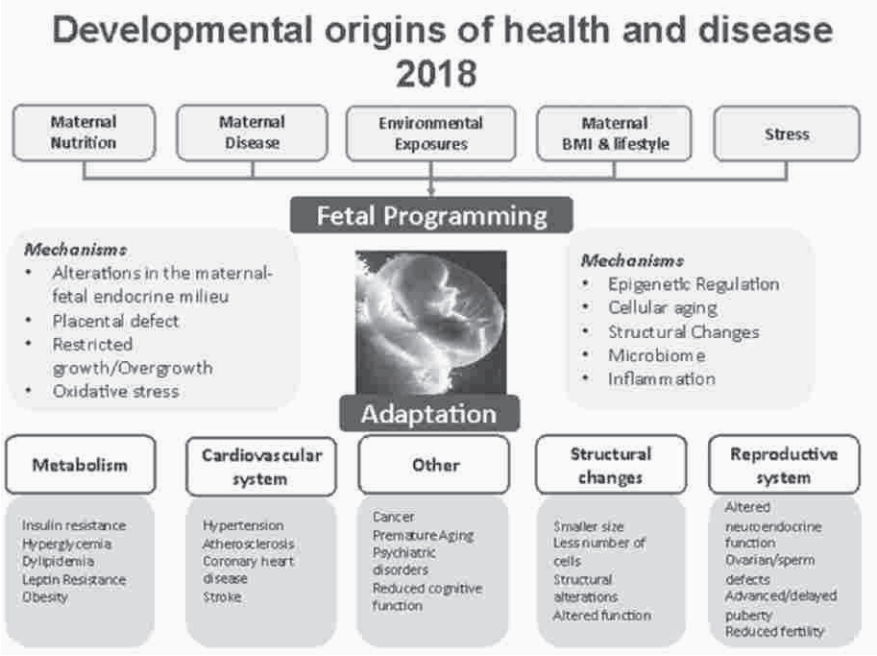
Very soon Barker realized that some of the problems was associated with low birth weight as well as high birth weight. Research moved on and new things emerged.

Genetics is the study of heredity. Genetics looks at the expression of the genetic code.

*Epigenetics is the study of how the expression of DNA can be changed without changing the structure of DNA itself. E*pigenetics is the study of the other factors that influence how and when a gene is expressed.

- After much research in the area of epigenetics, the developmental origins of health and disease (DoHaD)hypothesis was proposed

It contends that "during early life (at conception, and/or during foetal life, infancy and early childhood) the environment induces changes in development that have long term impact on later health and disease risk"

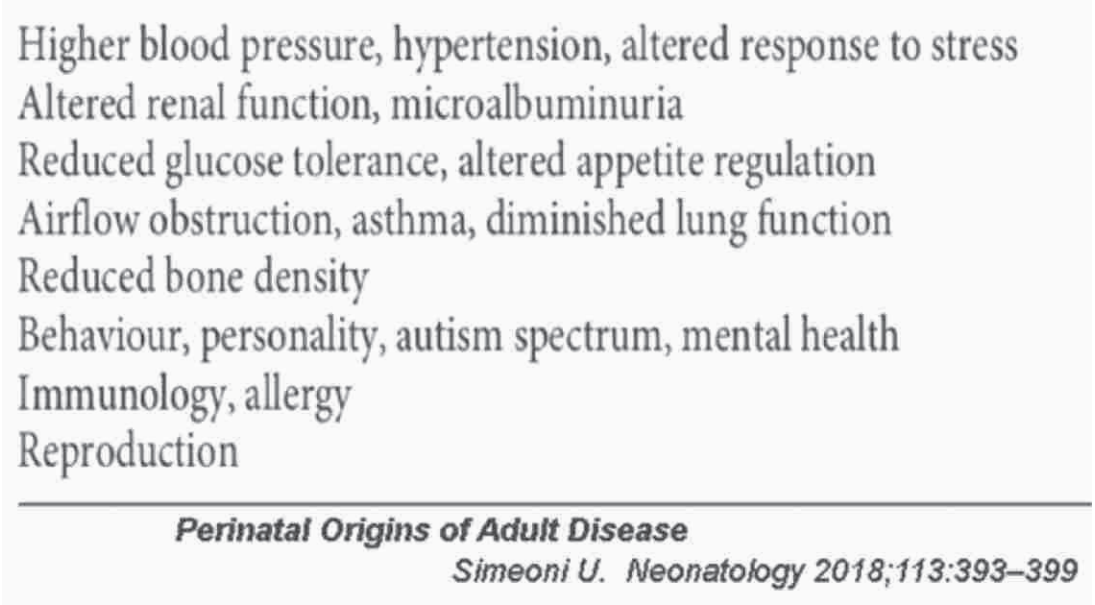


At the same time T M Luu et al showed that preterm birth was a risk factor for early onset of chronic diseases. They said that:

Common adverse intrauterine conditions that may trigger preterm birth (e.g., preeclampsia, gestational diabetes, fetal growth restriction and chorioamnionitis) can influence fetal programming. After birth, complications related to prematurity such as sepsis, lung and brain injury, and malnutrition — and their treatments (e.g., oxygen, parenteral nutrition, steroids) — further alter organ system development.

T M Luu et al CMAJ July 12, 2016 188 (10) 736-746

Long term disorders related to preterm birth



Prematurity and intra uterine growth restriction together are double trouble.They have cumulative incidence of metabolic syndrome.

Assisted reproduction (ART)and DoHaD: IVF and ICSI present nutritional,biochemical and hormonal environment significantly different from natural conception. The dynamic conditions in the genital tract are lost and novel variabkles are introduced by these procedures. Recent data suggests that ART is another example fetal programming. There is evidence that in these children, for early adverse metabolic profile, latent insulin resistance, higher blood pressures, higher blood glucose levels early in puberty. Higher incidence of imprinting disorders leading to syndromes like Beckwith Wiedemann, Angelman's, Prader willi's, Russel Silverman's etc. Higher incidence of neoplasms benign and malignant as compared with children born by normal conception.

It is now come to light that trans epigenetic inheritance can extend upto three generations. Oxidative stress and fetal programming are closely linked. **Consequently, OS may be the key link underlying the programming.**

FUTURE DIRECTIONS:

Epidemiological studies on possible fetal origins of health and disease have **only been conducted in adults.** Further studies on disease susceptibility **in childhood and also from birth to adulthood** will be required.

Only some systems have been covered .**Interactions between chemicals,nutrition & stress has still to be studied in depth. Dominant focus of experimental studies to date has been on phenotypic consequences of feto placental perturbances. Emphasis has now shifted to determining initiating mechanisms underlying the programming process.**

Interaction of windows across lifespan and generations have to be studied deeply.

Better integration of animal and human data.As a result of all this progress intervention and prevention strategies have to be planned, defined, tested and refined. Currently, the health of the fetus is considered more important than ever, due to increasing trends in low births, late child bearing . Understanding fetal programming which has a negative impact on fetal health as well as future health has immense value.

Dr. T. S. Mallesh Memorial Oration

Present Answer to Past Questions - Pediatric Asthma

Prof. Dr H Paramesh
MD, FAAP (USA), FIAP, FIAMS, FIAA, FICAAI, FPAI
Pediatric Pulmonologist, Environmentalist
Chairman: Lakeside Center for Health Promotion and Lakeside Education Trust
Visiting Professor Divecha Center for Climate Change, Indian Institute of Science (IISc)

Introduction:

Asthma is an early onset, non communicable ,chronic respiratory disease of environment origin characterised by airway obstruction, inflammation and hyperreactivity with significant psycho ,socio–economic burden to the family and society.

Asthma is a global epidemic. In 2015 nearly 1 billion population were suffering and it will rise to 4 billion by 2050.

Our data as per Commission of macroeconomics and health, Govt of India in 2005 asthma was 45million in India and predicted it will reach 57.2 million in 2016.

Our concepts in the management of asthma has changed over the years from simple bronchoconstriction to airway hyperreactivity, to airway inflammation, remodelling, united airway concept, phenotypes and dietary habits.

Over the years the common question asked by the parents are listed here and the updated answers will be discussed in the talk.

1. Is it asthma?
2. No one has asthma in our family, why our child suffers?
3. Is it contagious ?
4. How to choose medicine to use?
5. Does it have steroids?
6. Why inhalers, is it not addictive to children?
7. What food to give?
8. Can he play in school?
9. How can we manage the adolescent?

10. Can he out grow the disease?
11. Can we prevent the disease?
12. What is the impact of knowledge on environment into action?

With the update answers we can help our children with asthma lead quality life with good compliance and making the parents at ease.

Our training modules should be patient oriented than disease oriented for sustainability in health care.

Reference:

- H Paramesh, Pediatric Asthma: New answers to old issues – Austin Journal of Pulm & Resp. Medicine. 2017, 4 (2) 1053
- GINA – 2019
- H Paramesh-IAP textbook of Pediatrics, 7th Edition; Chapter: Asthma, Chapter: Environment and Child Health JAYPEE 2019.

BIOPSYCHOSOCIAL ASPECTS OF CARE

Dr Jagdish Chinnappa
Sr Consultant Paediatrician
Manipal Hospital
Bangalore

Traditionally, pediatricians are acutely aware of all the components that make babies healthy and keeps them away from disease.

A child with a simple problem like fever, cough and cold secondary to a virus infection like influenza, is brushed off in under a minute with prescriptions of paracetamol, cough syrups and sometimes antibiotics.

Little attention is paid to the psychological and social determinants of health and recovery. A few pediatricians may ask about how the illness impacts the child in terms of feeding, sleeping and socially interacting.

While this may be a trivial issue in acute transient illnesses of childhood; they play a major role in the response and recovery of a subacute and chronic illness.

Accurate diagnosis and precise treatment are the cornerstone of modern medicine. There is an increased awareness of evidence-based guidelines to deliver this accurately and efficiently.

Unfortunately, the psychological and social components are rarely accorded the same degree of importance as the biological component.

Psychological factors of both the parents and the child that play a vital role. Some of these factors are

1.Attitude -an attitude of trust towards the doctor, a keen understanding of the disease and its ramifications, a courage to deal with the disease and not get overwhelmed by the disease and a curiosity to find out more. Attitudinal attributes go a long way in ensuring compliance and helping recovery

2.Belief systems. A belief grounded in inaccurate facts may lead to a worsening of symptoms and the need for unnecessary investigations and treatment. A strong belief in the value of the medical intervention accelerates recovery.

3.Self-control. The ability to inhibit multiple medical opinions and online consultations leads to more rational treatment.

Other Psychological factors include self -esteem, behavioral tendencies and personality.

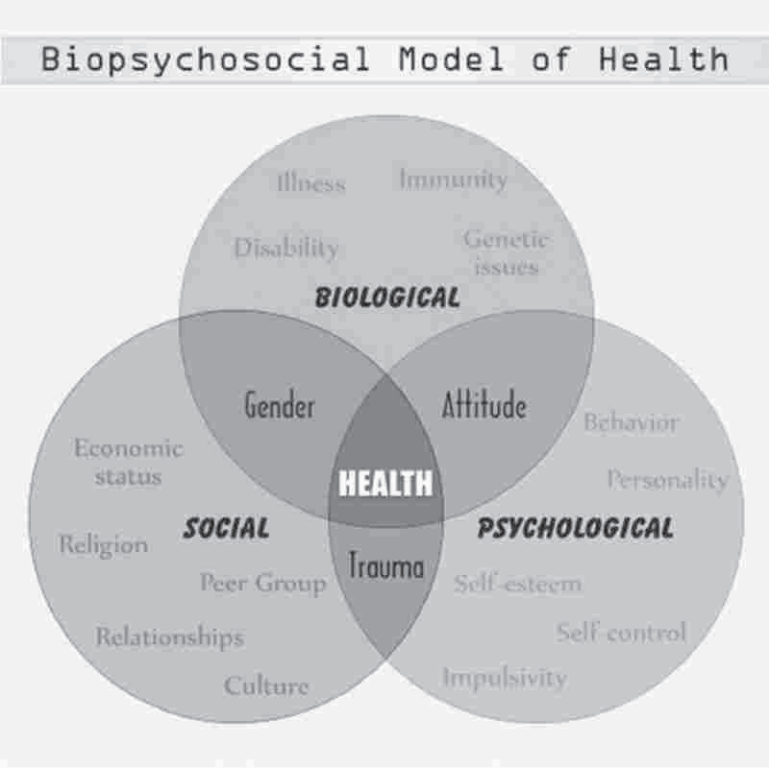
Social factors are also vital in recovery

Some of them which play a vital role are

1. Economic status. The inability to afford treatment especially in chronic conditions is the source of tremendous stress. It also determines outcomes. Short cuts are taken to tailor the treatment to resources
2. Support systems The ability to bounce back is strongly related to the amount of social support that the patient gets. Children in joint families tend to be cared for by multiple persons and this helps recovery. Support by groups, organizations, peer groups and the medical team

Other social factors which play are role are religious affiliation, culture and political systems

When dealing with a child with a chronic disease, it is worthwhile to consider all three aspects of care. Giving too much importance to the biological component alone will lead to suboptimal care of the child.



MANAGEMENT OF INFANT EXPOSED TO HIV

Dr. K.B. Rangaswamy
Professor and HOD
Department of Pediatrics
Sri Siddhartha Medical College and Hospital, Tumkur −572107

- **Introduction**
  - Children account for 6.5% of an estimated 2.1 million (2015) People Living with HIV (PLHIV) in India at present
  - Mother-to-child-transmission (MTCT), occurring during pregnancy, labour or during breastfeeding accounts for >90 % of all HIV infections in children
  - In India, of an estimated 27 million pregnancies every year, around 78,300 pregnancies occur in women with HIV infection annually. Infants born to these women are at risk of acquiring HIV infection.
- **Key points**
  - Clinical assessment and Care of HIV exposed infants.
  - Infant feeding guidelines
  - ARV Prophylaxis, Cotrimoxazole Preventive Therapy (CPT) & Immunisation protocol.
  - Diagnostic criteria and testing algorithm for HIV infection in infants

Risk of HIV transmission from Mother to Child with ARV interventions

ARV Intervention	Risk of HIV Transmission from mother to child
No ARV; breastfeeding	30-45%
No ARV; No breastfeeding	20-25%
Short course with one ARV; breastfeeding	15-25%
Short course with one ARV; No breastfeeding	5-15%
Short course with two ARVs; breastfeeding	5%
3 ARVs (ART) with breastfeeding	2%
3 ARVs (ART) with No breastfeeding	1%

- **Why are HIV exposed infants a vulnerable group?**
  - Regardless of their own HIV status, HIV exposed infants are at a high risk of malnutrition, growth failure, developmental delay and repeated infectious disease related morbidity by common and unusual organisms.
  - HIV infected infants frequently present with clinical symptoms in the first year of life.
- **Components of Care of HIV-Exposed Infant**
  - **Immediate Care at Birth**
    - The baby's mouth and nostrils should be wiped as soon as the head is delivered
    - Infants should be handled with gloves until all blood and maternal secretions have been washed off
    - The cord should be clamped soon after birth, and milking should be avoided.
    - Initiate feeding within the first hour of birth according to the preferred and informed choice
  - **Infant feeding**
    - The current national guidelines for feeding of HIV-exposed and infected infants <6 months age are:
    - Exclusive Breast Feeding (EBF) for first 6 months of life is recommended
    - When exclusive breast feeding is not possible for any reason (maternal sickness, twins), Mothers and health care workers can be reassured that maternal ART reduces the risk of postnatal HIV transmission in the context of mixed feeding as well
    - Mothers known to be HIV-infected (and whose infants are HIV uninfected or of unknown HIV status) should exclusively breast-feed their infants for the first six months of life, introducing appropriate complementary feeds thereafter and continue breastfeeding

- **Benefits of Exclusive breastfeeding (EBF) and Replacement feeding (RF)**

Exclusive breastfeeding	Replacement feeding
• Breast milk contains all the nutrients the baby needs in the first six months • Breast milk is easy to digest • Breast milk protects the baby from diarrhoea, pneumonia and other infections • Breast milk is readily available, does not require preparation • Breastfeeding helps in developing the mother-infant bonding • Exclusive breastfeeding helps the mother to recover from childbirth early • Exclusive breastfeeding protects the mother from getting pregnant again too soon*	• No risk of HIV transmission through feeding • Other family members may be involved in feeding when mothers need help

- **Breast feeding beyond 6 months:**
    - In settings where health services provide and support lifelong ART, including adherence counselling, and promote and support breastfeeding among women living with HIV, the duration of breastfeeding should not be restricted.
    - Mothers living with HIV should breastfeed for atleast 12 months and may continue breastfeeding for upto 24 months or longer (similar to the general population) while being fully supported for ART adherence.
- **Complementary feeding:**

  Guiding principles of complementary feeding

    1. Introduce complementary foods at 6 months of age (180 days) while continuing to breast feed
    2. Start at 6 months of age with small amounts of food and increase the quantity and frequency as the child gets older, while maintaining frequent breast feeding
    3. Feed a variety of nutrient-rich and energy-dense food from the family pot to ensure that all nutrient needs are met; use iron rich complementary foods or vitamin-mineral supplements for the infant, as needed
    4. In addition to age specific needs, HIV positive children who have poor weight gain or have conditions with increased nutritional needs will require additional 20-30% energy, based on actual weight
    5. In addition to the age specific needs, HIV positive children who have severe acute malnutrition will need therapeutic feeding to provide 50-100% additional calories and should be referred to appropriate facility for management of Severe Acute Malnutrition (SAM)
- **ARV prophylaxis**
- **Infant Nevirapine prophylaxis regimen**

Infant age	Daily dosing
Birth* to 6 weeks	
• Birth weight 2000- 2500 g	10 mg (1 mL) once daily
• Birth weight > 2500 g	15 mg (1.5 mL) once daily
>6 weeks - upto 6 months#	20 mg (2 mL) once daily
>6 months - upto 9 months#	30 mg (3 mL) once daily
>9 months - until breast feeding ends	40 mg (4 mL) once daily

*Infants weighing < 2000 g; the suggested starting dose is 2 mg/kg once daily

NVP dose for older infants is provided in a situation where HIV exposure is identified during infancy, the mother is breastfeeding and the infant is either HIV uninfected or the status is yet to be determined

• **Dose of Zidovudine for infants of Nevirapine exposed mothers / women infected with HIV2**

Infant Birth Weight	AZT Daily Dosage in mg	AZT Daily Dosage in mL	Duration
<2000 g	5mg/dose twice daily	0.5 mL twice daily	6 weeks
2000- 2500 g	10mg/dose twice daily	1 mL twice daily	6 weeks
>2500 g	15mg/dose twice daily	1.5 mL twice daily	6 weeks

- **Infant ARV prophylaxis when mother is diagnosed with HIV during labour**
    - All infants born to women who present directly-in-labour and are initiated on intrapartum and subsequent life-long ART, should be started on daily NVP prophylaxis at birth and continued for a minimum of 6 weeks (if the infant is started on RF) or 12 weeks if the infant is initiated on breast feeding.
- **ARV prophylaxis for infants born to women who did not receive any**

  ART (Home Delivery / detection of HIV during labour / lactation)
    - Infants should be started on daily NVP prophylaxis at their first encounter with health services.
    - Daily infant NVP prophylaxis can be started even if more than 72 hours have passed since birth though its efficacy in preventing perinatal transmission will be lower.
    - Daily infant NVP prophylaxis should continue for a minimum of 6 weeks, during which the mother should be linked to appropriate ART services.
    - A longer duration (12 weeks) of prophylaxis is needed for infants on breast feeding
- **Immunization and Vitamin A Supplementation**
    - HIV exposed infants, like all other infants, should be given BCG at birth. If BCG has not been given at birth, it should not be given in symptomatic HIV-infected older infants and children
    - Live vaccines should be avoided in all severely immune compromised infants (CD4 <15 %, or in the range of severe immune-deficiency for older children)
    - Rotavirus vaccine is recommended for use in HIV exposed infants due to their vulnerability to diarrhoea.
    - Japanese Encephalitis (JE) vaccine is inactivated and found to be safe for use in children with HIV infection.

- Check for sero-conversion and give boosters as required especially for hepatitis B and hepatitis A.
- Vitamin A supplementation should be as per the national immunization schedule

- **Co-trimoxazole prophylaxis**
  - Co-trimoxazole prophylaxis is an effective and proven strategy for reducing morbidity and mortality in children with HIV infection
  - It not only protects the infants and children from Pneumocystis jiroveci infection, but also from malaria, diarrhoea due to isospora and cyclospra, toxoplasmosis and other bacterial diseases
  - All HIV-exposed infants should get co-trimoxazole prophylaxis from the age of 6 weeks
  - The recommended dose is 5 mg/ kg/ day as a single daily dose.
- **Follow up**
- **Follow-up protocol of HIV exposed infant**

Care of HIV Exposed Infants & Children

Activities at each follow up visit

Visit	Birth	6 Wks	10 Wks	14 Wks	6 Mths	9 Mths	12 Mths	15 Mths	18 Mths
Co-trimoxazole Prophylaxis Therapy		Start from 6 weeks (or first immunization visit) for all HIV-exposed infants and children • Continue CPT: for those tested to be HIV infected • Stop co-trimoxazole: for those tested to be HIV un-infected							
Counselling for Infant feeding	√	√	√	√	√	√	√	√	√
Growth monitoring	√	√	√	√	√	√	√	√	√
Developmental assessment	√	√	√	√	√	√	√	√	√
Immunization &Vitamin A supplements	BCG OPV-0 Hep B Birth Dose	OPV-1 RVV-1 fIPV1## Pentavalent-1	OPV-2 RVV-2 Pentavalent-2	OPV-3 RVV-3 fIPV2/ IPV Pentavalent-3		MCV1 Vit A* JE-1#		MCV-2	DPT-B1 OPV-B JE-2# Vit A*
Clinical assessment	√	√	√	√	√	√	√	√	√
HIV testing (√-if required		√			√		√	√	√
Maternal Health & ART Adherence	√	√	√	√	√	√	√	√	√

- **Conclusion**
  - Components of HIV Care in infants
  - Infant feeding guidelines
  - ARV Prophylaxis, Cotrimoxazole Preventive Therapy (CPT) & Immunisation protocol
  - Clinical assessment and Care of HIV exposed infants & children
  - Growth, Nutritional & Developmental assessment
  - Diagnostic criteria and testing algorithm for HIV infection in infants in Programme Conditions

ಹರೆಯವೆಂಬ ಮೊರೆತ

ಡಾ।। ನಿತ್ಯಾನಂದ ಸುಂಡವಾಳು
ಮಕ್ಕಳ ತಜ್ಞರು

ಹರೆಯವೆಂಬುದು ಮೊರೆಯತೊಡಗಿದೆ
ನರ ನಾಡಿಗಳಲಿ ಝೇಂಕಾರ ಪ್ರೀತಿ ಬಯಸಿದೆ
ಮೋಹ ಕವಿದಿದೆ ವಯಸ್ಕ ಬದುಕಿಗೆ ಶ್ರೀಕಾರ

ದ್ವಂದ್ವ ಮನಸಿನ ಗೊಂದಲಪುರವಿದು
ಯಾರ ಮಾತನು ಕೇಳದು ಒಮ್ಮೆ ಖಿನ್ನತೆ
ಮತ್ತೆ ಭಿನ್ನತೆ ಏನು ಮಾಡಲು ತಿಳಿಯದು

ಆಕರ್ಷಣೆಗಳು ಬೀಸಿ ಕರೆದಿವೆ
ನೂರು ದಾರಿಯ ಸಂತೆಯು ಒಳಿತು ಕೆಡುಕು
ಅರಿಯದಾಗಿದೆ ಮಾರ್ಗದರ್ಶನ ಕೊರತೆಯು

ಹರೆಯದೂರನು ದಾಟಬೇಕಿದೆ
ಮಾಟಗಾತಿಯ ಸ್ವರ್ಗವು ಮನದ ಮರ್ಕಟ
ಜಿಗಿದು ನೆಗೆದಿದೆ ಮೈಯ ಮರೆತರೆ ನರಕವು

ಹರೆಯದು ನಾವೆಯ ಸುಗಮ ಯಾನಕೆ
ಸಾಂಘೀಕ ಯತ್ನವು ಬೇಕಿದೆ ವೈದ್ಯರು ತಜ್ಞರು
ಕುಟುಂಬ ಸಮಾಜ ಸರ್ವರ ಕಾಣಿಕೆ ಬೇಡಿದೆ

NEWER VACCINES:

Dr Sumitha Nayak
MD, DNB, PGDMLS, PGDGC, Adv. Cert in VACCINOLOGY (IVI, S.Korea)
Consultant Paediatrician
The Children's Clinic
Bangalore

Newer Advances have led to finding ways to prevent severe viral and parasitic infections. Vaccines for Dengue, Japanese Encephalitis, HIV and Malaria are available in some regions, providing variable levels of efficacy. It is imperative to understand the status of these newer vaccines.

Dengue Vaccine

Dengue is a mosquito borne illness and is caused by the dengue virus belonging to the genus of flavivirus.Other viruses in this group include the Japanese Encephalitis virus and Yellow fever viruses. The dengue virus consist of 4 serotypes, each of which produce acute self- limiting illnesses. Hencethe vaccine must be tetravalent, in order to protect against all serotypes.

The incidence of dengue illness has increased 30 fold in the past 50 years. The severity of illness varies from mild illness to severe symptoms and sometimes death.

The vaccine

CYD TDV (Dengvaxia) is the only licensed Dengue fever vaccine that is currently available in the world. This vaccine has been produced by Sanofi Vaccines and has approval to be marketed in 20 countries in Asia, Latin America and Australia.

Large clinical trials have been done in various parts of the globe, covering participants in ages from 2 years to 45 years. SAGE has based its recommendations from trials conducted in dengue endemic countries, covering over 30, 000 participants.

Results of trials

- The efficacy varied based on the age, serotype and disease severity, previous natural infection
- Vaccine efficacy against virologically confirmed dengue over a period of 25 months from the last dose was found to be 65.6% in 9-16 year olds. The cases of severe dengue were decreased by 93%.
- However, in the period over 2 years after vaccination, an increased risk of dengue hospitalization was noted in the 2-5 years age group.
- This increase was not observed in the > 9 years age group.

Recommendations

The SAGE recommended that the Dengue vaccine be used in regions that have a seroprevalence ≥ 70% and not ≤50%. The safety in ≥9 years age was based on the data available from the trials.

JAPANESE ENCEPHALITIS Vaccine

Japanese Encephalitis is caused by a virus belonging to the Flavivirus group, which includes the West Nile virus, Murray Valley virus, tick borne encephalitis , yellow fever etc. The vector is a night biting mosquito. Pigs act as amplifying hosts.

Prevention of JE

Personal care is an important aspect of preventing the occurrence of JE cases. Spraying of insecticides on a regular basis, use of mosquito repellents , avoid exposure to mosquito, wear long sleeve clothes and long pants.

Vaccine for JE

Several types of vaccines have been manufactured and used.

- The oldest vaccine was the inactivated vaccine prepared by inoculating the brains of young mice. This vaccine was associated with several adverse effects, hence has been withdrawn from the market, after the advent of newer vaccines
- Formalin inactivated vaccine- virus grown on Vero cells . Strains used here include SA-14-14-2
- Inactivated Vero cell derived vaccine using the Beijing 1 strain of virus
- Live attenuated SA 14-14-2 vaccine
- Live Chimeric vaccine with yellow fever 17D
- Vaccine containing the Kolar Strain 821564XY has shown superior results in trials conducted.

Indications:

JE Vaccine is given routinely in the endemic areas. The Vaccine is licensed for use from 2 months to 16 years, given in a 2 dose schedule, four weeks apart.

Contraindications :

JE Vaccine should not be given in the following conditions:

- Severe allergic reactions to insect bites/ bee stings
- Life threatening reaction to previous dose of JE Vaccine/ thiomersal/ mouse protein containing vaccine

- Pregnant women
- Lactating mothers

Malaria Vaccine

RTS, S ASO1 is the only vaccine in the world that is licensed for protection against malaria. This vaccine protects against Plasmodium Falciparum, which is responsible for the most sever form of malaria.

Trials done

Phase 3 trials have been done over a 5 year period from 2009- 2014. 15000 children were enrolled in this trial , from Sub Saharan African which is endemic to the worst forms of Malaria. The vaccine was found to be safe and well tolerated. The European Medicines Agency, EMA has recommended this vaccine based on the benefits outweighing the side effects.

Side effects

The common side effects noted were pain and swelling at the site of injection, Occasionally high fever with seizures was noted. A higher incidence of febrile seizures was noted in the immunized cohort, but all of them recovered completely.

HIV Vaccine

The first attempts to develop a vaccine against HIV began in the late 1980's.

The challenge

The HIV virus mutates at an extremely rapid rate. There is an incredible variability of the virus, especially the envelope protein. Hence , any vaccine that is developed must be adapted to suit the circulating virus forms at particular locations.

The Vaccine

RV 144 is the prototype HIV vaccine that was developed and subsequently tested . The central focus of the vaccine is one that drives a strong and broad CD8+ cytotoxic lymphocytes (CTL) reaction.The high levels of CTL's inhibit the lower viral loads, slow the CD4+ T cell decline and brings about a stable status.

Results

The studies have shown that the vaccine group had an infective rate that was 31.27% lower than the placebo group.

The RV 144 vaccine has provided several pointers for the future, based on which extensive trials have been planned. In case adequate efficacy data is available, this vaccine may be commercially procurable as early as 2020.

ORAL BRONCHODILATORS IN COUGH

Dr Nagesh A
Sr. Consultant Paediatrician
Bangalore

ABSTRACT :

Cough is one of the common pediatric problems

Cough in children can be discussed under three categories-Normal child,Specific cough and Nonspecific isolated cough. It can be acute,subacute & chronic. Thorough evaluation is a must to get to the root cause of the cough. Most coughs are caused by viral infections followed by asthma . No effective treatment to relieve acute cough.

Treatment of cough is required in certain situations

It can be definitive or symptomatic . Diagnosed case of asthma-always use inhaled SABA Oral bronchodilators are still used in resource poor countries for many reasons Salbutamol and levolin salbutamol are almost equal in efficacy with marginal differences wrt side effects

Remember red flags before starting treatment Oral bronchodilators are still useful in viral induced wheezing, wet cough, Mild asthma etc

AVAILABILITY, COST, CONVENIENCE ETC MAKES IT A GOOD OPTION IN MILD WHEEZERS

MANAGEMENT OF STRIDOR

Dr Raghunath C N
Pediatric Intensivist,
Sagar Hospital, Bangalore
Dr Dheepthi K
Resident

INITIAL ASSESSMENT

	Parameters evaluated
Effort of breathing	Respiratory rate Added sounds: Stridor / wheeze / grunting Recession Accessory muscle usage Flaring of nostrils
Efficacy of breathing	Chest expansion / abdominal excursion Auscultation: reduced, absent, symmetrical Oxygen saturation
Effect of respiratory failure on other systems	Heart rate Skin colour Mental status

Table 2 – APLS suggested assessment of breathing[2]

During the initial assessment:

Leave the child with the parent / carer in a comfortable position.

DO NOT insert a tongue depressor or other device to examine the airway

DO NOT attempt IV access or blood tests

DO NOT request X-ray / imaging at this stage

DO NOT force an oxygen mask on the child

Remember that pulse oximetry may be falsely reassuring when the child is receiving supplementary oxygen

Diagnosis	Clinical presentation / Physical examination	Treatment
Viral croup	Usually seen in children under 2 years of age. Barking seal-like cough, harsh inspiratory stridor, and hoarse voice / cry, (often starting at night) - commonly preceded by symptoms of a cold with a low-grade fever May be signs of increased work of breathing, such as recession, tachypnoea and tachycardia	Mainstay of treatment are glucocorticoids with or without nebulised adrenaline Lack of response or deterioration of the patient may be an indication for intubation
Post intubation croup	Stridor or other signs of airway compromise post extubation	Usually responds well to dexamethasone and nebulised adrenaline.
Bacterial tracheitis	Sick / septic looking child with respiratory distress. Hoarse voice, stridor and productive cough and copious secretions Preceding 2-3 day history of upper respiratory tract infection, followed by rapid deterioration to presenting state	80% require intubation – assemble an experienced team early No or little response to nebulised adrenaline Management of the septic child including IV antibiotics
Abscess	Neck pain and swelling May cause dysphagia, stridor, trismus and signs of systemic sepsis	Cultures and IV antibiotics May require surgical drainage
Epiglottis	Acute, severe, airway obstruction Sick looking septic child with soft inspiratory stridor and rapidly increasing respiratory difficulty Child will usually sit immobile with mouth open and tongue protruding, drooling / unable to swallow	Assemble an experienced multidisciplinary team early – intubation will usually be required and may be difficult IV cultures and antibiotics
Foreign body aspiration	Peak incidence 1-2 years old Sudden onset of respiratory compromise without any preceding illness or fever	Cough should be encouraged Surgical removal of FB by ENT surgeon may be required
Anaphylaxis	Respiratory &/or cardiovascular compromise following exposure to an antigen trigger	ABCDE management IM adrenaline
Hereditary angioedema	Acute, localised, non-pitting, non-pruritic, non-erythematous angioedema - commonly affecting eyelids, lips & tongue Airway oedema tends to occur at the level of or above the larynx - symptoms include stridor, voice changes and dysphagia	Steps should be taken to secure the airway as necessary Agents commonly used to treat allergic angioedema, such as adrenaline, steroids and anti-histamines will not be effective Treatment requires infusion of C1 esterase inhibitor
Inhalational injury	Acute airway compromise / oedema following thermal injury	Early preparation for intubation by an experienced team

Table 4: Diagnosis, presentation and management of the different causes of UAO in children

Table 2. Westley Croup Score Criteria[31]

Characteristic	Points
Level of Consciousness	
Normal (including sleep)	0
Disoriented	5
Cyanosis	
None	0
Cyanosis with agitation	4
Cyanosis at rest	5
Stridor	
None	0
When agitated	1
At rest	2
Air Entry	
Normal	0
Decreased	1
Markedly decreased	2
Retractions	
None	0
Mild	1
Moderate	2
Severe	3
Total	____

Mild croup, ≤ 2; Moderate, 3-5; Severe, 6-11; Impending respiratory failure, ≥ 12.

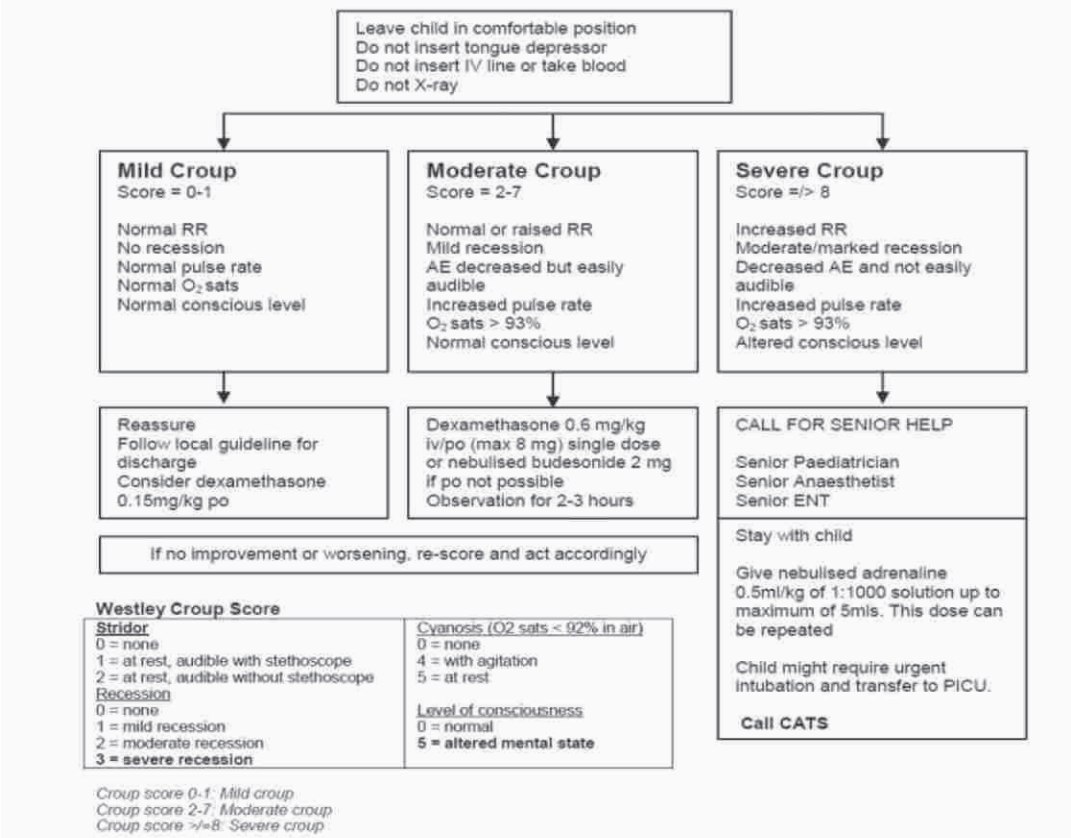


Figure 1 - Westley Croup Score and Children's Acute transport Service (CATS) flow chart to guide the manage child with croup[6]

TREATMENT

COOL MIST ADMINISTRATION

Moistens airway secretions,decreases their viscosity and soothes the inflamed mucosa

DEXAMETHASONE

Single dose of dexamethasone

Has long half life(36-54 hours)

0.15 mg/kg as effective as 0.3 0r 0.6 mg/kg

Has shown same efficacy if administered i.m,i.v or oral

PREDNISOLONE

Patients given single oral dose (1mg/kg) found to have made more return visits than those who received dexamethasone

Due to lesser potency to reduce inflammation

Short half life(18–36 hours)

EPINEPHRINE

Racemic mixture is used

Reserved for patients with moderate to severe respiratory distress

Therapeutic benefit within 30 minutes and a lasting effect fom 90–120 minutes

INHALED BUDESONIDE???

Clinical studies have demonstrated improvement in symptoms and decrease in hospital admissions with nebulized budesonide in children with croup

Has been shown in several studies to have equal efficacy as oral dexamethasone

HELIOX???

Several trials have demonstrated no advantages over conventional methods

Some trials have shown it to be equally effective in moderate to severe croup when compared with racemic epinephrine

Has been used during emergency transport of children with severe croup

ANTIBIOTICS??

Antibiotics NOT RECOMMENDED unless secondary bacterial infection is suspected

ANTIVIRALS??

In severe cases associated with influenza A or B neuraminidase inhibitors can be used

In Croup associated with RSV infection ribavirin can be considered.

In cases of recurrent episodes of stridor HSV infection to be considered due to immune suppression.In such cases acyclovir can be considered.

IMMUNOMODULATORS???

Immunostimulators like imiquimod,interferon alpha and gamma have been tried in immunocompromised patients with parainfluenza virus

In vitro interferon has shown to reduce viral replication

IVIG has shown viral clearance in some studies

VACCINES??

Sendai virus vaccine against human paramyxoviruses and RSV under trial

References:

1. https://www.wfsahq.org>acute upper airway obstruction in children 2017
2. http://www.ncbi.nlm.nih.gov>sendai virus as a backbone for vaccines against RSV and other paramyxoviruses 2017
3. Henrickson KJ. Parainfluenza viruses. Clin Microbiol Rev.;16(2):242–264
4. Hall CB, McBride JT, Walsh EE, et al. Aerosolized ribavirin treatment of infants with respiratory syncytial viral infection. A randomized double-blind study. N Engl J Med;308(24):1443–1447
5. Stankova J, Carret AS, Moore D, et al. Long-term therapy with aerosolized ribavirin for parainfluenza 3 virus respiratory tract infection in an infant with severe combined immunodeficiency. Pediatr Transplant. 2007;11(2):209–2136.

GASTROESOPHAGEAL REFLEX DISEASE (GERD)

Dr. Shivaprakash Sosale C
Asst. Professor in Paediatrics,
Bangalore Medical College and Research Institute, Bangalore.

Gastroesophageal reflux disease (GERD) is a common oesophageal disorder of gastrointestinal motility associated with reflux of stomach contents into the oesophagus, whereas GERD is associated with symptoms or complication. Gastro oesophageal reflex (GER) is a normal physiologic process occurring several times per day in healthy infants (Peak at 4months), children, and adolescents, which disappear almost by two year of age. Persistent or appearance of GER beyond 18 month is pathological. GERD has genetic predisposition, strong evidence in monozygotic twins and many pulmonary manifestations linked to chromosome 13q14 (locus GERD1).

GER	GERD
• Physiological • Retrograde movement of stomach content in to the oesophagus through lower oesophageal spincters (LES). Everyday phenomenon.	• Pathological • Reflex of gastric content become frequent or persistent causes bothersome and /or complications.

Regurgitation : Effortless and non-projectile, other term posseting /spitting up/spilling are same.

• Neurologic impairment • Obese • History of esophageal atresia (repaired) • Hiatal hernia • Achalasia	• Chronic respiratory disorders • Bronchopulmonary dysplasia • Idiopathic interstitial fibrosis • Cystic fibrosis • History of lung transplantation • Preterm infant

Clinical manifestation:

Infants	Children	Adolescents
Regurgitation Excessive crying /irritability Vomiting Food refusal/anorexia Failure to thrive Persistent hiccups Asthma and URTI Apnoea or life threatening events	Reduced quality life Persistent cough /aspiration pneumonia Asthma /chronic sinusitis Heart burn/pyrosis Laryngomalasia /strider/croup Dysphagia Wheezing /laryngitis/ear problem	Esopagagitis Heartburn /pyrosis Epigastric/chest pain Dysphagia

When to think about GERD?

In infants, non-resolvable regurgitation, irritability and vomiting, weight loss or poor gain, ruminative behaviour.

In older children heartburn/chest pain, dysphagia, hematemesis, dysphagia, odynophagia, wheezing, stridor, cough and hoarseness.

Atypical presentation: unexplained or refractory otolaryngological and respiratory complaint. Often GERD and asthma interact and a vicious cycle between them worsens both diseases. GERD symptoms are present in an average of 23% (19-80%) of children with asthma in many studies.

Diagnostic modalities:
Clinical:

Diagnostic criteria of infant (ROME III classification) (healthy infants 3 weeks to 12 months of age)
• Regurgitation 2 or more times per day for 3 or more weeks • No retching, hematemesis, aspiration, apnoea, failure to thrive, feeding or swallowing difficulties, or abnormal posture

Investigations:

a) Oesophageal pH monitoring: distal probes, intra oesophageal pH<4.0 suggests acid reflex episode. Can be done in any age but does not measure non-acid or weekly acidic reflex(pH>4)

b) Multichannel intraluminal impedance; superior to pH monitoring, detailed description of oesophageal event s and more rapid response limitation is high cost.

c) Endoscopy and biopsy: endoscopy should be combined with biopsy in NERD (non-erosive reflex disease), indications are refractory to medical therapy, dysphagia, odynophagia, GI bleeding, iron deficiency anaemia, stricture or ulcer on barium study and diagnosis of barret esophagitis. It detects condition, assess severity and detects complications.

d) Nuclear scintigrahy: technetium labelled milk scan is a non-invasive, useful in recurrent aspiration pneumonias. Not routinely recommended.

e) Laryngotrachiobronchoscopy : quantification of lipid laden macrophages in airway secretion.detection of pepsin in tracheal fluid is a marker of reflex associated with aspiration

Management:

A) Non pharmacological management: life style modification like weight reduction, avoid

caffeine, chocolate, beverages like juice /alcohol and tobacco. Short trial of food devoid of milk or soya protein can be tried before drug treatment. A combination of modified feeding volumes, hydrolysed infants formulas, proper positioning and smoke exposure avoidance improve the GERD symptoms in infants.

Positioning measures: seated position worsen infant reflex, more reflex episodes in supine and side position compared to prone. But recommended position during sleep is supine to avoid sudden infant death syndrome (SIDS). Lying flat in supine and semi seated positions (car seats, infant carriers) in post feed period is provocative for GER. In older children head elevation (should be elevate head of the bed rather than pillows) and left side positions in sleep are advisable.

Therapy to Happy splitters: avoid overfeed. Giving small amount. Adequate and prolonged burping after feed and thickening of feeds using rice, corn, potato etc.

B) Pharmacological management

1. Neutralising or surface protecting drugs (antacid or sucralfate): Antacids are a class of medications that can be used to directly buffer gastric acid in the oesophagus or stomach to reduce heartburn and ideally allow mucosal healing of esophagitis. There is limited historical evidence that on-demand use of antacids can lead to symptom relief in infants and children. Useful in short term usage, causes aluminium and calcium toxicity on prolonged use.

2. Prokinetic agents: acting by increasing LES pressure, improve gastric emptying and oesophageal clearance. Adverse effects more so not safe in paediatric age group.

3. Histamine -2 receptor antagonists (H2RAs)

Selective inhibition of histamine receptor on gastric parital cells, 1st line therapy in mild to moderate esophagitis, rapid onset of action (<30min) and short acting acid reduction (6hrs), develop tachyphylaxis on prolonged usage(6weeks). No post prandial acid suppression effect.

4. Proton pump inhibitors (PPI)

Action inhibits acid secretion by blocking Na-K-ATPase .Higher and faster healing rates in severe and erosive esophagitis than H2RAs, to be taken 30 min before food. Pre-adolescent group may require higher doses (double sometime) due to higher metabolism. Takes attest 2days to a week for optimal effect. No difference in efficacy of one over other PPIs, but omeprazole, lansoprozole and esomeprazole are FDA approved. Side effects: headache, diarrhoea, constipation and nausea.

Duration of medical therapy: attest 3months and taper over 3months to prevent rebound hyperacidity. If no symptomatic improvement in in 4 weeks, then increase the dose.

Medications	Doses	Formulations	Recommended Age(FDA)
Cimetidine	30–40 mg/kg/d, divided in 4 doses	Syrup	=16 y
Ranitidine	5–10 mg/kg/d, divided in 2 – 3 doses	Syrup, tablet	1 mo–16 y
Famotidine	1 mg/kg/d, divided in 2 doses	Oral suspension	1–16 y
Nizatidine	10 mg/kg/d, divided in 2 doses	Solution	=12 y
Omeprazole	0.7–3.3 mg/kg/d	Sprinkle contents of capsule onto soft foods	2–16 y
Lansoprazole	0.7–3 mg/kg/d	Sprinkle contents of capsule onto soft foods or juice, disintegrating tablet	1–17 y
Esomeprazole	0.7–3.3 mg/kg/d	Sprinkle contents of capsule onto soft foods or juice	1 mo–17 y
Rabeprazole	20 mg daily	Oral tablet	12–17 y

Surgical treatment :

Nissen fundoplication (increasing laparoscopic) in refractory GERD to medical therapy, in case of refractory esophagitis , strictures and chronic pulmonary conditions by creating high pressure status. Higher failure rates seen in early infancy procedures and neurologically impaired kids.

Key Points
GERD is most common oesophageal disorder in infants and children (below 2yrs age group).
Refractory apnoea, ALTE in new-born, asthma/recurrent pneumonia should be reviewed for GERD.
More complications are seen in neurologically abnormal children.
PPI are most preferred drugs, may require twice a day dosage for optimum treatment.
GERD with extraesophagial manifestations need aggressive and prolonged treatment.

References:

1. Vandenplas Y , Hassal E. Mechanism of gastroesophgial reflex and gastroesophagel reflex disease J Pediatrgastroenterolnutr 2002;35: 119–36
2. UjjalPoddar. Diagnosis and management of gastroesophageal reflex disease : an indian prospective , Indian paediatrics 2013; 50: 119–26
3. MIchail S. Gastroesophagial reflex, Pediatr Review 2007;28: 101–3
4. Seema khan and susan R o570 KRF84renstein ,gastroesophagieal reflex disese , nelson textbook of paediatrics 20/e 1787–92
5. Wenzl TG , Role of diagnostic testsin GERD J PediatrGastroenterol Nutr.2011;53(suppl2) S4–6

LIFE STYLING OUR KIDS-THE NEW IMMUNISATION !

Dr Supraja Chandrasekar
MRCPCH Fellowship Critical Care,
Chief Paediatrics PEOPLE TREE Hospitals
Dr Sharmila Nayak,
DNB, Fellowship Endocrinology,
Paediatric Endocrinologist, PEOPLE TREE Hospitals

Over time we realise that apart from infections, **the single most important cause for illness is poor lifestyles.** Innumerable adult diseases are now linked to unhealthy lifestyle practices. Lifestyle habits take roots at a very young age and then become fixed onto adulthood. Inculcating **healthy lifestyle practices is the biggest vaccination** against all these diseases! Life style practices such as type of food eaten, sleep time, screen time and play time have huge effects on overall kid's health. Here is a brief overview of the current situation and how we as paediatricians can make a huge difference.

Can We Measure a Child's Life Style ?

As we know the various parameters of a child's life that constitute their life style can be simply classed into **EAT-PLAY-CONNECT.** Eat – which deals with all the recommendations related to food. **Play -** Vigorous physical play and screen play. **Connect -** Connect with Nature, Connect with family and connect with self through meditation & sleep. In an attempt to quantify the life style practices of children and their adherence to the global recommendations a short survey was conducted, in May 2019, by PEOPLE TREE Hospitals, involving parents between ages of 2 yrs to 16 yrs. Survey designed to understand the practices of children around their food, play, screen time, sleep, nature time and family time. With reference to the recent WHO recommendations of life style in under fives and the American Academy of Pediatrics recommendations on sleep and screen time a scoring questionnaire was formulated and distributed to parents. Each answer was given a unique rating based on the compliance to the global recommendations set for children. A final score was generated as a percentage. A perfect score will be 100 % which means complete compliance to the recommendations, anything less needs to be worked on ! Amongst 383 responders the preliminary survey results show that there is only 70 % compliance to these recommendations.

What is the Current Problem?

A poor diet : Currently urban children's diet mostly comprises fast foods and processed foods. They are constantly gorging on burgers, pizzas, sweets and carbonated drinks. We call them **empty calories** as they provide calories without any nutrients namely vitamins minerals and fibre Hence children of today are **overfed but undernourished.** A food predominantly made of empty calories is rightly called **junk food.** Such food is also very high in solid fats, sugar salt & preservatives all of which have long term negative health effects. Unfortunately "Mall"nutrition is the new malnutrition. Home food can also become junk if it has too much empty calories or processed elements high in solid fats salt, sugar or preservatives. Children are thus deprived of nutrition that a good diet of fresh, homemade foods, vegetables and fruits provides. Children are encouraged to eat 5 things on their plate−half their plate as fruit & vegetables, quarter grains preferably whole grains and quarter proteins especially from vegetarian sources and have 1 cup diary like curd every meal. Our survey showed 47% of responder's kids did not have vegetables or fruits on a daily basis.

Lack of physical activity : Most children nowadays are not getting enough physical activity and the results are disastrous. Children spend most of their time hooked to their smartphones, playing games, watching TV or surfing the net. The rising rates of childhood obesity metabolic syndrome, hypertension, Vitamin deficiencies is the result.

Excess screen time - Easy availability of electronic gadgets like the television and video games mean children are spending countless hours in front of these gadgets and living a sedentary lifestyle. This leads to Obesity, Myopia, sleep disturbances and several behaviour issues. WHO recommends no screen time till 2 years of age and a maximum of 1 hour during child hood.* Our survey shows 82% default in preschool years, 61% in school age and 48 % during teens.

Compromised sleeping hours due to late bedtimes and need for waking early for school. About 13 hrs of sleep for pre-schoolers, 11 and 9 during school age and teenage years. Only about 50 % are compliant across the ages for recommended duration of sleep.

Nature Deprivation - Most children now are completely disconnected with nature, this is a serious deprivation of vitality in their lives, impacting their overall health. From vitamin deficiencies to behavioural and emotional disorders. We call this **Vitamin N** deficiency ! In our survey 73% of children did not get even one hour of nature time a day.

Limited Family Time - Lack of time, supervision & emotional support from parents due to busy life styles of parents does have a negative impact on their kids life styles. Only 62 % of kids get regular daily family time and only 38 % say they eat meals together as a family without any media distraction.

Effects of a poor Life Style in children ?

We had conducted **health screening** for over 5000 school children in 3 schools in Bengaluru for 2 consecutive years 2015 & 2016. We never realised the value of this venture until we analysed the data. The statistics are alarming. One in every 3 high school children was Overweight/Obese; Over quarter of them had eye problems; a third of them had dental caries a fifth of them had pallor suggesting anaemia. This screening program unearthed hidden malnutrition in these kids.

Problems include

Overweight and Obesity : Obesity during childhood can have a harmful effect on the body in a variety of ways. Children who have obesity are more likely to have high blood pressure and high cholesterol, which are risk factors for cardiovascular disease (CVD), increased risk of impaired glucose tolerance, insulin resistance, and type 2 diabetes, breathing problems, such as asthma and sleep apnea, joint problems and musculoskeletal discomfort and Fatty liver disease, gallstones, and gastro-esophageal reflux (i.e., heartburn).

Diabetes & Metabolic Syndrome : Diabetes is a metabolic disease, in which increased blood glucose levels ultimately lead to damage to the eyes,kidneys and nerves.

Malnutrition & Nutritional deficiencies : This leads to recurrent infections and poor quality of life in children.

Eating disorders : Eating disorders can cause many dangerous medical and psychological illnesses in children.

Constipation : Chronic constipation may lead to complications like anal fissure,stool withholding and recurrent urinary tract infections.

Screen addictions, Gaming disorders : These lead to irregular sleep patterns, poor academic performance, behavioral issues in children

Behavioural, Emotional & Relationship problems : These include disruptive, depression, anxiety and pervasive developmental disorders.

Sleep difficulties : Poor sleep quality and/or quantity in children is associated with a host of problems, including academic, behavioral, developmental and social difficulties, weight abnormalities, and other health problems. It also impacts family dynamics and parental or sibling sleep.

We must make changes in our kids' lives before this entire generation of children will be medicated! So, lets re look at our children's lifestyles and set it right, to make them healthier and happier !

What can we do as paediatricians?

Simple – follow the Life Style approach! Specifically ask questions regarding Eat.Play.Connect and facilitate children to get back on track. At People Tree hospitals, we have started a unique first of its kind Children's Life Style clinic with an integrated approach to set the right foundation for a healthy lifestyle for life. An integrated team of specialists including Paediatrician, Paediatric Endocrinologist, Dietician and Yoga Therapist, Child Psychologist and Physiotherapist address life style issues from eating problems to screen addictions.

References

1. WHO guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.
2. American Academy of Pediatrics recommendations on Media use in children 2016
3. Children and Adolescents and Digital Media PEDIATRICS Volume 138, number 5, November 2016: e 20162593
4. U.S Department of Agriculture, ChooseMyPlate.gov Website Washington, DC, My Plate. http://www.choosemyplate.gov/MyPlate.accessed.Nov 10 2018
5. Recommended Amount of Sleep for Pediatric Populations: A Consensus Statement of the American Academy of Sleep Medicine Shalini Paruthi, MD; Lee J. Brooks, MD; Carolyn D'Ambrosio et al; Journal of Clinical Sleep Medicine, Vol. 12, No. 6, 2016
6. The IDEFICS intervention trial to prevent childhood obesity: design and study methods., Pigeot I1,2, Baranowski T3, De Henauw S4; IDEFICS Intervention Study Group; IDEFICS consortium.. Obes Rev. 2015 Dec;16 Suppl 2:4-15

TEENAGE FAINTER

Prof. Dr. S. M. Prasad
Vice President (2019), IAP-BPS

In our clinical office, suddenly we come across teenager fainted in school suddenly brought by one of the parents, teachers or a friend in class. What are the possibilities we need to keep in mind? Do we need to manage?

Syncope : A sudden & brief loss of consciousness and postural tone secondary to hypo-perfusion of the brain. Some studies estimating 15% experience at least once before childhood. In 64% girls & 53% of boys, there is more than 1 episode Family history reveal with near fainting or fainting. Most fainting is benign. Common situations: pain, fear, emotional distress, hair brushing, micturition, defecation, prolonged stationary standing, immediately after rigorous exercise.

a) Vasovagal Syncope : In order to maneuver from a supine/sitting position and maintain upright posture, body goes through a normal sequence of compensatory changes to overcome gravity induced hydraulic changes on blood volume. First increase in HR by 10-15 beats/min, activation of Renin-Angiotensin-Aldosterone system, baroreceptor- mediated increase in peripheral vascular resistance. Teenagers are prone to autonomic instability where there is excess decrease in BP with sudden standing. Most will have prodromal symptoms like light-headedness, nausea, diaphoresis, muffled hearing, visual changes and usually in a warm environment.

b) Syncope games : Some teenagers force themselves to pass out to obtain a high or to avoid unwanted activity like test at school. This is achieved by hyperventilation followed by squeezing the chest or neck or performing a forceful valsalva maneuver. Hyperventilation lowers Pco2 levels, causing a compensatory cerebral vasoconstriction. The valsalva maneuver decrease the venous return to heart & in combination decrease cerebral perfusion to lose consciousness.

c) Psychogenic Syncope : It has been identified in 2.3% of pediatric patients. The loss of consciousness occurs without hypotension or identifiable change in trans-cranial doppler or EEG. Many of these patients are victims of abuse & their symptoms may represent a cry for help, which should not be ignored.

d) Cardiac syncope : Less common in teenagers(2%-6%) than simple fainting but may represent episodes of aborted sudden death or periodic worsening. A high index of suspicion should be kept for primary cardiac causes: HCMP, CHDs, Myocarditis, SVT, Long QT syndrome, Pulmonary hypertension, Wolf Parkinson White Syndrome, ischemic changes, etc. Palpitations before fainting may help differentiate vasovagal from cardiac syncope. Adolescents with suspected cardiac syncope should be sent to cardiologist for further management.

e) Postural Orthostatic Tachycardia Syndrome(POTS) : Patients affected with this POTS present with light-headedness, weakness, near syncope, palpitations, anxiety, inappropriate sweating and tachycardia associated with standing upright. Most patients are young after puberty or during rapid growth. Severely affected individuals present with chronic fatigue, debilitated to the point of inability to attend school and recreational activities. This condition can develop slowly, there may be preceding illness like Epstein-Barr virus, common cold or other infections. Chronically ill compared to vasovagal fainting, who are well in general & faint sporadically. Symptoms for more than 6 months and increase in HR of 40bpm with upright posture without hypotension are diagnostic for POTS.

Treatment:

(a) Education and non-pharmacologic interventions : Counter-pressure maneuvers (crossing legs, tensing lower body, hand gripping, arm tensing), hydration to the point of clear color urination, add table salt , aerobic exercise with lower extremity & core muscle strengthening, wall stands with gradually increasing time. For POTS apart from hydration and gradual exercise, elevating head of the bed help.

(b) Pharmacologic Treatment : Despite conservative measures, some adolescents continue to faint. Medications frequently used with strong data, supporting its use: α-adrenergic agonists Midodrine with encouraging results. Selective serotonin reuptake inhibitors(SSRIs) may be most useful in adolescents with anxiety and panic disorders . β-Blockers are not effective especially below 42 years and not recommended. Fludrocortisone is also not effective. Those teenagers affected with POTS, who fail to respond to conservative measures, medications like β- Blocker, α-agonist, Mineralocorticoid, SSRIs, DDAVP, clonidine can be tried but conservative measures form the mainstay of management.

TOURETTE SYNDROME

Dr Poornima Shankar
Professor of Paediatrics
KIMS & RC, Bangalore

Tourette syndrome (TS) is a lifelong neurodevelopmental disorder characterized by repeated twitches,movements or sounds, otherwise known as tics.

Tics can be sudden, rapid and include both nonrhythmic motor movement and vocalization. While the frequency of tics may differ, typical age of onset is between 7 and 12 years and tics need to be present for at least a year in order to gain an official diagnosis of TS. However, when symptoms involve persistent motor or vocal tics, a diagnosis of persistent (chronic) motor or tic disorder (symptoms more than a year), or a diagnosis of provisional tic disorder (symptoms present for less than a year), is given (APA, 2013).

Tic disorders are considered to be more common than TS and have a prevalence rate of between 1% and 29% (depending on the methods adopted, the diagnostic criteria employed and whether or not the sample was a nonclinical or clinical sample;). For example, high prevalence rates are often reported when the inclusion criteria involve children who show intermittent and unpredictable motor or vocal tics and which appear out of context of normal motor activity.

Tics are often classified into simple and complex categories. Simple motor tics can be behaviours such as eye blinks, shrugs and grimaces; more complex tics can include the touching of objects and/or people. Furthermore, simple vocal tics can include coughs and grunts, whereas more complex vocal tics might involve repetition of their own (palilalia), or someone else's (echolalia), speech. In addition to motor and vocal classification of tics, there is some unpredictability surrounding the symptoms. For example, the body parts affected by tics, and the frequency and severity of the tics, can change over time.

The severity and frequency of tics have also been shown to be influenced by an assortment of environmental factors, like increased levels of anxiety, stress, excitement and fatigue.

There are several important reasons to address diet and nutrition in TS. Firstly, medication is one of the main forms of treatment, and although it is relatively successful in treating symptoms, it has been associated with a range of adverse effects including sedation, increased levels of depression and anxiety, as well as having a debilitating effect on motor function. First-generation antipsychotics, also known as neuroleptics, conventional or typical antipsychotics, have the tendency to cause movement disorders, extrapyramidal side effects and tardive dyskinesia. While more newly marketed atypical drugs, such as risperidone, aripiprazole and clozapine, are considered to be safer, they are still associated with a range of adverse side effects, including type 2 diabetes. Importantly, weight gain has been associated with all types of antipsychotics, although it has been more frequently linked to the newer atypical drugs and can

lead to additional immediate and long-term health risks including obesity, diabetes mellitus and hyperlipidaemia

Secondly, it is well known that a child's early eating habits form the basis for the child's dietary habits as an adult and can also lead to poor physical and mental health. Importantly, both anecdotal and case reports suggest that many individuals with TS are more likely to consume an unhealthy diet and show a predisposition to being overweight, compared to those without TS.Results revealed over half of those surveyed reported consuming low levels of protein, calcium, zinc, retinal, thiamine, riboflavin and vitamin C. Participants also reported consuming more carbohydrates and fats than may be considered healthy. Therefore, specific nutritional guidelines appear to be needed for individuals with TS to follow.

Finally, more alternative treatments are needed aside from the pharmaceutical–and behavioural-based interventions (e.g. habit reversal) that are currently being offered . Given the impact of motor and vocal tics on the lives of individuals with TS, the suggestion they are more vulnerable to unhealthy eating habits and also the multiple adverse effects of the use of pharmaceutical interventions, it is important to increase our understanding of what role, if any, dietary factors and eating behaviours play in the frequency and severity of tics.

PICA

Dr Rashmi S. Murthy,
Raghava Child Clinic
rashmi153@gmail.com

Persistent eating of non-nutritive, non-food substances, over a period of at least one month is called pica. The substances may include ice (pagophagia), paper (xylophagia), soap, plaster, charcoal, clay, wool (trichophagia), ashes, paint and earth (geophagia). Mouthing and tasting of objects is normal in infants and toddlers. This is not pica. The eating behavior is inappropriate to the developmental level. Therefore, it is assigned a minimum age of two years. Also, this behavior is not a culturally or socially acceptable practice. The diagnostic and statistical manual of mental disorders (DSM IV) states in addition that, the eating of non-nutritive substances is sufficiently severe to warrant independent clinical attention.

Pica can occur at any age, but is common during childhood. It appears to be more common in children with intellectual disability, autism spectrum of disorders, obsessive-compulsive and schizophrenic disorders. The numerous proposed etiologies of pica include nutritional deficiencies of iron, zinc and calcium; low socio-economic factors with lead paint exposure; child abuse and neglect, family disorganization with poor supervision; mental disorder, learned behavior, cultural and familial factors.

Children with pica are at increased risk for lead poisoning, iron-deficiency anemia, mechanical bowel problems, intestinal obstruction, intestinal perforations, dental injury and parasitic infections.

Treatment includes combined behavioral, social and medical approaches. Family supervision and neglect need to be assessed along with evaluation for developmental delay and mental disorders. Applied behavioral analysis in patients with intellectual disability is helpful. The related sequelae of lead toxicity, iron deficiency anemia and parasitic infestation need to be addressed. Ingestion of hair can require medical or surgical intervention for a gastric bezoar. Once all non-psychogenic causes have been ruled out, SSRIs have been tried in the treatment of psychogenic pica.

Case:

A 5-year-old boy was brought into the emergency pediatric unit by his parents with a history of stone ingestion for 2 weeks, abdominal distention and pain for 5 days, and constipation for 2 days. He had a similar episode of stone ingestion at 2 years of age, but stopped after being scolded and monitored closely. There was no history to suggest any psychiatric illness, and developmental milestones were normal. At presentation, he was in painful distress, with mild pallor. The abdomen was uniformly distended with generalized tenderness and no guarding. Rough masses were palpated in all the

abdominal quadrants with hyperactive bowel sounds. Digital rectal examination revealed multiple stone particles palpable in the rectum. The anthropometric parameters were lower for the patient's age, with a weight of 14 kg (fifth percentile for age), height of 102 cm (tenth percentile for age), mid-arm circumference of 12.5 cm, and a weight for height of less than −1 SD. Other systemic examinations were unremarkable.

Plain abdominal radiography revealed multiple opacities along the line of the colon, extending throughout the entire length of the large bowel (from the cecum to the rectum), and appeared denser in the sigmoid colon and rectum. Red blood cell indices showed features of microcytic hypochromic anemia (packed cell volume, 29.5%; mean corpuscular volume, 65 fL; mean corpuscular hemoglobin, 20.4 pg; mean corpuscular hemoglobin concentration, 30 g/dL; and red blood cell distribution width, 19.8%) and reticulocytopenia, with a reticulocyte percentage of 1.8% (2%–6%). Iron studies showed evidence of iron deficiency (serum iron, 45.6 g/dL [61–157 µg/dL]; ferritin, 4.30 ng/mL [30–400 ng/mL]; serum transferrin, 74.5 mg/dL [20–50 mg/dL]). Stool microscopy showed no parasites or ova.

He was treated with laxatives (liquid paraffin) along with a rectal wash-out and the pebbles were excreted over 3 days. The patient was discharged on the fifth day of admission. At discharge, oral iron therapy was prescribed (6 mg/kg of elemental iron per day). There was a remarkable improvement in the pica, as he stopped further ingestion of stones (2 weeks after he was discharged), which was confirmed by the parents during the follow-up evaluation in the outpatient clinic.

References

Iron-deficiency anemia with lithobezoar (pica): a rare cause of intestinal obstruction
in a 5-year-old Nigerian child
Olayinka R Ibrahim, Abubakar S Lugga, Nuraddeen Ibrahim, Lawal M Ibrahim, and Bello M Suleiman

THE CRYING CHILD

Dr Ramitha A. Pai
Sr. Consultant Paediatrician
Jayanagar, Bangalore

The cause of crying in a child is: Functional in 95% and

Organic in <5%, only.

However, every crying child must be assessed.

Assessment:

A full history and examination should be carried out including birth history, feeding (volume, frequency, type of milk), weight gain, bowel frequency, sleep and awake times.

The aim is to exclude pathological causes of crying and identify physiological causes.

History:

Ask the parents what they think the cause is and their concerns must be taken seriously. Crying infants are one of the most common stress factors, associated with Shaken Baby Syndrome and so this presentation should not be taken lightly.

Differential Diagnosis:

A) Non-Pathological Causes:

a) Hunger-is the most common cause in newborns. Newborns feed every 2-3hrs.It is a lusty cry which stops, on feeding the baby.

b) Discomfort -Wet or soiled diapers, feeling too hot, or too cold, causes a baby to cry.

c) Tiredness -Overtired babies cry and are irritable.Average sleep requirements are:

newborns-16hrs. and awake time max 1.5 hrs. 3months-15 hrs. and awake time 2hrs.

d) Wind -crying post feeds or waking shortly after being put into the crib is common. Burping the baby helps.

When the mother responds quickly to comfort the newborn, it cries less often.

Dr Robert Hamilton, an American Pediatrician,has perfected a baby calming technique, called 'The Hold'.

This consists of 4 simple steps:1st step is to fold the baby's arms across the chest.2nd step is to secure the arms gently.3rd step is to grasp the diaper area .4th step is to gently rock the infant at 45degrees.

'The hold', appears to have an immediate effect as seen in his You tube video.

e) Colic or inconsolable crying– Wessel's Criteria(Rule of 3)–excessive crying is defined as crying for>3hrs/day for >3days a week for >3weeks.There is a Universal increase of fuss/cry over 1st 6 weeks of life culminating in a 'Crying Peak' at 5–6 weeks of age and then Universal reduction between 6–12 weeks of age. Caring for such babies is very difficult and frustrating for the parent.

Dr Ronald G Barr, a developmental Pediatrician, has called this the 'PURPLE PERIOD 'to help parents understand, that this is a normal part of every infant's development. When babies go through this period, nothing seems to soothe them.

The letters in **PURPLE** stand for:

P - peak of crying. May cry more each week, the most in month 2 and lesser in months 3–5.

U - unexpected–crying may come and go and you don't know why.

R - resists soothing. Baby doesn't stop crying no matter what is done.

P - pain like face. Baby may look like in pain, even when they are not.

L - long lasting. Cry may last as long as 5hrs a day or more.

E - evening. Cries more late noon and evening.

PERIOD - means crying has a beginning and end.

If this is conveyed to parents, they also feel relieved that this is a fixed phenomenon. They must be told 'Never to Shake the Baby'!

5S's to calm a fussy baby:

1) **Sucking -** feed the baby or give a pacifier. Use of pacifier has found to reduce risk of SIDS.

2) **Swaddling -** reminds them of the snug space in womb.

3) **Shh Sounds -** white noise, monotonous sounds,calm the baby.

4) **Swinging motion -** with head and neck supported swing baby gently. NeverShake.

5) **Stomach -** babies should never lie on stomach but laying a fussy baby on stomach for supervised periods help.

B) **Pathological Causes :** There is often, a more acute history, and associated, clinical signs on examination.

a) Sepsis–Babies may be febrile or hypothermic with constant irritability.

b) Intracranial Pathology–Babies are persistently irritable.

c) Intussusception– Baby is pale, draws up legs and a history of blood in stool, which though typical may not always be present.

d) Gastroesophageal Reflux– Baby screams during feed time and refuses feeds. Upright position during feeding and feed thickeners help.

e) Constipation– Delayed gut transit is normal in neonatal period. Colostrum is a stimulant laxative, so initially breast-fed babies have regular bowel movements which slow down once milk supply is established. Anal fissures cause crying during defecation with passage of blood in stools.

f) Incarcerated Hernia–clinically apparent, with groin lump seen.

g) Testicular Torsion–rare in a neonate, but must be considered with pain, erythema and swelling.

h) Ophthalmic problems –corneal abrasions and FB.

I) Orthopedic problems–fractures, septic arthritis.

RED FLAGS in a crying child:

1) Sudden onset of irritability and crying

2) Respiratory distress

3) Continuous crying especially if accompanied by fever.

4) Fever in an infant under 8 weeks of age.

Clinical Bottom Line: Sudden onset of irritability and crying must NOT be diagnosed as colic. Other causes must be identified. Admission for observation, investigation and parental reassurance is necessary.

Allow mother to discuss stress, related to having a baby that cries constantly. This is very essential to prevent postnatal depression and Shaken Baby Syndrome.

THUMB SUCKING

Dr Sunil Kumar B M
Professor, Department of Pediatrics
Ramaiah Medical College and Hospitals, Bengaluru

Thumb sucking is defined as placement of the thumb or one or more fingers in varying depths into the mouth and sucking. Thumb and digit sucking is one of the commonly seen habits in children. Studies have shown that thumb sucking may be practiced even during intra-uterine life.

The presence of this habit is considered quite normal till the age of 3-4 years. Although the incidence of sucking habits varies considerably between different countries, these comforting habits are common in children in many populations. According to Oslon, the most common oral habit was thumb sucking or finger sucking [1] with a reported incidence ranging from 13% to almost 100% at some time during infancy [2,3]. Malocclusion may occur if the habit is not discontinued even after the age of 6 years [4].

Figure1: Thumb sucking at various stages of life in children.

Etiology:

A number of theories have been put forward to explain why thumb sucking occurs [5]. The following are some of the more accepted ones:

1. **Freudian theory :** This theory was proposed by Sigmund Freud, he suggested that a child passes through various distinct phases of psychological development of which the oral and the anal phases are seen in the first three year of life. In the oral phase, the mouth is believed to be an oro-erotic zone. The child has the tendency to place his fingers or any other object into the oral cavity. Prevention of such an act is believed to result in emotional insecurity and poses the risk of the child diversifying into other habits

2. **Oral drive theory of Sears and wise :** Sears and wise in 1950 proposed that prolonged suckling can lead to thumb sucking
3. **Benjamin's theory :** Benjamin has suggested that thumb sucking arises from the rooting or placing reflex seen in all mammalian infants. The object is usually the mother's breast but may also be a finger or a pacifier. The rooting reflex disappears in normal infants around 7 –8 months of age.
4. **Psychological aspects :** Children deprived of parental love, care and affection are believed to resort to this habit due to a feeling of insecurity.
5. **Learned pattern :** According to some authors, thumb sucking is merely a learned pattern with no underlying cause or psychological bearing.

Problems with thumb sucking :

Johnson and Larson [6] in an extensive review noted that malocclusions produced by prolonged thumb sucking habits are characterized by anterior open bites, labial inclination of the maxillary incisors, an increase in over jet, and spacing of the maxillary incisors as shown in Figure 2. Other maxillary changes include an increase in arch depth, anterior displacement of the maxilla, high palatal vaults, and narrowing of the inter-canine and inter-molar arch widths. Posterior cross bites have been observed in thumb–sucking individuals. In the mandible increases in inter-canine arch widths have been detected, and the incisors may be labially or lingually inclined. Local keratinization and callus formation on the thumb can occur.

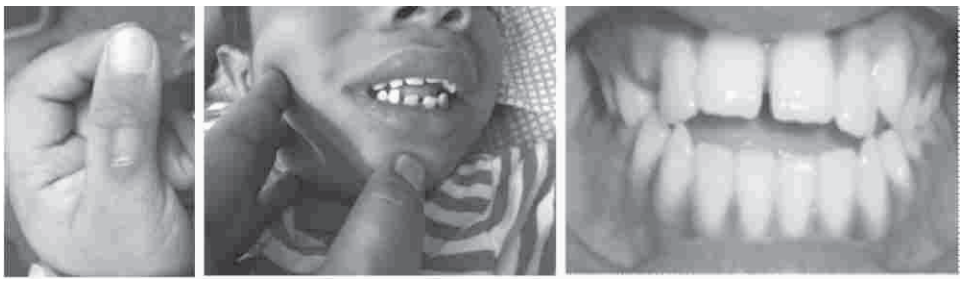


Figure 2: Keratinization and callus formation on the left thumb, and Anterior open bite due to thumb sucking.

Management of thumb sucking:

The age of the child, intensity, duration and frequency of the habit, child cooperation, and motivation are all important factors to be considered for the success of any intervention, and sufficient time should be given for the child to stop the habit on his/her own. Parents usually start to worry too early about how to stop thumb sucking habit of their children. It is advised that thumb sucking will decrease before the age of four (unless a problem to dentition occurs due to vigorous thumb sucking) overzealous treatment might have the opposite effect [7].

The success of any habit interception procedure largely depends upon the subject's co-operation and willingness to be helped to discontinue his/her thumb sucking habit. Thus the parents and the pediatrician should seek to motivate the child.

Here are some ways stop thumb sucking:

1. Keep the child's hands occupied with a toy, puzzle or other activity. Carefully remove the child's thumb from his or her mouth during sleep, give the example of his friends that have managed to stop thumb sucking.
2. Don't put the child in a state of anxiety or fear. If the child has any emotional problems, or is under stress and needs comforting, we may need to resolve those issues first before the child can successfully stop thumb-sucking. Talk about the 'bad' germs that are on our hands and how the child puts them in his or her mouth while thumb sucking.
3. Avoid punishing or shaming the child. Reward the child for not thumb sucking for a progressively increasing time period.
4. On rare occasions and difficult cases causing problems with dentition, a device can be used. Various mechanical and electronic devices can help a child (Figure 3).

Thumb sucking guard - A thumb guard is a device with a plastic cover of the thumb that is attached to a child's wrist. The thumb sucking guard interrupts the process by breaking the vacuum created by sucking, thus removing the child's pleasure. Treatment with thumb guards usually lasts four weeks and helps children to stop thumb sucking successfully.

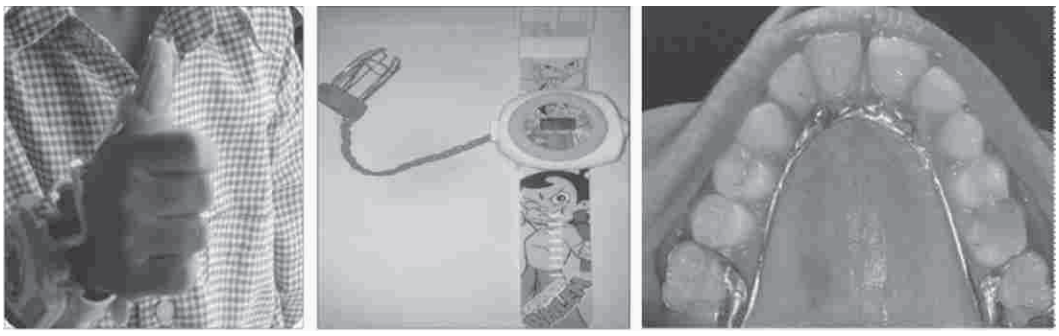


Figure 3 : Electronic alarm device and Palatal crib.

Conclusion

Thumb sucking may be considered normal till certain stage of the child's development. It may not be related to the emotional status of the child. If the habit is causing malocclusion or other pathologic process, a dental opinion and management may be considered. Because the prevalence of habits

decreases with age, various age ranges are selected as guidelines for the management and treatment of the activity. It is usually said that children lacking parental care, love and affection resort to this habit. Thus the parents should be counselled to provide the child with adequate love and affection. The parents should also be advised to divert the child's attention to other things such as play and toys.

Reference:

1. Substelny JD, Substelny JD. Oral habits: Studies in form, function and therapy. Angle orthod 1973; 43(4):349–83.
2. Traisman AS, Traisman HS. Thumb–and finger–sucking: A study of 2,650 infants and children. J Pediatr 1958; 52(5):566–72.
3. Magurie JA. The evaluation and treatment of pediatric oral habits. Dent Clin North Am 2000; 44(3):659–69.
4. Varas FV, Gil GB. Pacifier sucking habit and associated dental changes. Importance of early diagnosis. An Pediatr. (Barc) 2011; 77(6): 374–380.
5. Gairuboyina S, Chandra P, Anandakrishna L, Kamath PS, Shetty AK, Ramya M. Non–Nutritive sucking habits: A review. J Dent orofac Res 2014; 10(2):22–27.
6. Johnason ED, Larson BE. Thumb sucking: Literature review. ASDC J Dent Child 1993; 60(4): 385–91.)
7. Bengi AO, Karacay S, Guven G. A unique treatment of finger–sucking habit in children with mental retardation: Report of 2 cases. Quitessence Int. 2007; 38(3):e158–e163.

INCULCATING SPIRITUALITY IN ADOLESCENTS

Dr Shashidhara MD.,
Sr. Paediatrician,
Bangalore

The WHO (World Health Organisation) has included spirituality as an integral part of health as is evident from the recently revised definition as follows: "Health is a dynamic state of complete physical, mental, spiritual, and social well-being and not merely the absence of disease or infirmity."

Living with the truth - PRESENT is spirituality and it is a way of life. Spirituality however needs to be scientific that provides a firm, unshakable foundation of the truth. Scientific Spirituality is a movement where an individual scientifically integrates or lives with the truth (Present) in everything, in every being, everywhere, in every moment, in ever-present way, leading to an enlightened, fulfilled and harmonious life.

The Present which can be understood as a here and now state is the fundamental reality of life. For a better understanding of the Present, we can divide the "Present" into Outer and Inner Present. The Outer Present or the Surface truth is that part of the Present which is experienced through our body and mind with relation to a given ecosystem. This Outer Present is physical in nature, has finite dimensions and various forms (includes all living and non-living beings as well as diverse topographic features) and is governed by laws of physics (including time and space). At an individual level, we experience surface truth as body and mind which is accompanied by ego. Hence, the Outer Present is the materialistic world.

Inner Present is our Centre, which is recognized as a silent state (essence/ content of outer state). The Centre is infinite as there is no boundaries , has no form and is not subjectable to the laws of Physics (including time and space). At an individual level, Inner Present is recognized as the Being state in us– which is egonil state. Hence the Inner Present is the spiritual dimension or our "Real-self".

As per Scientific Spirituality, awareness and realization of the great, inherent truth–Present itself makes an individual spiritual as the Present always exists, we only have to uncover it. Knowledge of the truth, the Present, will not only help teens form their identity on the basis of pure, scientifically substantiated data but will also have positive effects on their body, mind in a given ecosystem, which are important faculties in the Present Perception that will determine the health, psychology, emotional range and capacity for development of higher emotions in teens.

Parents fear a child's teenage phase and rightfully so. The adolescent period is the most vulnerable, confusing time for a growing child due to hormonal changes on the physical front and neurobiological changes that shape the teen's brain development and is responsible for an emotional rollercoaster.

Accordingly, recent statistics show that 1 in 5 young people suffer from a mental illness, that's 20 percent of our population. Mental illnesses include depression, anxiety, personality disorders, complexes, stress, learning disabilities, psychosomatic illnesses etc. Teenage is also synonymous with disturbing issues such as addictions (alcohol. nicotine, drugs), aggression, peer pressure, abnormal behaviours, cyber addiction, teen dating, health issues due to unhealthy eating habits (more of junk, processed foods), obesity, eating disorders, accidents, sexually transmitted diseases, teen pregnancy and suicide. Hence, Scientific Spirituality is essential for teenagers to navigate the dangerous pitfalls associated with the adolescent phase and instead bloom as healthy, happy teenagers who can discover, nurture and express their unique talents instead.

Every teen must be aware of the difference between Spiritual Culture and Spirituality in order to recognise their true spiritual selves. Spiritual Culture exists in the Outer Present and varies on the basis of religion, region, language, family values, traditions etc. For example, spiritual culture in the Hindu system involves performing homas and pujas to appease the various deities. In Christianity, Spiritual culture involves confessions every Sunday of the sins performed during the week. As per Islam, offering prayers 5 times a day constitutes spiritual culture. **There are thousands of different spiritual cultures and although their methodologies vary, they are designed to help people go deep into the Inner Present.** However, teens should note that Spiritual Culture is the partial truth, an epiphenomenon of the

Outer Present and hence teens need not adhere to any one culture to become spiritual individuals but to respect the feelings. **Spirituality simply involves being aware of the Outer Present and Inner Present and aligning the two.** But understanding the difference between spiritual culture and spirituality is essential for teens to develop tolerance for the various spiritual cultures and pave the way for global peace.

The tenets of Scientific Spirituality that enables the development of physically healthy, mentally stable, positive, unique teens are as follows:

❖ **Body spirituality**

Body spirituality means living with the truth of the body. Body spirituality involves paying attention and enhancing aliveness and awareness towards the body and the surrounding in order to lead to automatic transcendence from the body in the Outer Present to the Inner Present. Body Spirituality aims to create a healthy body in teens by de-stressing it through Balanced Nourishment (focus on all five elements), creating awareness about healthy food choices and ill-effects of unhealthy foods in the market, physical exercises, breathing techniques and fun meditative activities that can help teens maintain a healthy body in the Outer Present. Today it is very important to follow body spirituality as it prevents obesity, nutritional disorders, diabetes and hypertension etc.,

❖ **Mind spirituality**

Mind spirituality means living with the truth of the mind. Mind Spirituality involves discovering the mind as a bundle of thoughts, disciplining one's thoughts and understanding that in reality, the mind is only a tool in the Outer Present which dissolves on automatic transcendence to the Inner Present. Mind Spiritual solutions help teens develop positive, constructive attitudes such as politeness, creativity, rationality etc as opposed to negative destructive attitudes such as irrational thoughts, jealousy etc.

❖ **Eco Spirituality**

Eco spirituality means living with the truth of the Ecosystem. A spiritual connect with nature has become a primary need for an individual's health, so much so that absence of a bond with nature leads to a condition termed as nature deficit disorder as per a leading American journalist named Richard Louv. Inclusiveness or a sense of connectedness with nature can be fostered through Eco spirituality. Eco–spirituality means awareness of the truth or Present within creation which includes each and every entity in nature (living or non-living) and experiencing a sense of connectedness with the common Inner Present within those entities. By becoming eco spiritual teens, adolescents can reap several health benefits of being in nature such as alleviation of stress, exercising outdoors even with a simple walk, exposure to the essential vitamin D, activation of both brain hemispheres, connecting with the silence in nature etc. They also get to decide the habitable or inhabitable status of the Earth in the future Presents. Eco Spiritual education for teens is the need of the hour as today's teens are mostly trapped in technological digital media which restricts them to life indoors .

❖ **Unique design and contribution**

Every aspect in nature is unique. Even identical twins will have some differences. Similarly, every human being is unique and different with their own physical traits, mental make ups and emotional states. Only the Inner Present remains the same. But these differences in the Outer Present give rise to different, unique qualities, potentials and skill-sets which can be identified and expressed through Scientific Spiritual techniques so that every teen can blossom as the crown of nature while understanding their limitations simultaneously.

❖ **Happiness Program for Teens**

This is a special program that aims to develop happy adolescents through scientific spiritual solutions such as acceptance, love, empathy, compassion, independence, forgiveness, gratitude and living in the Present by turning daily activities into meditative forms (eating, drinking, sun, walking, swimming, massage, bathing etc).

❖ **De- Stress Program for Teens**

This essential program for teens offers scientific spiritual solutions to adolescents such as being in the

Present, adopting healthy lifestyles, fun easy-to-follow meditations (example Silence and Role Play meditation etc), adopting the 7 A's (accept, alter, adapt, avoid, adjust, assertive and align), ecotherapy, restful sleep etc to help them alleviate their stress levels and cope with daily stressors in life.

Scientific Spirituality is an easily comprehensible, practically feasible form of spirituality that offers modern teens a host of benefits such as helping teens make healthy lifestyle choices to maintain "disease free bodies", develop positive mind-sets, understand the importance of nature and work towards a Greener Earth in the Outer Present, reap the benefits associated with the Inner silence such as purity, calmness, healing etc, develop gratitude and higher emotions such as empathy, compassion and the like, devise effective stress–management strategies and blossom their special, unique creative talents instead of becoming conformists.

References

1. Everpresent State –A Scientific Solution to Individual and Global Peace –Dr. Shashidhara 2005
2. Present –A Scientific Gateway to Nondual Universal Human Being –Dr. Shashidhara, 2014.
3. Living In The Present –Dr. Shashidhara 2018
4. De-stress through truth –Dr. Shashidhara, 2018
5. Scientific spiritual solutions for managing Teens –Dr. Shashidhara, 2019

For more information contact:
Dr. Shashidhara MD.,
SATHYA DARSHANA
Center for scientific spirituality
No.104/B, West of chord road, [Near ISKCON]
R-block, Rajajinagar, Bengaluru-560010
PHONE–7204730998
Website: www.everpresentstate.com

Scientific spiritual solutions for managing Teens by
Dr. Shashidhara is getting released in
PEDICON BENGALURU ON 8TH JUNE 2019

ಮಕ್ಕಳಿಗೆ ಮನೆಯಲ್ಲಿ ರಕ್ಷಣೆ ನೀಡುವ ಕೆಲವು ಅಂಶಗಳು

ಡಾ।। ಸಂತೋಷ ಎಸ್

ಪ್ರಾಧ್ಯಾಪಕರು ಹಾಗೂ ಮಕ್ಕಳ ತಜ್ಞರು
ಈಸ್ಟ್ ಪಾಯಿಂಟ್ ಆಸ್ಪತ್ರೆ, ಬೆಂಗಳೂರು

ಮಕ್ಕಳು ಪ್ರತಿವರ್ಷವು ಬೆಳೆಯುತ್ತಾರೆ. ಅದರಲ್ಲೂ ಮೊದಲನೆಯ ವರ್ಷವಂತು ಪ್ರತಿ ತಿಂಗಳು ನೀವು ಬೆಳವಣಿಗೆ ಕಾಣಬಹುದು

1. ಮಗು 6 ರಿಂದ 8 ತಿಂಗಳಲ್ಲಿ ಯಾವುದೇ ವಸ್ತು ಸಿಕ್ಕಿದಲ್ಲಿ ಬಾಯಿಗೆ ಇಟ್ಟುಕೊಲುವುದು ಸಾಮಾನ್ಯ. ಇಂತ ಸಮಯದಲ್ಲಿ ಮಗುವಿನ ಕೈಗೆ ಚೂಪಾದ ವಸ್ತುಗಳು ಸಿಗದಂತೆ ಕಾಪಾಡಿಕೊಳ್ಳಬೇಕು. ಇಲ್ಲವಾದರೆ ಮಗು ಅದನ್ನು ಬಾಯಿಗೆ ಹಾಕಿಕೊಳ್ಳಬಹುದು ಅಥವಾ ಅದರಿಂದ ಗಾಯ ಮಾಡಿಕೊಳ್ಳಬಹುದು.

2. ಸುಮಾರು ಒಂದು ವರ್ಷ ಆದಾಗ ಮಕ್ಕಳು ನಡೆಯಲು ಸಿದ್ದರಾಗುತ್ತಾರೆ. ಹಾಗ ಮಕ್ಕಳಿಗೆ ಎಟುಕುವ ರೀತಿಯಲ್ಲಿ ವಸ್ತುಗಳನ್ನು ಇಡಬಾರದು. ಮಕ್ಕಳು ಯಾವುದೇ ವಸ್ತುವನ್ನು ಬಳಿಸಿ ಒಡೆಯಬಹುದು ಅಥವಾ ಚೆಲ್ಲಬಹುದು ವಿಧವಿಧವಾದ ಬಣ್ಣ ಹೊಂದಿರುವ ಬಾಟಲಿಗಳು ದೊರೆತಲ್ಲಿ ಮಕ್ಕಳು ಕುಡಿಯಬಹುದು. ಇದರಲ್ಲು ಹೆಚ್ಚಾಗಿ ಸೀಮೆಎಣ್ಣೆ, ವಿವಿದ ಬೇರೆ ಎಣ್ಣೆ, ಸೀಮೆಸುಣ್ಣ, ಗೋಡೆಗೆ ಬಳಿಯವ ಬಣ್ಣ ಅಥವಾ ಇತರೆ ತೈಲ. ಇವೆಲ್ಲವನ್ನು ಮಕ್ಕಳಿಗೆ ಎಟುಕದ ರೀತಿಯಲ್ಲಿ ಮೇಲೆ ಇಡಬೇಕು.

3. ಮಂಚದಿಂದ ಕೆಳಗಿಳಿಯಲು ಮಕ್ಕಳಿಗೆ 2 ರಿಂದ 3 ವರ್ಷ ಬೇಕಾಗಬಹುದು. ಮಕ್ಕಳು ಮಲಗಿರುವಾಗ ಉರಳಿ ಬೀಳದಂತೆ ಮಂಚ್ಚದ ನಾಲ್ಕುಕಡೆ ಇಡಿಗಳನ್ನು ಹಾಕಿದಷ್ಟು ಒಳ್ಳೆಯದು ಅಥವಾ ಮಗು ಮಂಚದಿಂದ ಕೆಳಗುರುಳದೆ ಇರಲು ಗಟ್ಟಿಯಾದ ದಿಂಬು (1 ಅಥವಾ 2) ಅಡ್ಡವಿಡಬೇಕು.

4. ಮಕ್ಕಳ ಕಾಲಿಗೆ ಶಬ್ದ ಮಾಡುವ ಕಾಲ್ಗೆಜ್ಜೆ ಕಟ್ಟದಷ್ಟು ಒಳ್ಳೆಯದು ಇದನ್ನು ನಮ್ಮ ಅಜ್ಜಿ, ಮುತ್ತಜ್ಜಿ ಕಾಲದಿಂದಲು ಅವರು ಪಾಲನೆ ಮಾಡಿಕೊಂಡು ಬಂದಿರುತ್ತಾರೆ. ಕಾರಣ ಮಗು ಏಲ್ಲಿ ಆಟವಾಡುತ್ತಿದೆಯಂದು ತಾಯಿ ಅಥವ ಮನೆಯ ಹಿರಿಯರಿಗೆ ಗೆಜ್ಜೆ ಸದ್ದು ಮಾಡಿದಾಗ ತಿಳಿದು ಬರುತ್ತದೆ. ನಂತರ ಮಗು ಘಾಡ ನಿದ್ರೆಯಿಂದ ಎಚ್ಚರವಾದಗ ಗೆಜ್ಜೆ ಶಬ್ದದಿಂದ ತಾಯಿಗೆ ತಿಳಿದು ಬರುತ್ತದೆ.

5. ಮೆಟ್ಟಿಲು ಹತ್ತುವ ಮತ್ತು ಇಳಿಯುವ ಜಾಗದಲ್ಲಿ ಸಣ್ಣದೊಂದು ಬಾಗಿಲು ಇದ್ದಲ್ಲಿ ಮಕ್ಕಳು ಮೆಟ್ಟಿಲುಗಳಿಂದ ಬಿದ್ದು ಗಾಯಗೊಳುವುದನ್ನು ತಪ್ಪಿಸಬಹುದು.

6. ವಿದ್ಯುತ್ ಕುಹರ (Socket) ಗಳನ್ನು ಆದಷ್ಟು ಮೇಲೆ ಇಡುವುದು ಒಳ್ಳೆಯದು, ಮಕ್ಕಳಿಗೆ ಎಟ್ಟುಕಿದರೆ ತೊಂದರೆ ಸಂಭವಿಸುವ ಸಾಧ್ಯತೆ ಹೆಚ್ಚು. ಅದರಲ್ಲಿ ಮಕ್ಕಳು ಬೆರಳುಗಳನ್ನು ವಿದ್ಯುತ್ ಕುಹರಗಳಲ್ಲಿ ಹಾಕದಂತೆ ಮುಚ್ಚಿಡತ್ತಕ್ಕದ್ದು.

7. ಮೇಜಿನ ಅಂಚ್ಚು ಚೂಪಾಗಿಯಿಲ್ಲದಂತೆ ಎಚ್ಚರ ವಹಿಸಬೇಕು. ಇಲ್ಲವಾದರೆ ಅದು ಮಗುವಿಗೆ ತಾಗಿ ಗಾಯ ಮಾಡಿಕೊಳ್ಳಬಹುದು. ಅದ್ದರಿಂದ ಅವುಗಳನ್ನು ಅಂಚ್ಚು ಮುಚ್ಚಳದಿಂದ ಮುಚ್ಚಿಡುವುದು ಸೂಕ್ತ.

8. ಜಿರಲೆ ಔಷಧಿ ಅಥವ ಇಲಿ ಪಾಷಣವನ್ನು ಸೇವಿಸಿ ಬಂದಿರುವ ಮಕ್ಕಳನ್ನು ನಾನು ಕಂಡಿದ್ದೇನೆ. ಆದ್ದರಿಂದ ಇಂತಹ ವಸ್ತುಗಳನ್ನು ಆದಷ್ಟು ಮಕ್ಕಳಿಂದ ದೂರವಿಡಬೇಕು.

9. ಮಕ್ಕಳಿಗೆ ಸೊಳ್ಳೆ ಕಡಿಯದಂತೆ ಮುನ್ನೆಚ್ಚರಿಕೆಯ ಕ್ರಮಗಳನ್ನು ಕೈಗೊಳ್ಳಬೇಕು ಅದರಲ್ಲಿ ಮಕ್ಕಳಿಗೆ ಪೂರ್ಣ ಬಟ್ಟೆಯನ್ನು ಧರಿಸುವುದು, ಸೊಳ್ಳೆ ಪರದೆಯನ್ನು ಕಟ್ಟಿಕೊಳ್ಳುವುದು ಮತ್ತು ಸೊಳ್ಳೆಯನ್ನು ಹೊಡೆದೂಡಿಸುವ ಯಂತ್ರಗಳನ್ನು ಉಪಯೋಗಿಸುವುದು ಒಳ್ಳೆಯದು. ಇದರಿಂದ ಡ್ಯಂಗ್ಯೂ, ಮಲೆರಿಯಾ ಮತ್ತು ಇತರೆ ಮರಣಾಂತಿಕ ರೀತಿಯ ಖಾಯಿಲೆಗಳನ್ನು ತಡಗಟ್ಟಬಹುದು.

10. ಮಕ್ಕಳಿಗೆ ನಾಯಿಗಳಿಂದ (ಮನೆ ನಾಯಿ ಮತ್ತು ಭಧಿನಾಯಿಗಳು) ಕಚ್ಚಿಸಿಕೊಳ್ಳದಂತೆ ಕಾಪಡತಕ್ಕದ್ದು.

AN IMPORTANT LESSON

A VITAL MESSAGE FROM A COSTLY MISTAKE

Proteek Sen, Palany Raghupathy
Paediatric and Adolescent Endocrinology,
Indira Gandhi Institute of Child Health, Bengaluru.

2 year old Sital had travelled to Bangalore, from one of the distant north Indian States, with the parents seeking treatment because of her severely delayed milestones. She was born at term by LSCS in a private hospital, and had an uneventful neonatal period. Subsequently, all her developmental milestones were reportedly delayed. The mother said that the infant had regularly received immunization from a local paediatrician but details were unavailable.

At Bangalore, the parents consulted a paediatric neurologist, who referred the patient to a paediatric endocrinologist. She presented with gross developmental delay,dysmorphicfacies,large protruding tongue, severe hypotonia, umbilical hernia, wide open anterior fontanelle, and a florid clinical picture of congenital hypothyroidism (Fig.1). She was totally withdrawn but able to smile on parental contact, and was unable to sit, stand or speak.

Thyroid function tests: S. total thyroxine 0.6 mcg/dl; free thyroxine 0.29 ng/dl; s. TSH 615 mIU/ml. Thyroid nuclear scan revealed hemiagenesis thyroid.

The parents were counselled in detail regarding congenital hypothyroidism and the child was commenced on thyroxine replacement therapy 12.5 micrograms OD for a week, 25 mcg OD for a week and subsequently 37.5 mcg OD regularly. Regular followup was advised once a month but the parents did not return.

DISCUSSION

Congenital hypothyroidism (CH) is diagnosed efficiently by neonatal thyroid screening done either using cord blood or blood sampling at 4 days of life. The benefits are enormous with early diagnosis and prompt commencement of long term thyroxine replacement, with the affected infant capable of achieving a normal life like the peers. This screening has been in vogue since 1970s in the developed world and guidelines have been recommended in India also (See Ref.). Thus, it is the birthright of every newborn baby to have screening for CH. In case of any infant who has not had neonatal screening, and especially if the infant presents with developmental delay, it will be prudent to rule out CH by requesting thyroid function tests.

Lack of awareness on the part of the physician and failure to recognize the diagnosis despite frequent visits for immunization or intercurrent illnesses, is totally unpardonable in this day and age, as the

affected infant is likely to suffer irreversible degree of mental retardation which is entirely preventable with optimal therapy. However, such instances of parental neglect and missed diagnoses on the part of paediatricians continue to recur (Fig. 2). In many instances, when the parents have repeatedly approached their paediatrician for the complaint of prolonged neonatal jaundice, chronic constipation, chronic anaemia, hyptonia or developmental delay, the parents were wrongly reassured by their physician that the infant "will grow out" of the condition.

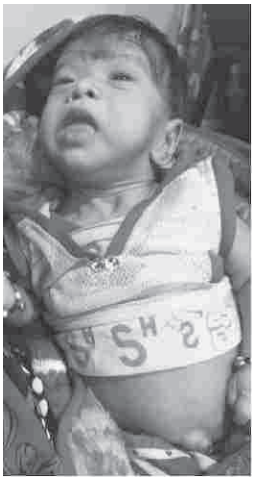


Fig 1 : Two year old Sital at presentation.

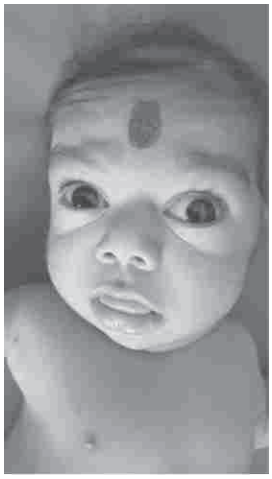


Fig 2 : 30 month old with undiagnosed congenital lhypothyroidism

It is equally important not to yield to false alarms following newborn screening for CH. Wrong diagnosis can be avoided by "seemingly elevated" s. TSH reported by the laboratories against normal adult values. Normal TSH values greatly vary in various paediatric age groups and it is important for the paediatrician to be aware of (Table). This can be further verified also by requesting the thyroid panel, viz., s. total T4, free T4, and TSH.

Table. Normal s. TSH values in NB and children (ICMA)

	mIU/L
Premature infants (28–36 wkgestn)	
1st week of life	0.7 – 27.0
Cord blood (> 37 wk of gestn)	2.3 – 13.2
Birth to 4 days	1.0 – 38.9
2 – 20 weeks	1.7 – 9.1
21 wk – 20 yrs	0.7 – 6.4

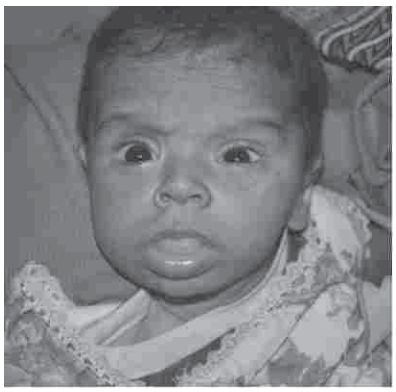


Fig. 3 : Delayed presentation at 2 yrs.

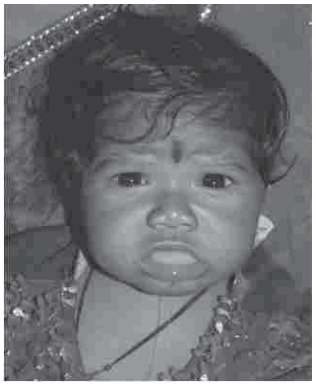


Fig. 4 : Undiagnosed at 15 month of age

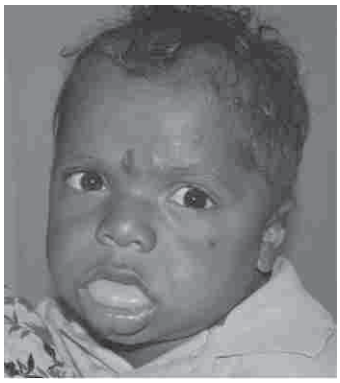


Fig 5 : Undiagnosed at 18 month of age

Let us pledge that such unrecognizedCH, (Figs 3 to 5) undiagnosed with uninitiated therapy for several months or even years should only belong to a bygone era!!

Let us undertake a sincere pledge that we shall undertake all efforts to diagnose CH patients by neonatal thyroid screening and commence thyroxine replacement therapy and ensure optimal followup to monitor physical and developmental milestones of the affected children very effectively.

THIS YEAR marks the 45th anniversary of the establishment of the first screening programme for CH in April 1974 in Quebec, Canada. Since then, when they reached the figure of 150,000,000 newborns who had screening, around 42,000 were detected to have CH. In the West, it is estimated that one million newborns are tested yearly and 280(approximately 1 in 3,571 livebirths) detected to have CH. Experience from several Centres in India reveals a much higher figure of 1 in 1,200 livebirths, thereby emphasizing the mandatory need for nationwide routine newborn screening for CH on a priority basis.

ESSENTIAL READING

Newborn Screening Guidelines for Congenital Hypothyroidism in India: Recommendations of the Indian Society for Pediatric and Adolescent Endocrinology (ISPAE) – Part I: Screening and Confirmation of Diagnosis. Indian J Pediatr. 2018 Jun;85(6):440-447.Part II: Imaging, treatment and followup. Ind JPediatr2018 Jun:85(6)448–453.

ALL CHRONIC NECK SWELLINGS ARE NOT KOCHS COMPLEX- Case report of Nodular fasciitis

Dr Nagalatha S, Dr Harigovind, Dr Gowri Uday
St. Marthas Hospital, Bangalore.

INTRODUCTON-

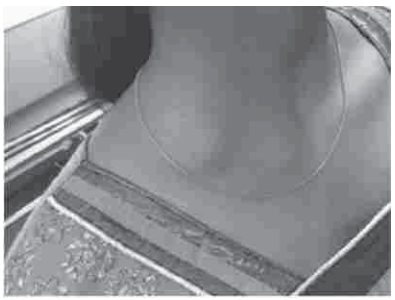
Nodular fasciitis is a benign, discrete proliferation of fibroblasts in the subcutaneous tissues often centered on the deep fascia. Its rapid growth can be deceptively similar to that of soft-tissue sarcomas. In addition, pathologic analysis may show high cellularity, high mitotic index,and infiltrative borders, further pointing to malignancy. In the past, this may have led to unnecessary radical surgery as treatmentfor this benign lesion.Nodular fasciitis has been described as a reactive phenomenon with an etiology that may be injury related. It is most commonly diagnosed in adults aged 20 to 40 years and has been reported to occur predominantly in males.[1]Its prevalence in children is low,with only 10% of reported cases presenting inthe pediatric population.[2,3] Within the pediatric population,tumor location varies, although it is most commonly reported in the head and neck.[4]

CASE SUMMARY

Here we are reporting a fourteen year old female child who presented to us with swelling in the right side of the neck in the supraclavicular region for the last one year and pain since the last 2weeks.The swelling was gradually increasing in size and was not associated with any pain initially and a a weight loss of 5 kg over the last 1 year. Child was evaluated for the same in outside hospital and FNAC suggestive of tuberculosis(no bacteriological evidence or CBNAAT was done) child received ATT for 9months and completed the full course with good drug compliance. She was followed up in DOTS centre without clinical resolution. On examination child was noticed to have a swelling of size 4*3 cm in the right supraclavicular region which was firm in consistency, tender with the overlying skin appearing normal. A differential diagnosis of MDR-TB, Lymphoma, sarciodosis and other soft tissue swellings were kept in mind.We investigated the child with full hemogram, CBC, Mantoux, chest X-ray, USG abdomen and pelvis was done which was normal. CB-NAAT sent was negative. Serology for HIV, HBSAg,VDRL and HEPATITIS –C were negative. CECT of the neck showed clumped, necrotic lymphnodes with peridadenitis suggestive of tubercular lymphadenitis. FNAC done in our hospital revealed features suggestive of spindle cell tumour / nodular fasciitis. Hence excision biopsy of the tumour was done and specimen was sent for histopatholpgy and immunohistochemistry. Histopathology revealed proliferative fasciitis /myositis consisting of spindle cells proliferation (fibroblastis /myofibrblastic) admixed with ganglion like cells ,areas of haemorrhage and myxoid changes ,chronic inflamation consisting of lymphocytes ,focal

neurosis and histiocytic changes with 5 reactive lymphnodes.Immunohistochemistry revealed neoplastic cells which are positive for S100,focal SMA positive. Scattered CD68+ve cells seen. Negative for desmin and Myo D1 cells-proliferative fasciitis /nodular facsitis .Child underwent excision of the swelling along with the surrounding lymph nodes. Child improved symptomatically and has no recurrence till now.

SWELLLING IN THE RIGHT SIDE OF THE NECK



DIAGNOSIS - NODULAR FASCITIS OF THE NECK WITH REACTIVE LYMPHNODE ENLARGEMENT.

DISCUSSION

Proliferative fasciitis(PF) is a self-limiting, benign, reactive fibroblastic proliferation considered as a pseudosarcomatous lesion because of its microscopic features overlapping with those of malignant soft tissue tumours[2]. It is a very rare disease, concerning mainly middle age adults and its incidence has not been estimated. It is typically diagnosed in the age group average of 34 years,with maximum age of 50 and minimum agr 0f 8 yrs. Our child was 14 yrs. PF is considered as a repair reaction in soft tissue, where minor traumas and inflammation are frequent . However, only rarely some type of injury is reported to precede the resulting proliferation, raising the possibility that other causes may play a role in its development . Among adult patients, 7-33% had a history of trauma adjacent to the involved area. Among the reviewed children's clinical data, as well as in our case, no trauma was reported[5].Childhood lesions are generally well circumscribed, lobulated, extremely cellular and with less collagen production than in adults [1]. Mitotic figures may be numerous, in both adult and paediatric PF cases, but are never atypical . In our case these were few, less than 5%. Also, paediatric lesions are often well circumscribed, with a more solid growth pattern. Reticulohistiocytoma presents with ganglion-like myofibroblasts with more prominent nucleoli and more amphophilic cytoplasm. Xanthogranulomas have more multinucleated cells with touton giant cells and an inflammatory background which includes eosinophils. No particular immunohistochemical stain would distinguish xanthogranuloma or reticulohistiocytoma from PF. The clinical characteristics of PF are those of a mass-forming lesion, usually painful, demonstrating an aggressive local behaviour, which may increase in size rapidly during a few weeks time,

typically attaining a maximum size of about 3 cm . RMS(rhabdomyosarcoma) and non-RMS soft tissue tumours are strong diagnostic alternatives to PF . They usually present as painless masses without associated symptoms, except when compromising adjacent organ function. There may be palpable regional lymphadenopathy . Treatment is basically surgical excision. Other modes of treatment include triamcinolone intralesional injection(TAILI) and pin hole method with a carbon di oxide CO2 laser(6). Recurrence risk is very rare(7).

CONCLUSION

Thus we can conclude from the above discussed case that lymphadenopathy with overlying swelling can be a skin or subcutaneous infection with reactive lymphadenopathy which can be easily mistaken for a tubercular lymphadenitis clinically and by FNAC. Here by we conclude that thorough investigation including repeat histopathology and biopsy may be needed in non or partial responders to ATT prior to labeling them as MDR –TB. Also it can be re emphasized that do not start on ATT unless there is bacteriological confirmation and after starting treatment proper follow up for response is a must.

REFERENCES

1. Price EB Jr, Silliphant WM, Shuman R. Nodular fasciitis: a clinicopathologic analysis of 65 cases. AmJ ClinPathol. 1961;35:122–136.
2. Stout AP. Pseudosarcomatousfascitis inchildren. Cancer. 1961;14:1216–1222.
3. Allen PW. Nodular fasciitis. Pathology. 1972;4(1):9–26.
4. DiNardo LJ,Wetmore RF, Potsic WP. Nodularfasciitis of the head and neck in children:a deceptive lesion. Arch Otolaryngol Head Neck Surg.1991;117(9):1001–1002.
5. Jaryszak EM, Shah RK, Bauman NM, Howell RJ,Rossi CT, Preciado DA. Unexpected pathologies inpediatric parotid lesions: management paradigmsrevisited. Int J PediatrOtorhinolaryngol. 2011;75(4):558–563.
6. Byung Ho oh,Jihee kim,and kee yang chung. Treatment of Nodular Fascitis Occuring on the face. Annals of dermatology.2015Dec;27(6):694–701.
7. Tomita S, Thompson K, Carver T, Vazquez WD.Nodular fasciitis: a sarcomatous impersonator.J Pediatr Surg. 2009;44(5):e17–e19.

SCIENTIFIC PAPERS

CASE STUDY

Dr Sri Raksha
Devraj URS Medical College, kolar

Prospective Study of Blood lactate levels as a prognostic indicator in patients with shock admitted to PICU in tertiary care centre.

Objective :

To determine the clinical utility of serum lactate values as a prognostic indicator in patients with shock.

To correlate serum lactate values with PRISM III scores as indicators of mortality.

Procedure :

All the patients with shock between age group of 1month and 18 years irrespective of the aetiology were included in this study. The patients at admission were evaluated based on the physiologic variables in the PRISM III score and also arterial and venous blood was drawn for routine investigations required for evaluating the patients.Serum lactate values was analysed at 0 , 12 and 24 hours of admission.

Results :

P value of <0.05 was considered as statistically significant.

A total of 66 children were included in the study.The outcome was 21 non survivors(30%) and 45 survivors(70%).A serum lactate value of more than 3.5mmol/l at 0 hours and more that 3mmol/l after 24 hours of admission was found to be associated with increase in mortality.

The area under the ROC curve for the PRISM III score (0.898) suggests that it was a strong predictor of mortality in study subjects when compared to serum lactate levels which had area under the ROC curve 0.872. Area under the ROC curve for Both PRISM III score and serum lactate levels had a significant P value <0.001.

Conclusion :

Serum lactate values can be used as good prognostic indicator in children with shock in correlation with PRISM III scores.

CAN TRICLOFOS RETRIEVE ITS DOMAIN IN PEDIATRIC MRI SEDATION?

Dr Sajini Ramakrishnan
(Fellow, Pediatric Emergency Medicine, Manipal Hospital),
Dr Gnanam R
(Intensivist and HOD, Department of Pediatric Emergency Medicine, Manipal Hospital),
Dr Bidisha Banerjee
(Consultant Pediatric Neurologist, Manipal Hospital)

Introduction :

MRI scans in children are becoming increasingly common in children as a diagnostic tool .Sedation for the same becomes mandatory ,especially in children less than 5-6 years of age. Considering the cost effectiveness and the negation of IV sedation,the Pediatric ER team at Manipal Hospital implemented oral sedation with Triclofosto facilitate the same,in children weighing less than 20 kg.Triclofos administration was superimposed on the natural sleep of the child ,andthe investigation done at night ,in select patients.This study is the first of its kind in Indiaanalysing the effectiveness of triclofos,even in older children, for MRI sedation .

Objectives :

To determine the effectiveness and tolerability of Triclofos for non emergency MRI sedation in children,when administered during natural sleep of the child

Methodology :

This is an Observational Descriptive study. It was conducted in the department of Pediatric Emergency Medicine,Manipal Hospital, between January 2018 and April 2019.There was no age limit but the study was limited to children weighing less than 20 kg ,considering a maximum dose of1g.The sedation and the investigation was always superimposed on the natural sleep of the child.When done at night,parents were instructed to wake the child earlier than usual in the morning and avoid sleep during the daytime.Informed consent was procured in all patients.

Observation :

Of the 93 children studied,MRI was successfully completed in 91(97.849%) . Among those, 32 children(35.16%) underwent MRI at night while in the remaining (64.9%),the investigation was completed during the day.The median age was 2.8 years and oldest child who underwent oral sedation

was 8 years of age.75mg/kg was the highest dose administered,the least utilised dose being 20 mg/kg .Sevenchildren(7.69%) required a second attempt of triclofos,scheduled on another day for successful completion. No side effects were observed in any of the children..

Discussion and conclusion :

Triclofos can effectively replace intravenous sedationfor non-emergency MRI scans in young children weighing less than 20kg, especially when timed with the natural sleep of the child.However,further analytical studies may be required for issuing recommendations on the same.

keywords :

MRI scan, children, Triclofos

CLINICAL, LABORATORY, RADIOLOGIC PROFILE AND OUTCOME IN ACUTE NECROTIZING ENCEPHALOPATHY OF CHILDHOOD (ANEC) - A TERTIARY CARE CENTRE COHORT

Dr. Sruthi Sashidharan, MBBS,
Dr. Bidisha Banerjee, DM,
Dr. Gnanam Ram, DM,
Dr. Rupa A, DM,
Dr. Ashwath Ram, DM,
Dr. Sivakumar S , DM,

Background : ANEC is potentially devastatingillness characterised by fever, abrupt onset encephalopathy,seizures, vomiting and hepatic dysfunction with bilateral symmetrical lesions in thalami.Indian data on outcome is limited.

Objectives :

1) To study the clinico-radiological profile and outcome in ANEC.

2)To study the factors influencing survival and neurologicaloutcome.

Methods : All children < 18 years of age admitted from January 2010 to March 2019 with a diagnosis of ANEC were included. Clinical, laboratory, radiology and factors predicting outcome were analysed.

Study design : Retrospective observational study

Results : Nineteenchildren 8 months to 13 years age were evaluated.Male:female was 1.4:1.All presented with fever and abrupt onset altered sensorium; median duration being 2 days.Seizures were reported in 12, vomiting in 8, abnormal posturing in 5 patients; 12 had hypotension.Dengue was identified in 7,H1N1 in 1 and influenza A in 1. Liver enzymes were elevated in 14.Neuroimaging was done in all (CT-7,MRI – 14).Thalamic involvement was seen in all, brainstem 12, cerebral white-matter 17, cerebellar white-matter 10.ANE severity scorewas high in 12 patients. There were 73.7% survivors.Neurologic outcome at discharge was poor in 9. At follow-up, of 14 survivors, 1 had poor, 3 fair and 8 good neurologic outcome. Persistent neurodeficits were seen in 100% < 48 months versus 30.7% ≥ 48 months age. There was no relation between ANE severity score or use of steroids within 24 hours with neurological outcome.

Conclusion : Age influenced outcome with younger children <48 months fairing worse. Continued neurologic improvement was seen in majority of the survivors.

RESPONSE TO FIRST LINE AGENTS, EPILEPSY AND DEVELOPMENTAL OUTCOME IN INFANTILE SPASMS - RETROSPECTIVE COHORT FROM TERTIARY CARE HOSPITAL

Dr. L. Gowthami, MBBS,
Dr. Bidisha Banerjee, MD DM ,
Dr. D. UllasAcharya, MD DM ,

Introduction :

Infantile spasm(IS) is an infantile epileptic encephalopathy with potentially adverse developmental outcome esp. if inadequately treated.

Objectives :

To study response rate of infantile spasms to first line treatment (ACTH, high dose oral corticosteroids, vigabatrin),long term epilepsy and developmental outcomes.

Methods :

Retrospective observational study in a single centre over a period of 5 years(2014-2018).Children with infantile spasms between 3mnths-1 year and treated with first line agents were included.

Results :

Total 60 cases of IS were found; 16 were excluded as detailed treatment or 1 month follow up not available.Mean age at onset was.7.6 ±3.5 months with male:female 2.6:1.

Median delay in diagnosis was 2 weeks (range 1day to 24 weeks). Developmental delay at diagnosis of IS was present in 40 cases.Neuroimaging (MRI Brain) was done in allof which 27(61.3%) had structural abnormality.Median lead time to treatment was 3 weeks(range 1 day to 28 weeks).

Single 1st line agent was used in 15 and ≥ 1 in 19 children. Cessation of spasm was achieved in 68% by 1month.Remissionwas sustained at 3 months in 61.4%.Twenty-six (59%) evolved into other types of epilepsy on follow up . Side-effects with 1st line treatment were noted in 22 children, in the form of irritability (8), obesity(4), severe infection(2),hypertension(1) .

Developmental delay on follow-up was noted in 36(81%) patients (mild in19, severe in. 17); 7 had normal or borderline development.

Conclusions :

First-line agents are effective and well tolerated in treatment of infantile spasms.

POSTER PRESENTATIONS

PROFILE OF CHILDREN WITH OPSOCLONUS MYOCLONUS SYNDROME - A TERTIARY CARE HOSPITAL EXPERIENCE

Ayesha Thanvi MBBS, Bidisha Banerjee DM,
Department of Paediatric,Manipal Hospitals
Radhakrishnan C N FRCS, Ravikiran CS MCh,
Department of Paediatric Surgery,Manipal Hospitals
Poonam Patil DM
Department of medical Oncology,Manipal Hospitals

ABSTRACT

BACKGROUND : Opsoclonusmyoclonus syndrome (OMS) is a rare neurological disease characterized by opsoclonus, myoclonus, ataxia, and behavioral changes.

OBJECTIVE : To describe the clinical profile,investigations and therapeutic outcome of children diagnosed to have OMS

STUDY DESIGN : Eight children were diagnosed with OMS over a period of 9 years (2010–2018) .Out of them, 5 underwent diagnostic evaluation and are included in the study. Their charts were retrospectively analysed.

RESULTS : Mean age of presentation was 19.2 months (SD=6.675) with a female preponderance of 4:1. Median time lag of diagnosis and treatment from onset of symptoms was18 days (5 days to one year).One had a history of influenza vaccination. Four out of five children(80%) had an associated neuroblastoma detected by CT scan of neck,thorax and abdomen.Urinary VMA was done in 4 patients,3 had neuroblastoma,however all came negative.Mean follow up of patients was 20.75 months(SD=6.235) with one child lost to follow up after initial diagnosis of neuroblastoma..All were treated with ACTH,oral steroids,and surgery±chemotherapy for neuroblastoma, IV Immunoglobulinwas used in two out of five patients with a very good outcome.2 out of 4 children(50%) had cognitive delay at follow up.The overall outcome was poor in the child with maximum delay in diagnosis (1 year)

CONCLUSION : OMAS clinical diagnosis which is potentially treatable.There is a strong association with neuroblastoma and search for a tumour is essential.CT scan serves as a very sensitive tool for the same.Overall outcome to early aggressive immunomodulation is good ,better results achieved with additional IVIg.Cognitive and behavioral impairment is common long term sequele.

Case study - Lactose intolerance

Dr. Ritesh Veerlapati,
Sri Devraj URS College, Kolar

Background and objectives

Diarrhoea is a major cause for mortality and morbidity among children in India. Morbidity is increased by risk factors like malnutrition, infection, dehydration and lactose intolerance. Very few studies have been done in India relating to lactose intolerance in acute diarrhea. This study aims to estimate the occurrence of Lactose Intolerance and to assess the factors affecting the outcome in Children with Acute Diarrhoea.

Methodology

The study included 150 children below 5 years of age suffering with Acute Diarrhoea having stool pH $\leq$5.5 and reducing sugar $\geq$ 1–1.5 gm % (Benedict's Test +2) were classified as sugar intolerance. The factors affecting the outcome such as use of Low Lactose formula feeds andMalnutrition were assessed.

Results

Out of 150 children, 54(36%) were lactose intolerant. In those who took low lactose feeds, mean duration of illness was 4.82 days and 7.59 days in those who took normal feeds. Out of 79 well nourished children, 19(24%) were Lactose Intolerant and out of 71 malnourished children, 35(49%) were lactose intolerant.Cases with malnutrition had duration of illness with mean of 6 days and well nourished cases had mean of 5.35 days.

Conclusion

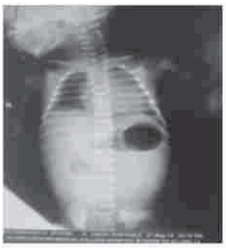
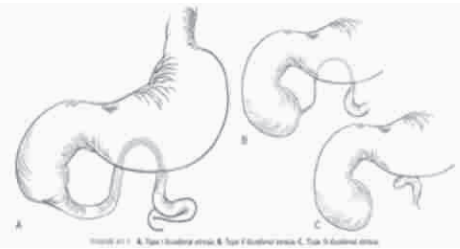
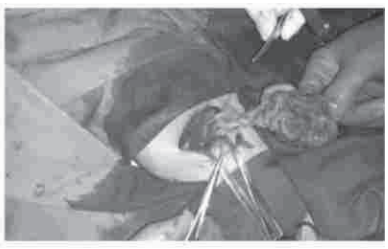
Lactose intolerance is common in acute diarrhoea and is often underemphasized.Lactose intolerance is positively correlated with the nutritional status of the patients.Treatment of lactose intolerance with low lactose feeds has the potential for speedier recovery and improved outcomes. There is need for considering lactose intolerance in formulating better diarrhoea treatment guidelines in India.

A RARE CASE OF CONGENITAL DUODENAL ATRESIA (TYPE 3) WITH VOLVULUS

Dr. Shruthi R.S, Dr. Adarsh. E, Dr.Sree Krishna, Dr. Sahana
Rajarajeshwari Medical College And Hospital

INTRODUCTION : Duodenal atresia is the congenital absence or complete closure of a portion of the lumen of the duodenum.It causes polyhydramnios during pregnancy and intestinal obstruction in newborn babies.No medical therapies are available for definitive treatment of duodenal atresia,the treatment is surgical correction.Occurs in 1 in 10000 live births More than 50 % patients have associated congenital anomalieslike Trisomy 21,Isolated cardiac defects, other gastro-intestinal anomalies.

CASE REPORT : 1st born female baby of birth weight 2.24kg born at 34 weeks of gestation by LSCS (severe PIH,threatened labour,breech presentation) to a 21 year old non consanguinous couples. Antenatal scan showed duodenal atresia with polyhydramnios(AFI – 24), On admission to NICU vitals were stable, bilious aspirate was present. Post natal USG showed mid gut volvulus with stomach grossly dilated with no evidence of dilation of jejunal or ileal loops suggestive of duodenal atresia. X ray showed double bubble sign.Genetic analysis was done which was normal. Exploratory laparotomy was done at 36 hrs of life there was a type 3 duodenal atresia with volvulus, there were no any other gastrointestinal tract anomalies, duodeno –jejunal anastomosis was done after excising the atretic segments.

DISCUSSION : Duodenal atresia can be of 3 types

1. Type 1-obstructing septum formed from mucosa and submucosa with no defect in muscularis layer mesentery is intact.
2. Type 2 –a short fibrous cord connects the two blind ends of the duodenum mesentery is intact.
3. Type 3 – there is no connection between the two blind ends of duodenum,v – shaped mesentery defect present.

Regardless of atresia severity,the proximal intestinal segment is typically dilated and the distal segment empty,these are hallmarks of duodenal atresia. It is common near ampulla of vater.Duodenal mal–

development occurs secondary to either inadequate endodermal proliferation or failure of epithelial solid cord to re-canalize. Duodenal atresia differs from other atresiasof small and large bowel which are isolated anomalies caused by mesenteric vascular accidents.More than 50 % patients have associated congenital anomalies Trisomy 21,Isolated cardiac defects,Other gastro intestinal anomalies.

CONCLUSION : Duodenal atresia can occur as an isolated or as part of a genetic defect or a syndrome. Familial cases have been reported but the mode of inheritance is unclear. Addition human and animal research are needed to discover the causative factor of this rare condition

REFERENCE : Duodenal atresia and associated intestinal atresia a cohort study and review of literature Niscia et al. PediatrsurgInt 2019

Coron AG, AdzickkNS , pediatric surgery, 7 th edition.

Duodenal atresia and stenosis Eovaldi B J et al. Star pearls 2019

Congenital neonatal intestinal obstruction retrospective analysis at tertiary care hospital. Singh et al J. neonatal surg 2016

CASE REPORT

EYES DON'T SEE WHAT THE BRAIN DOESN'T KNOW : UNUSUAL CASE OF BLINDNESS

Dr Nimrat Sandhu, Dr Sunil Kumar B M.
MS Ramaiah Medical College, Bangalore

ABSTRACT :

INTRODUCTION : Acute disseminated encephalomyelitis (ADEM) is a rare complication of viral infections and immunizations[4] and is often missed due to its myriad presentation. It is defined as an immune mediated inflammatory demyelinating condition that predominantly affects white matter of the brain and Spinal cord. Here we report a case of ADEM following meningoencephalitis.

CASE REPORT : A 4 year old girl presented with fever since 10 days with history of headache 10 days before admission and persistent fever spikes. On admission, her vitals were stable, systemic examination was normal. There were no deficits or meningeal signs, relevant investigations were done which revealed Hb -8.4gm/dl, TLC-8040(N-51,L-43), platelet 320000, CRP-0.1. Child was managed symtomatically, neuroinfection was suspected and evaluated with CT brain which was normal and Lumbar pucture which had shown 10 cells and normal proteins and sugar. However on day 5 of admission child developed fever with chills and drowsiness followed by 1 episode of right upper limb tonic posturing. Repeat CSF showed 63 cells with 60%lymphocytes and normal protein and sugar. CSF was sent for viral studies. MRI brain and EEG were done and were normal. Child was started with antibiotics, mannitol, dexona and acyclovir.CSF meningoencephalitis panel was negative. Childs condition improved and was discharged after 14 days of treatment.

After 2 weeks, child presented with complaints of blurring of vision and headache. On examination child was noted to have bilateral papillitis, and MRI brain was repeated, which revealed signal abnormalities in brainstem, basal ganglia and peduncles suggestive of ADEM (fig1). VEP was done as a work up for blurring of vision which showed prolonged latency in both eyes (fig2)CSF was repeated which was normal and serum samples were sent for Anti-NMO and anti-MOG antibodies and child was started on pulse methyl prednisolone therapy.Anti-MOG antibodies were positive and child has been continued on pulse steroids for 5 days and continued on small dose after tapering. Childs vision improved and headache disappeared. Currently child is stable and on regular follow up.

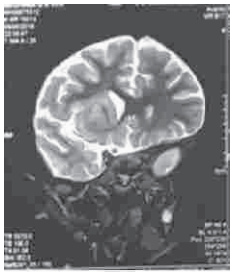
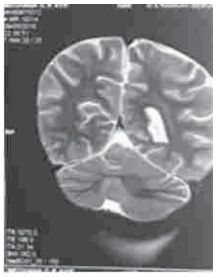
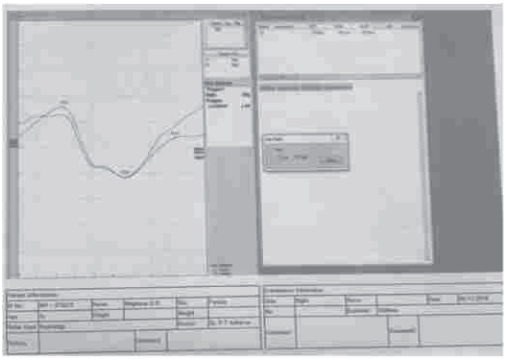


FIG 1 : ENHANCEMENT OF BASAL GANGLIA



ENHANCEMENT IN PEDUNCLES



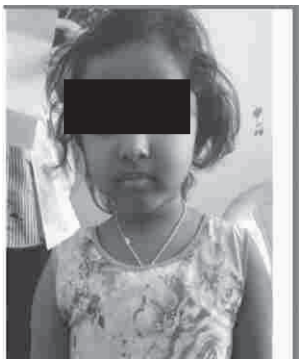
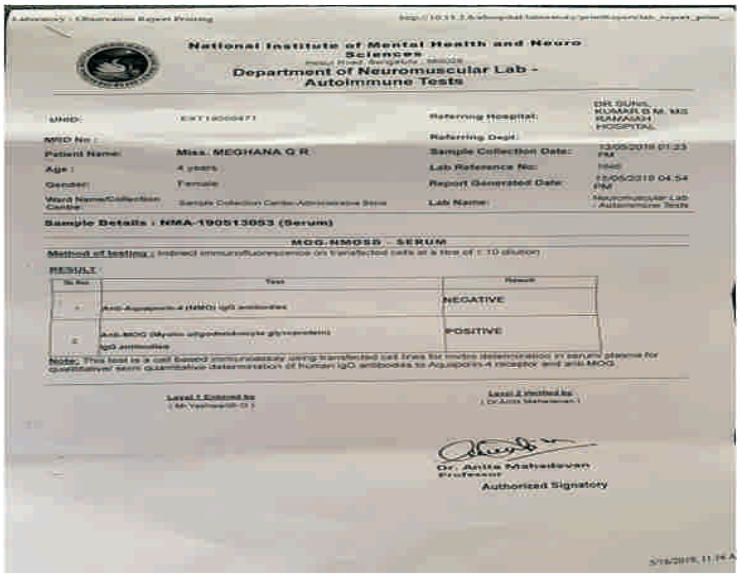


FIG 2 : VEP- PROLONG PATENCY OF BOTH EYES



National Institute of Mental Health and Neuro Sciences
Department of Neuromuscular Lab - Autoimmune Tests

UHID:	EXT1000471	Referring Hospital:	DR SUNIL KUMAR S M. MS RAMAIAH HOSPITAL
MRD No :		Referring Dept:	
Patient Name:	Miss. MEGHANA G R	Sample Collection Date:	13/05/2019 01:23 PM
Age :	4 years	Lab Reference No:	1000
Gender:	Female	Report Generated Date:	15/05/2019 04:54 PM
Ward Name/Collection Centre:	Sample Collection Centre-Administrative Block	Lab Name:	Neuromuscular Lab - Autoimmune Tests

Sample Details : NMA-190513053 (Serum)

MOG-NMOSD - SERUM

Method of testing : Indirect immunofluorescence on transfected cells at a titre of 1: 10 dilution

RESULT

Sr.No.	Test	Result
1	Anti-Aquaporin-4 (NMO) IgG antibodies	NEGATIVE
2	Anti-MOG (Myelin oligodendrocyte glycoprotein) IgG antibodies	POSITIVE

Note: This test is a cell based immunoassay using transfected cell lines for invitro determination in serum/ plasma for qualitative/ semi quantitative determination of human IgG antibodies to Aquaporin-4 receptor and anti-MOG

Level 1 Entered by (Mr.Yashwanth G)

Level 2 Verified by (Dr.Anita Maheshwari)

Dr. Anita Maheshwari
Professor
Authorized Signatory

SERUM LEVELS OF MOG ANTIBODIES

DISCUSSION : ADEM is a diagnostic challenge in its first attack[1]. It is associated with polyfocal neurological deficits and is typically self-limiting. Known to be seen most commonly following immunization or infections such as measles and chicken pox.ADEM as we typically know, has a multifocal presentation can present as long tract signs (decreased voluntary movement) or hemiparesis or cranial neuropathies. Clinical phenotype of myelin oligodendrocyte glycoprotein antibody associated ADEM is evolving and our case illustrates an uncommon presentation of ADEM. The term multi-focal can be implied synonymously with our case because our patient typically presented with symptoms of Optic neuritis (impaired vision). Diagonsis is based on MRI findings and lab studies including antibodies, since there is no biological indicator of ADEM.

MOG-Ab associated syndrome[2] is an autoimmune inflammatory demyelinating disorder typically presents as optic neuritis, myelitis, encephalitis. MOG is a glycoprotein forming the myelin sheath and plays an important role in adhesion of myelin fibres and regulation of oligodendrocyte stability. They are known to modulate the immune system and their epitopes are highly immunogenic. As concentrations of MOG are higher in serum than CSF hence for evaluation of ADEM serum levels are sent.

In our patient, typically presented with fever and history of headache with LP-CSF suggestive of meningoencephalitis. Two weeks after meningoencephalitischild presented with complaints of blurring of vision and headache as a result of multifocal involvement of ADEM mainly involving optic nerve in our case. . High doses of intravenous steroids for 3-5 days is the primary treatment . Prognosis of ADEM is usually good and rarely results in focal deficits if treated early[3]

REFERENCES :

1. NELSON TWENTIETH EDITON
2. Divya Nagabushanaa; Rutul Shaha, Hima Pendharkar, Aakash Agrawala, Girish B. Kulkarnia, Srijithesh Rajendrana, Suvarna Alladia, Anita Mahadevan; MO Gantibody seropositive aseptic meningitis : A new clinical phenotype ; Journal of Neuroimmunology; Volume 333, 15 August 2019, 476960
3. Apak RA, Kose G, Anlar B, Turanli G, Topaloglu H, Ozdinim E. Acutedisseminated encephalomyelitis in childhood : report of 10 cases. J ChildNeurol. 1999;14:198 –201
4. Chowdhary J, Ashraf SM, Khajuria K. Measles with acute disseminated encephalomyelitis (ADEM). Indian Pediatr. 2009 Jan. 46(1):72-4.

VARICELLA AND THE WAR WITHIN

Dr. Nikitha D' Souza,
Dr. Chandrakant Pujari,
Dr. Mounika Reddy,
Dr. Lalitha AV
Department of Pediatrics, St. John's Medical College and Hospital, Bengaluru

Varicella is a benign,self-limiting viral infection of childhood. Rarely, it results in potentially life-threatening complications. We present three cases of immune-mediated neurological syndromes triggered by primary varicella infection.

Case1:6-year boy with altered sensorium on day 8 of varicella rash, progressing to refractory status epilepticus and raised intracranial pressure, requiring mechanical ventilation, barbiturate coma and decompressive craniectomy. MRI brain showed diffuse diffusion restriction with impending herniation, CSF was negative for varicella PCR and serum anti-MOG antibody was positive.He received mechanical ventilation for 20 days, acyclovir and steroids.

Case2: 6-year boy with acute-onset symmetrical ascending paralysis, areflexia, progressing to respiratory failure within 48 hours, with onset of varicella rash 12 days prior and crusted lesions at presentation.Guillain Barre syndrome was considered, CSF analysis showed albumin-cytological dissociation and nerve conduction studies suggested AMAN variant.He received 2g/kg IVIg and mechanical ventilation for 5 days.

Case3: 4-year boy with acute onset descending paralysis, ptosis progressing to bulbar dysfunction and respiratory failure within 48 hours, and polymorphic varicella rash at presentation. Myasthenic crisis was diagnosed based on dramatic response to neostigmine and positive anti-ACh receptor antibodies with normal CSF analysis. He received mechanical ventilation for 3 days, acyclovir, steroids and pyridostigmine.

All children responded to treatment and are doing well on follow-up.

Discussion: An environmental trigger in genetically predisposed individuals is believed to result in autoimmunity.Viral etiology has gained attention in several autoimmune conditions, however, primary varicella infection is rarely reported as the cause. Postulated mechanisms for post-infectious autoimmune phenomenon include molecular mimicry (antigen cross-reactivity) between viral and host proteins or triggering T-cell mediated innate immunity. Direct infection should be ruled out by testing for viral genetic elements (DNA) or antibody response in CSF.

A RARE CASE OF INTERRUPTED AORTI ARCH

Dr Arpitha B

Dr Sahana

Dr Adarsh E

Department of Pediatrics,
Rajarajeshwari Medical College & Hospital, Bangalore

Abstract

Interrupted aortic arch accounts for about 1% of all crtically ill infants who have congenital heart disease. This is an extreme form of coarctation of aorta in which aortic arch is atretic or segment of the arch is absent(1). It represents a critical ductus dependent congenital heart disease, which without surgery is associated with high mortality in the neonatal period(2).Here we are reporting newborn male baby presented with interrupted aortic arch.

INTRODUCTION

Interrupted aortic arch (IAA) was described by Steidele in 1778 and is now defined as an uncommon congenital cardiovascular malformation characterised by the lack of luminal continuity between the ascending and descending thoracic aorta(2).Incidence is 1% of all congenital heart disease(1).Associated with DiGeorge syndrome occurs in atleast 15% .Associated with VSD and PDA.(1)

DISCUSSION

It is a rare congenital malformation that is often associated with a ventricular septal defect (VSD), and may coexist with severe intracardiac congenital anomalies such as common arterial trunk (CAT), transposition of the great arteries (TGA), aortopulmonary window (APW) or hearts with single ventricle connection(3).

Depending on location of the interruption divided into 3 types:type A-Interruption is distal to the left subclavian artery(30%),type B-interruption between the left carotid and left subclavian arteries(43%),type C-interruption between innominate and left carotid arteries(1).

The clinical manifestation as respiratory distress,variable degree of cynosis,poor peripheral pulses,circulatory shock(1).

chest x ray shows cardiomegaly ,echocardiography is useful in diagnosis.Cardiac CT and MRI used to clarify the anatomy before surgery(1).

Management consists of PGE1 infusion with intubation and oxygen administration.workup for Di George syndrome.Primary complete repair of interruption and VSD repair.

Innominate artery cannulation through a PTFE graft anastomosed to it facilitates the operation by providing adequate space on the ascending aorta and permits continuous cerebral perfusion, thereby avoiding circulatory arrest during the arch reconstruction (4).

CASE REPORT

A full term male neonate born out of third degree consanginious marriage to a primi mother was antenatal ultrasonography at eight month of pregnancy showed interrupted aorticarch with membranous ventricular septal defect.Baby was delivered by vaginal delivery cried after tactile stimulation with APGAR score at 1 minute 7 and 5min 8 ,birth weight of 2.5kg was shifted to neonatal intensive care for further management.Baby was given oxygen support,intravenous fluid ,intravenous antibiotic. Echocardiography showed PDA(4mm) and VSD (4.5mm).Computed topography was done showed interruped aortic arch .Angiography showed type B of interrupted aortic arch.Baby underwent surgery primary repair for interruption with VSD closure and PDA repair.

CONCLUSION

Interruption aortic arch accounts for 1% of congenital heart disease.Associated with DiGeorge syndrome occurs in atleast 15% (1).Type B is most common form. It is associated with VSD and PDA.Cardiac CT is the investigation of choice. surgery primary repair with VSD closure is treatment(1).

REFERENCES

1) Parks textbook of cardiology page no 204

2) Pankaj Kumar Mishra, Management strategies for interrupted aortic arch with associated anomalies, European Journal of Cardio–Thoracic Surgery, Volume 35, Issue 4, April 2009, Pages 569–576,

3) Khatami AD. Ascending aortic slide for interrupted aortic arch repair. Translational pediatrics. 2017 Sep 26;7(1):71–2.

4) Varghese R, Ganesh J, Nandam J, Ravikumar S, Kothandam S. Anomalous origin of right pulmonary artery from innominate artery: Repair using pulmonary artery pedicled flap plasty. Annals of pediatric cardiology. 2017 Sep;10(3):278.