AYURVEDIC TREATMENT OF NEUROLOGICAL DISEASES IN CHILDREN

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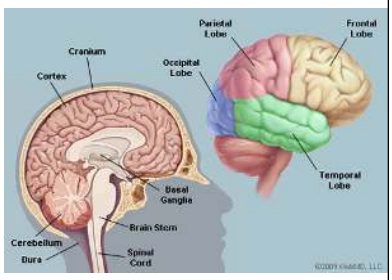
What is a Neurologic Disorder?

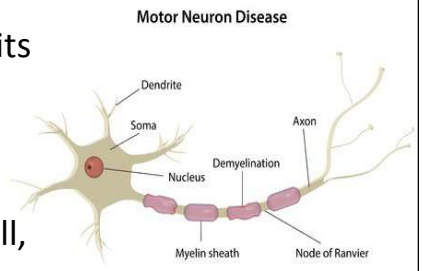
- The term "**neurologic disorder**" applies to any condition that is caused by a dysfunction in part of the brain or nervous system, resulting in physical and/or psychological symptoms.

- The development of the human brain begins during **pregnancy** and continues through infancy, childhood & adolescence.

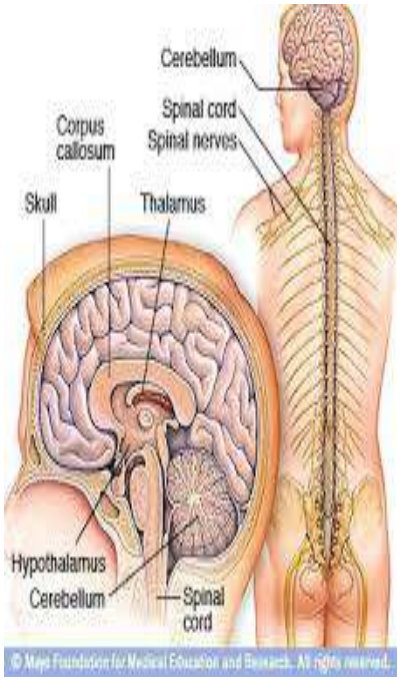
Most brain cells are formed before birth but the trillions of connections between these nerve cells (neurons) are **not developed until infancy**.

- The brain is composed of gray matter (neurons & interconnections) and white matter (axons surrounded by a myelin sheath).
- A motor neuron (above) carries impulses away from the brain.
- The brain is self-organizing.
- It selects information to forward its growth and development. It also adapts to the environment.
- Experience of the environment through the senses of touch, smell, sight, taste and hearing produces connections in the brain.





- All neurologic disorders involve the brain, spinal column or nerves.
- Symptoms depend on where damage occurs. Areas that control movement, communication, vision, hearing or thinking can be affected.
- Neurologic disorders are wide ranging. They have various causes, complications and outcomes.
- Many result in additional needs requiring life-long management.

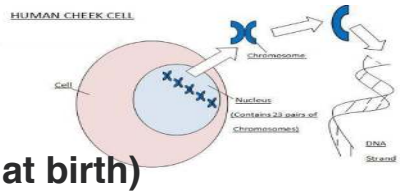


- Symptoms of neurologic disorders vary.
- Physical, cognitive (or thinking), emotional and behavioral symptoms may be present, with specific disorders having combinations or clusters of these symptoms.
- For e.g., Cerebral Palsy tends to have more physical symptoms whereas ADHD tends to have greater effects on behaviour.

- Many neurologic disorders emerge during the early years of development and may be diagnosed at birth.
- Some are diagnosed later because symptoms only appear when a child misses normal developmental milestones or has developmental difficulties (e.g. Autism).
- It can also occur due to damaging infections (e.g. meningitis).
- An accident with head injury can also cause in brain injury resulting in to neurological presentations (stroke, trauma, hypoxia).
- Metabolic or autoimmune mechanism can also lead to neurologic disorders which are usually progressive.

Causes of Neurologic Disorders

- Many neurologic disorders are "**congenital**," meaning they were present at birth.
- Some of the disorders are "**acquired**," which signifies that they developed after birth.
- Those with an unknown cause are termed "**idiopathic**."



Congenital Causes (present at birth)

Genetic factors can influence the development of a variety of neurologic disorders that are typically inherited from parents through genes and chromosomes.

- **Gene abnormalities**
- **Chromosome abnormalities**
- **Change in chromosome number**
- **Change in chromosome structure**
- **Metabolic disorders**
- **Congenital malformation**

Pre/Perinatal Causes

- **Toxins and environmental factors -** Neurotoxins
- **Nutritional deficiencies**
  Deficiency of folic acid (a B vitamin) could lead to a neural tube defect (NTD)—for example, spina bifida (open spine).
- **Infections**
  Hypoxia/asphyxia - Perinatal asphyxia
- **Complications during childbirth**
- **Prematurity / low birth weight**
- **Interaction effects**
  A number of factors, including heredity, gene expression, the environment, infectious disease, poor nutrition, stress, drugs and other chemicals, can interact in complex ways to cause neurologic disorders.

Acquired Causes (developed after birth) - These are less common than congenital causes of neurologic disorders, and include:

- **Immune disorders**
- **Postnatal infections**
- **Traumatic brain injury**
- **Spinal cord injuries**
- **Neoplasm**
- **Toxins**
  Exposure to environmental chemicals or toxins during childhood can lead to neurologic impairment. Closed head injuries – where no damage is visible; these are common in car accidents.

Neurological disorders in children

- Disorders of consciousness
- Epilepsies
- Migraine
- Movement disorders
- Developmental disorders
- Inherited metabolic diseases
- Traumatic diseases of NS/ Spine
- Vascular diseases of NS
- Infections of NS
- Tumors of CNS
- Learning disabilities
- Birth injuries
- Degenerative diseases of NS
- Acquired metabolic diseases of NS
- Disorders of CSF circulation
- Cranial neuropathies
- Spinal cord diseases
- Diseases of PNS
- Muscle disorders
- Metabolic disorders
- Genetic disorders
- Neuro-behavioural disorders
- others

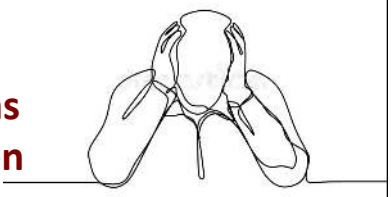
Neuro Behavioural Disorders

- All children have behaviour problems.
- All parents have behaviour problems.
- All teachers have behaviour problems.

We all have behaviour problem at some point of time !

Behaviour problems in developing child

- **A child's behaviour problems represent a conflict between his developing personality and that of his parents, teachers, siblings and other children with whom he comes into contact.**



Behavioural Problems

- **Externalizing Behavioural problems**: Problems relating to acting out – conduct disorders, ADHD etc.
- **Internalizing Behavioural problems**: Problems relating to self: anxiety, phobia, depression, somatic complaints, OCD etc.

AUTISM & Childhood onset Psychosis are not included under behavioural problems as they are mental disorders which later manifest as Behavioural abnormalities.

Classifications based on DSM-5 and ICD-10

COMMON BEHAVIOUR PROBLEMS

- Habit problems
- Problems of eating
- Sleep problem
- Speech problems
- Scholastic problems
- Sexual problems
- Personality problems
- Antisocial problems

Classifications based on DSM-5 and ICD-10

- Habit problems
- Conduct Disorders
- Opposition Defiance Disorder
- **ADHD**
- **ASD**

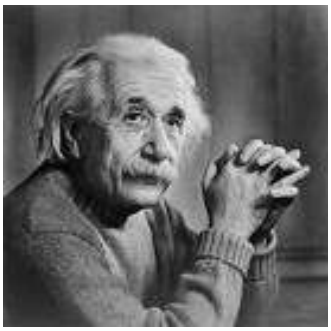
Developmental delay v/s behavioural diseases

¥ Developmental delay and behavioural diseases are two different entities.
¥ All developmental delay conditions need not have behavioural problems and vise versa….
¥ The developmental diagnosis must never be made on clinical impression, but only on a careful history and thorough examination.
¥ It is wrong to conduct a developmental examination of an epileptic child when he is in a state of confusion after a major convulsion or when he is under the influence of drugs.
¥ Serious mistakes are made in developmental diagnosis.

Language developmental disability:

- Some children develop well in all other aspects except speech, they are slow in learning to speak, benefit with speech therapy.

"Albert Einstein did not speak till he was four years old and did not read till he was seven"!

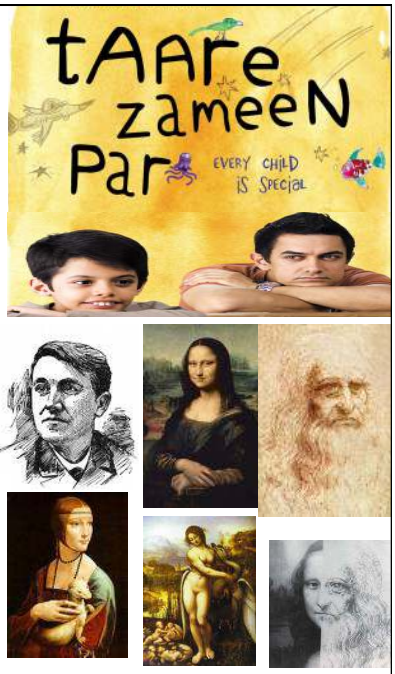


Dyslexia: in this condition the level of intelligence is normal or above average, yet have difficulty in doing well in studies, otherwise intelligent child has significant disability in learning the three **R**'s – **R**eading, w**R**iting and a**R**ithmetic.

- It is not mental retardation because child is good in other areas such as sports, language, social and artistic skills.

*Did you know what is common among **Thomas Alva Edison** and **Leonardo Da Vinci**?*

*- They had **Dyslexia***



Neurological disorders & Ayurveda

- **There are no exact one to one correlation for various neurological disorders in Ayurveda.**

- **Few conditions or diseases that have some similarity in etiopathogenesis and clinical presentation -**

  Vata Vyadhi

  Phakka Roga

  Bala Pakshaghata

  Bala Samvardhana Vikriti

  Shiro Marmabhighataja Vata Vikara

- *Vayavyadhi*
- *Unmada*
- *Apasmara*
- *Grahabadha – Balagraha*

Each of these conditions have specific management principles

- *Rogi* and *Roga Pariksha*
- *Nidana Panchaka – Samprapti & Samprapti Ghataka*
- *Chikitsa Sutra – Chikitsa – Shodhana & Shamana*

Vataja Nanatmaja Vikara

- ***Mukatva*** - Dumb
- ***Badhirya*** - Hearing impairment
- ***Ekangavadha*** - Monoplegia
- ***Pakshavadha*** - Hemiplegia
- ***Sarvangaroga*** - Quadriplegia
- ***Pangulya*** - Paraplegia
- ***Anavasthita Chitta*** - Impaired mental function
- ***Aakshepaka*** - Convulsion
- ***Akshivyudasa*** - Visual impairment

Vata Vikara Lakshana :

- ***Sankuchana*** - Contracture
- ***Khanjata*** - Limping
- ***Shosha*** - muscle atrophy
- ***Stambhana*** - restricted movements
- ***Cheshta*** - *Cheshtavriddhi* : Abnormal movement
  Cheshtahaani : Decreased movement
- ***Chalatva*** - Abnormal movements / instable posture

Phakka

- ***Phakka***

  Delayed developmental milestones – Child who is unable to walk by the age of **one year.**

  Many words found in *Phakka* :-

  Ksheenamamsa
  Ksheenabala
  Sphik bahu uru sushkata
  Durbalata
  Manda cheshta

As per different type of Vyadhi classification..

- **Aadibala, Janmabala, Sanghatabala and Daivabala pravritta – Su.**
- **Sahaja Vyadhi, Beeja beejabhagavayava dushti – Ch.**

for ND of congenital and hereditary origin

Aachaarya Charaka **has also given indication about Genetical disorders in terms of** ***Beejadushtijanya Vikaara***

- **ySy ySy ý¼avyvSy blje bljÉag %ptÝae Évit tSy tSya¼avyvSy ivk&itépjayte, c·za·3 / 29**
- **ySy ySy ývyvSy blje bljÉage va dae;a> àkaepmap*Nte, t< tmvyv< ivk&itraivzit , c.za.4/ 30**

27

- ***Beejatmakarmashaya kala doshaihi matustathahara vihara doshaihi I***

  Kurvanti rogaha vividhani dushtah samsthana varnendriya vaikrutani *II*

i.e. *Beejadosha –*
Atmakarma dosha –
Ashaya dosha –
Kala Dosha –
Ahara-Vihara of Mother

Samsthana varna indriya ..... vikriti

The methodology of understanding unknown disease has been described in *Charaka Samhita* based on *Aaptopadesha Pramaana*

raegm! एकैकम् @v< àkaep[m! @v< yaeinm! एवं %Twanm! एवं AaTmanm! एवं Aix:Qanm! @v< वेदनम् @v<< संस्थानम् @v< zBdSpzRêprsgNxm! एवं उपद्रवम् @v< v&iïSwan]ysmiNvtm! @v< उदर्कम् @v< namanm! एवं योगम् iv*at! ; tiSmn! #y< àtIkarawaR àv&iÄ> Awva inv&iÄ> $TyupdezaJ}ayte.

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Ayurvedic terminology	Nearer term
Evam Prakopanam	Aggravating factors of the disease
Evam Yonim	Pathogenic material of the disease
Evam Utthaanam	Etiology of the disease
Evam Aatmaanam	Specific Features of the disease
Evam Adhisthaanam	Location of the disease
Evam Vedanam	Knowledge of the disease
Evam Samsthaanam	Symptom of the disease
Evam Upadravam	Complication of the disease
Evam Vriddhi, Sthaana, Kshayam	Accumulation, Stasis, Diminution of symptoms
Evam Udarkam	Consequences / squeal of the disease
Evam Naamam	Name of the disease
Evam Yogam	Treatment or management
Evam Pratikaara, Nivritti, Pravritti	Disappears and prevention of the disease

Samprapti Ghataka

- ***Dosha*** - ***Vata Pradhana Tridosha***
- ***Dushya*** - ***Rasa, Rakta, Mamsa, Asthi, Majja***
- ***Agni*** - ***Dhatwagni***
- ***Srotas*** - ***Pranavaha to Majjavaha***
- ***Srotodushti*** - ***Sanga, Vimargagamana***
- ***Adhishthana*** - ***Sharira and Manas***
- ***Vyaktasthana*** - ***Ekanga/ Sarvanga***
- ***Rogamarga*** - ***Madhyama***
- ***Vyadhi Swabhava*** - ***Yapya / Asadhya***

TREATMENT

Dhathu Kshayajanya and / or Avaranajanya Vataroga **treatment**

- ***Deepana & Pachana***
- ***Snehana***
  - ***Bahya / Abhyantara***
  - ***Abhyantara sneha–*** ***Snehapana***
  - ***Bahyasneha-*** ***Abhyanga***
    - ***Shiroabhyanga***
    - ***Shirodhara***
    - ***Shiropichu***
    - ***Shirobasti***
- ***Swedana – Nadi Sweda, Upanaha Sweda, SSPS***
- ***Basti – Sneha, Kashaya, Matra (Yoga Basti / Chaturbhdrakalpa Basti)***
- ***Nasya – Marhsa / Pratimarsha***
- ***Others: Netra Tarpana, Karna purana, Jihvanirlekhana, Gandusha Kavala***
- ***SHAMANA CHIKITSA – Various drugs, specifically Vatahara, Rasayana***
- ***YOGASANA, PHYSIOTHERAPY . EXERCISES etc.***

Autism: …… ASD

- This is a disorder in which children fail to develop the ability to relate and interact with people, they tend to be lost in their own world and remain indifferent to people around them.
- They have poor eye contact, they may develop some limited speech but fail to use it for communicating with others. Repeating of the same activities again and again is common here.

Attention Deficit Hyperactivity Disorder:

- All children are active, but few are overactive and considered hyperactive, they may sleep only a few hours at a time, when awake, they are impulsive, constantly in motion, darting from one activity to another, often failing to sustain attention in simple tasks or games, such children often have ADHD.
- Common manifestations in ADHD are –
  - being fidgety, restless and hyperactive, most of the time,
  - poor concentration in activities, leaving tasks unfinished, frequently shifting from one activity to another
  - impulsive behaviour such as often interrupting other, doing dangerous things like rushing into traffic, peeping into wells, jumping from heights, and pulling the tail of dogs etc.
  - being distracted from activities by minor events and happenings
  - easy excitability, over talkativeness, aggressive behavior.

Attention Deficit Hyperactivity Disorder:

- **Treatment of ADHD:** Comprehensive treatment program with holistic view
- [Behaviour therapy, teacher training, parent training, family therapy and individual counseling etc.]

- **Ayurvedic approach for improving reaction time of attention deficit hyperactivity disorder affected children.,** Harish Kumar Singhal, Neetu, Abhimanyu Kumar, Moti Rai., Ayu. 2010 Jul-Sep; 31(3): 338–342.
- On the basis of the results of this study, it can be concluded that the drug alone or the drug + *Shirodhara* were both effective in reducing reaction time in ADHD and thus improve the attention span. The drug + *Shirodhara* was more effective in reducing reaction time than either the drug or placebo alone.

- **Ayurvedic Management of ADHD (Attention Deficit Hyperactivity Disorder)- A Case Study**, Patra Snigdha Rani et al ., IJAAR. Volume III Issue XI Nov-Dec 2018.
- Treatment followed:
- 2 sittings of *Takra dhara* for 8 days (*Jatamamsi + Musta + Amalaki + Yashtimadhu churna* + butter milk)
- *Abhyanga, Swedana* followed by *Matra basti* with *Kalyanaka ghrita* 6 for 8 days
- *Shamana Oushadhi* (for 1-month in gap period) • Tab Cognium 1-tab BD • *Kalyanaka ghrita* 2-tsf BD with milk • *Manasamitra vataka* 1-tab BD
- **Observations**: Hyperactivity- throwing objects beating self, doing very often in a day - reduced to 2-3/day only; Inattention Not sitting in one place for 5min – improved to 10-15min., Not obeying commands – Obeying parents command; Disturbed sleep - Sound sleep and **started going to school** after completion of the 2 months treatment.

- Chiatali Bhatt et al., *Shankhapushpi* on ADHD.
- Rahul Gameti et al., Ayurvedic management of ADHD (Attention Deficit Hyperactivity Disorder) with *Panchendriya Viverdhan Tail Nasya-* a case study., World Journal of Pharmaceutical Research., August 2017 (10.20959/wjpr20178-9088)
- Praveen Sharma et al., Role of *Panchabhautika Taila Nasya* and *Abhaya Ghrita* in ASD.
- Dinesh KS et al., Role of *Saraswata Churna* in Scholastic performances
- Dr. SK Ramachandran – works on Autism, ADHD...

ADHD management thr. Ayurveda

- Procedure based therapy – *Abhyanga, Sweda, Basti, Nasya, Shirodhara, Murdhataila*
- Drugs: *Medhya Rasayana* (*Shamaka / Uttejaka*)
- Dosage forms: All
  - *Brahmi (Mandukaparni), Vacha, Shankhapushpi (Vishnukranta), Yashtimadhu, Guduchi, Jyotishmati,*
  - *Kalyanaka Ghrita, Brahmi Ghrita Panchagavya Ghrita, Naladadi Ghrita, Saraswata Ghrita, Abhaya Ghrita*
  - *Saraswaatarishta, Ashwagandharishta*
  - *Suvarnaprashana, Kumara Kalyana Rasa, Saraswata Churna*

Panchakarma in CP

Research	Group A	Group B
Dr. Apexa G. Vyas 2011	*Samvardhana Ghrita* + *Abhyanga* with *Bala Taila* + *Shashtika Shali Pinda Sweda*	*Samvardhana Ghrita*
Result	Group A has shown better effect in the components of Motor system compared to Group B	
Dr. Sagar Bhinde 2012	*Ashtanga Ghrita* + *Udvartana, Abhyanga Chaturbhadra Kalpa Basti*	*Ashtanga Ghrita* + *Udvartana, Abhyanga Yoga Basti*
Result	Here both group shows similar kind of result on motor & Growth component.	

Research	Group A	Group B
Dr. Pavan D. Gor 2013	*Samvardhana Ghrita* + *Yoga basti*	*Samvardhana Ghrita*
Result	In both groups,shown improvement ranging from 10 to 15 % as per the criteria of overall effect of therapy.	
Dr. Satyavati Rathia 2014	*Samvardhana Ghrita* + *Yoga basti*	*Samvardhana Ghrita* + *Udvartana, Abhyanga & Swedana*
Result	In both groups,10 to 17 % improvement shown in overall effect of therapy.	

TONICS FOR CHILDREN

"YASYA DESHASYA YO JANTU:
TASYA TAJJAUSHADHAM HITAM !"

Role of brain tonics in children

All the drugs of chemical origin are associated with adverse or toxic effects.

Herbal drugs are comparatively safe and effective.

The **Medhya drugs** of Ayurveda stimulates the neurons of memory and intelligence area of the brain and results in optimum function.

[Earlier concept of clearing the masking has now changed]

Medha and Smrutivardhaka Yoga :

Churna :
- Saraswata Churna
- Medhya Rasayana Churna

Avaleha:
- Guduchyavaleha
- Brahmi avaleha
- Manjishtavaleha
- Suvarnaprashana
- Haritakyavaleha

- **Taila:**
  - Shankhapushpi Taila
  - Brahmi Taila

Ghrita:

Ashtamangala Ghrita

Ashtanga Ghrita

Kushtadi Ghrita

Dvipanchamuladi Ghrita

Pathadi Ghrita

Brahmi Ghrita (2)

Saraswata Ghrita (2)

Soma Ghrita

Hingwadi Ghrita

MENTAL RETARDATION

- Drugs: Group J – Jyotishmati Taila – orally
- Group A – Ashtamangala ghrita [B.R] nasya
- Group C – Placebo drug

Total effect of therapy on IQ [n=33]

Group	MEAN		%	S.D.	S.E.	't'	P
	BT	AT					
Gr. A	63.40	68.79	8.50	3.246	0.967	5.752	<0.001
Gr. J	55.94	62.88	12.41	1.974	0.527	13.156	<0.001
Gr. C	52.03	52.02	0.03	0.706	0.266	0.058	>0.1

(Maniar M, Patel K.S, Takwani H.K,Mistry I.U-1999)

MENTAL RETARDATION

- **Drugs:**

Group S – Panchabhautika Taila [KS] nasya + Samvardhana Ghrita [KS] orally

Group J – Nasya (Gr. S) + Jyotishmati Taila orally

Group P – Nasya (Gr. S) only

Effect of therapies on overall IQ [n=26]

Group	Mean		%	SD ±	SE ±	't'	P
	BT	AT					
S	54.10	63.30	17.00	2.85	0.90	10.17	<0.001
J	49.25	54.87	11.41	1.84	0.65	0.61	<0.001
P	55.50	56.25	1.35	0.88	0.31	2.39	<0.05

(Saxena S, Patel K.S, Mistry IU- 2001.)

MEDHYA RASAYANA

- Drugs: Mandukaparni, Yashtimadhu, Guduchi, Shankhapushpi + Ela & Dalchini **[Prakehspa]**

Effect on IQ [n=45]

Group	Mean		%	SD ±	SE ±	't'	P
	BT	AT					
Control	96.2	96.9	0.69	0.03	0.42	1.58	>0.05
Volunteer	93.7	95.5	1.92	3.05	0.78	2.29	<0.05*
Patients	64.96	66.0	1.60	1.36	0.27	3.73	<0.01#

* Significant # Significant

(Dash PK, Rao R, Patel KS, Mistry IU, 1996)

Most of the *Medhya Rasayana* are told in early childhood period! Why?

- *Lehana – Lehya* of Kashyapa
- *Medhya Rasayana* – 4 types
  - *Vak* Speach
  - *Medha* Intelligence [specific]
  - *Smruti*Memory
  - *Buddhi* Intelligence [general]

- Growth & Development in Children:

- Types of Growth:

1. General - Gradual
2. Lymphoid - up to 8 years
3. Brain - maximum up to 3-4 yrs
4. Gonadal - at puberty

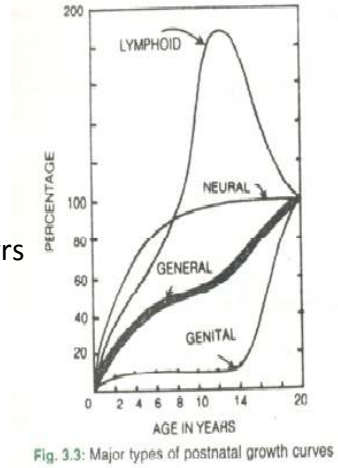

Fig. 3.3: Major types of postnatal growth curves

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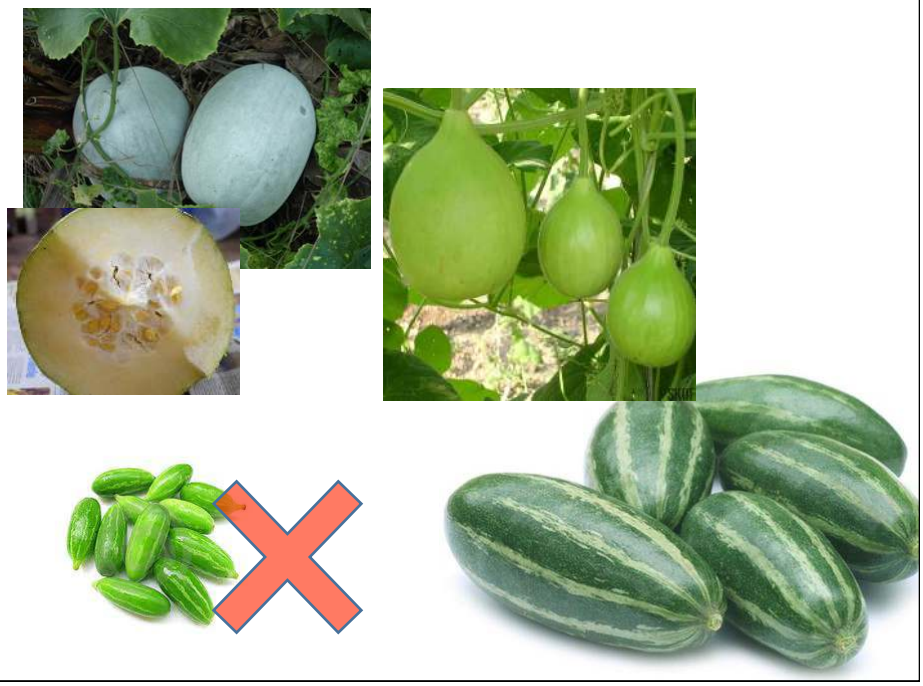

Challenges ....

- Drug – Drug interaction
- Modification of Procedures to age
- Existing co-morbidities
- Fixation of the dose of drug especially through rectal and nasal route
- Dosage forms
- Inadequate facilities, expertise .... Etc...

In nut shell.....

- *Dosha* evaluation – *Vata kshaya, Aata vriddhi, Avarana*
- *Dushya* evaluation
- Nature of disease – progressive ( ) or static (CP)
- *Agni, Ama* evaluation
- *Dehabala, Satvabala* evaluation
- Procedure selection
- Internal medication – as per system involved
- Higher mental functions – *Ghrita & Asava Arishta*
- Sensory or motor – Local – *Abhyanga*
- *Vata pradhana* – Oil
- *Vata Kapha pradhana – Ruksha Ushna karma – Udvartana*
- *Avarana – Kaphavrita –*

"..... Sheshadoshavirodhayan....."

Fact….

Don't do false claim of curing diseases

As……

there are good number of diseases yet to be understand.

Concept of Karma phala / Karmaja Vyadhi

- ***Medico astrological aspects and Vastu considerations in clinical practice.***
- **Respect the knowledge of ancient Seers, It may have some meaning, which we yet to understand … !!!!**

"Publish and share knowledge"

- **Folklore drugs & therapies**
  - Good : Promote
  - Bad : Don't Promote
  - Harmless : Promote for but not required psychological reasons

Scientific insight into folklore medicines is needed

Conclusions:

❖ One to one correlation to most of the neurological disorders or a similar disease or symptom complex in Ayurvedic science is not available.

➢ As far as Etiology and Clinical features are concerned, predominance of *Vata dosha* is obvious.

➢ Evaluation of clinical presentations reveal *Vata* dominant conditions [*Vata vyadhi]* is the nearest to understand Etiology, Pathology and Associated conditions.

- Where treatment of Modern science is diminutive for improving the condition, Ayurvedic treatment is found to be more valuable as per some research studies and clinical practice
- Ayurvedic management protocol along with modern treatment looks more beneficial to deal with the condition
- Though it is not curable, Ayurvedic science can show a better direction by improving the quality of life of those children

Approach to research:

Ayurvedic diagnosis – Ayurvedic management

Ayurvedic diagnosis – Modern management

Modern diagnosis – Modern management

Modern diagnosis – Ayurvedic management

Modern diagnosis – Ayurvedic understanding & Ayurvedic management

Early Management Is Essential To Lessen The Problems Of Physical And Mental Disabilities In ND.

Education
Consultation
Counseling
Positivity
Support **- for Parents**

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Than
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