



PEDTR.ISSUE 2 | APRIL, 2022

PEDIATRICS

AIIMS Rajkot

Message from Department

April has been an active month in medical field. There was Autism awareness day on 2 nd April, World health day on 7 th April, Hemophilia day on 17th and Immunisation week from 24 - 30 th April. The Department of Pediatrics, AIIMS Rajkot conducted in house seminar for health care workers, on lines of the theme 'Education For All' for autism. In this issue we have presented the salient features of the same so the message is widespread. We have also included a short snippet of immunization programme in India and update of recent genetic therapy trial for haemophilia.

Dr. Pinky Meena (Assistant Professor)

Dr. Devhuti Godhani (Senior Resident)

Dr. Jahnvi Panchal (Junior Resident)



What is Autism...

Autism spectrum disorder (ASD) are persistent impairment in reciprocal social communication and interaction, and restricted, repetitive patterns of behavior or interests.

Theme 2022

Inclusive quality education for all

Message from Executive Director

AIIMS Rajkot is glad to use its newsletter to disseminate vital information related to health and participate actually in public health issues. I appreciate the efforts of Department of Pediatrics in this regard.

-Dr. (Col) C.D.S.Katoch

Clinical features

- Young children - brought with parental/ physician concern of delay or regression in development and/ or speech, or age inappropriate play and/or behavior.
- Older children - present with difficulties in academics, social awkwardness or behaviors serious enough to disrupt family life.
- A subset of children have normal or above-average intelligence ('high functioning')
- Some may exceptionally gifted in specific areas, despite being impaired in others ('savant').
- During adolescence hyperactivity and stereotypical behaviors may decrease, but other psychiatric illness may develop.

Epidemiology

- In America, the prevalence is 1 per 88 children.
- In India, prevalence is 0.8-1.3% in 2-9 year olds i.e one per 80- 100 children is affected.
- Equal predilection in both sex

Etiopathogenesis

- Multifactorial etiology cause neurotransmitter imbalance, dysfunctional neuronal pathways, and abnormal synaptogenesis.
- May be associated with
 - some genetic and metabolic disorders like Angelman's, Prader-Willi, Fragile X and Smith-Lemli-Opitz syndromes
 - environmental causes : congenital rubella, antenatal intake of valproate and encephalitis

The signs of Autism..





Screening of ASD

- Usual age of diagnosis is 2 years but can be picked up as early as 1 year
- Evidence-based psychosocial interventions can improve communication and social skills. So early recognition is important.
- American Academy of Pediatrics recommends universal developmental screening and surveillance that includes ASD specific screening at 18 and 24 months
- ‘Red flags signs’ can help but are not sensitive criteria for autism.
- ASD specific screening can be done between 16 to 30 mo by the Modified Checklist for Autism in Toddlers, revised with follow up (MCHAT-R/F)*.

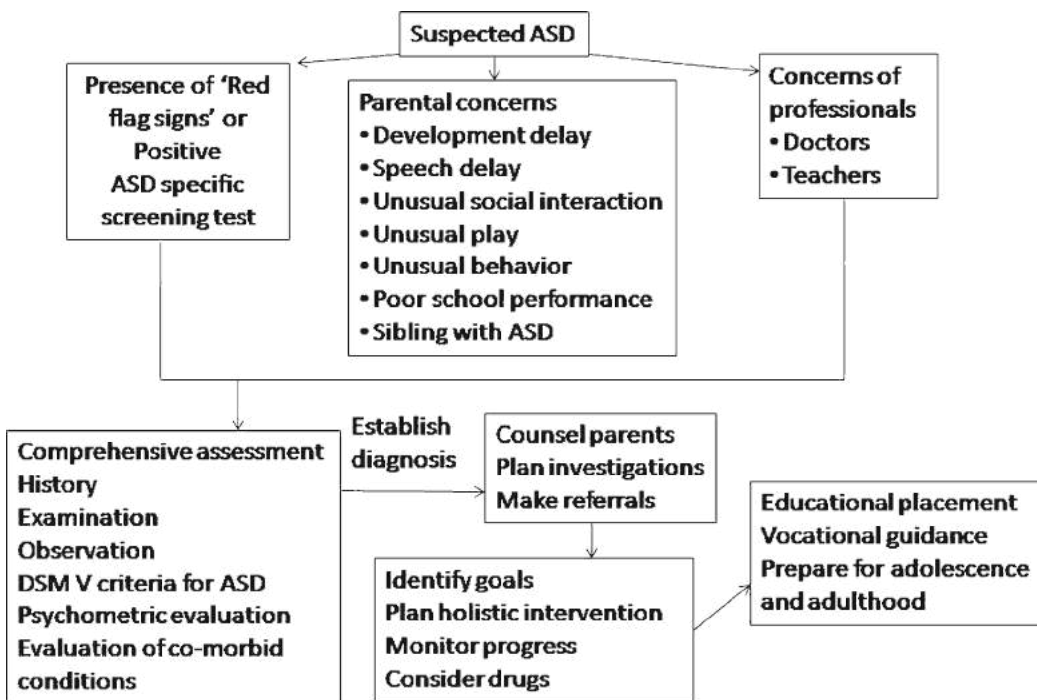
‘Red flags’ for Autism Spectrum Disorder in 12- to 18-mo-old children

| Domain | Characteristic features |
|----------------------|---|
| Social communication | <ul style="list-style-type: none"> • Regression or loss of social-emotional connectedness • Reduced or atypical character of any of the following <ul style="list-style-type: none"> - Eye gaze and shared or joint attention - Sharing of positive (more impaired) or negative emotions - Social or reciprocal smiling - Orienting when his or her name is called - Poor eye contact, or decreased use or understanding of facial expressions and gestures |
| Language | <ul style="list-style-type: none"> • Regression or loss of speech • Delayed or atypical character of any of the following <ul style="list-style-type: none"> - Babbling, particularly reciprocal vocalization (back-and-forth) - Language comprehension and use - Development of gestures (e.g., pointing, waving) |
| Play | <ul style="list-style-type: none"> • Minimal interest in age appropriate toys • Unusual manipulation or repetitive banging or spinning of objects • Reduced interest in lap games like <u>peeka-boo</u> or pat-a-cake |

Comorbid condition

- 1) Cognitive Impairment: in 50-70%
- 2) Epilepsy: in 25-30%
- 3) Psychiatric illnesses: Attention Deficit Hyperactivity disorder, Depression, Anxiety and Obsessive-Compulsive disorders.
- 4) Feeding Disturbances: decreased chewing, poor food acceptance, extreme food selectivity, food aversion or meal time misbehaviour.
- 5) Gastrointestinal Illnesses: Frequent vomiting, gastroesophageal reflux, recurrent diarrhea, chronic constipation and recurrent abdominal pain.
- 6) Sleep disturbance: poor sleep or loss of normal previously acquired sleep pattern
- 7) Dysmorphism: in 18-20%

Algorithmic approach to management of a child with suspected Autism Spectrum Disorder



- Diagnosis of Autism is mainly clinical.
- All boys with ASD require testing for Fragile X Syndrome.

Functional levels

ASD LEVEL 1 Requiring Support

- Difficulty initiating social interactions
- Problems with planning and organization at times



ASD LEVEL 2 Requiring Substantial Support

- Social interactions are limited to narrow special interests
- Frequent restrictive and repetitive behaviors



ASD LEVEL 3 Requiring Very Substantial Support

- Severe Deficits with Verbal and Non-Verbal Communication
- Narrowly Focused and Great Distress When Changing Behaviors or Focus



DSM - V Diagnostic criteria

| DOMAIN | CRITERIA |
|--------|---|
| 1 | Impairment in social interaction and communication Subcriteria (impairment in all 3 required) <ul style="list-style-type: none">• social and emotional reciprocity• nonverbal communication• creating and maintaining relationships |
| 2 | Abnormal and repetitive behaviour, interests, and activities Subcriteria (2 of 4 required) <ul style="list-style-type: none">• stereotyped speech and behaviour• resistance to change• fixated interests• hypersensitivity or hyposensitivity to sensory input |
| 3 | Presentation in early childhood development |
| 4 | Limited and hindered everyday activities |

DO YOU KNOW???...???

Satoshi Tajiri, The creator of Pokemon was autistic.



Management

Multi-disciplinary team comprising of :

- 1) Clinician (experienced pediatrician, general practitioner or psychiatrist)
 - 2) Developmental pediatrician or clinical psychologist- for evaluation of:
 - Core symptoms: with internationally recommended tools like Autism Diagnosis Interview-Revised (ADI-R) , Autism Diagnosis Observation Schedule General (ADOS-G) . Two Indian diagnostic tools: 1) INCLIN: ASD, Consensus Clinical Criteria 2) Indian scale for assessment of Autism
 - The Childhood Autism Rating Scale (CARS): for assessment of severity
 - Cognitive function: Mullen's scale and Leiter's scale
 - Adaptive function: Vineland Adaptive Behavior Scale (second edition)
- 3) Pediatric neurologist/ Geneticist
 - 4) Occupational therapist: develops skill based training and provides Sensory Integration (SI) therapy
 - 5) Speech-language therapist
 - 6) Behavior analyst and therapy provider
 - 7) Special educator
 - 8) Child and adolescent psychiatrist
 - 9) Psychiatric social worker
 - 10) Drug therapy: not curative
 - Indications : only given when behavior abnormality is refractory or when they endanger the child
 - Atypical antipsychotics: risperidone, aripiprazole
 - Newer treatment- intranasal oxytocin is under studies
 - 11) Parental counselling

Planning Intervention

- Individual plan should be considered
- For Young Children: home-based developmental models incorporated into the daily routine, consisting behavioral modification and teaching strategies. Maximal benefit is seen with intensive intervention (15 to 25 hr per wk)
- For Older Children: Applied Behavior Analysis (ABA) - first target behaviour is identified and then interventions for its modifications are started
- Teaching models like 'Floor-time model', and Training and education of autistic and related communication handicapped children (TEACCH) can be used.

Applications for support of Autism

- 1) Learn Autism
- 2) CogniAble
- 3) Mom's Belief
- 4) Leeloo AAC

Link of NGO's

- <http://www.autism-india.org/identifying-autism.php>
- <http://sopan.org>
- <http://www.vatsalyam.in/>
- <https://www.tanayfoundation.org/>
- Prayas autism school, Rajkot

Human Rights

- In May 2014, the 67th World Health Assembly adopted a resolution entitled Comprehensive and coordinated efforts for the management of autism spectrum disorders (ASD), which was supported by more than 60 countries.
- In India , autism is now included under disability act

References:

- Mukherjee, Sharmila Banerjee (2017). Autism Spectrum Disorders — Diagnosis and Management. The Indian Journal of Pediatrics, 84(4), 307-314. doi:10.1007/s12098-016-2272-2.
- https://secureservercdn.net/104.238.68.130/545.e42.myftpupload.com/wp-content/uploads/2015/07/M-CHAT-R_F_Hindi.pdf
- https://www.cpqcc.org/sites/default/files/M-CHAT-R_F_1.pdf

World Immunization Week : 24-30 April



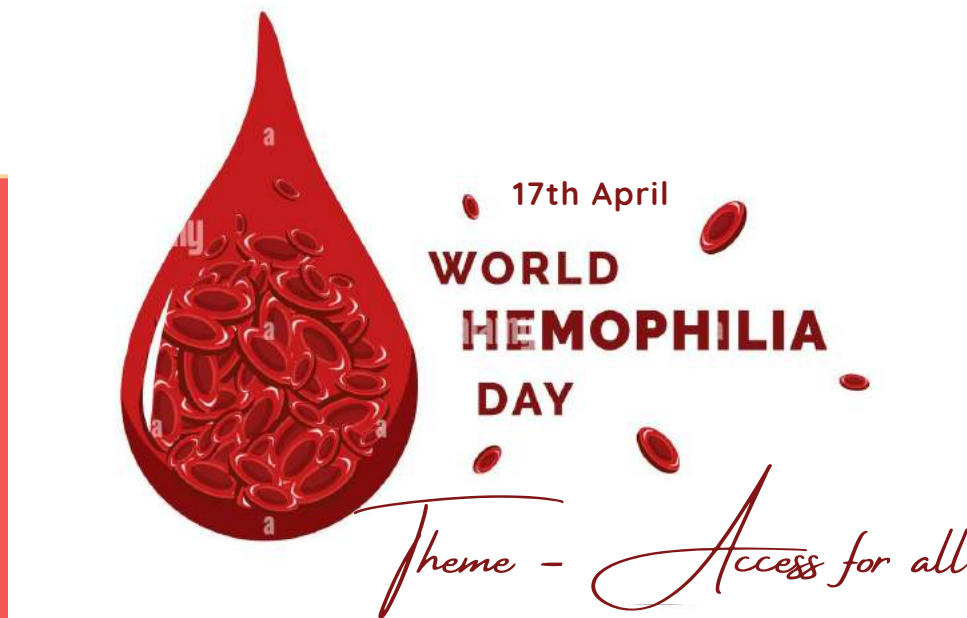
Immunization Programmes in India

| PROGRAM NAME | LAUNCHING YEAR | DETAILS OF COVERAGE |
|--|-----------------|---|
| Expanded Programme of Immunization (EPI) | 1978 | 30-35% for DPT3 |
| Universal Immunization Programme (UIP) | 1985 | 65% children in the first year of life |
| Mission Indradhanush | December 2014 | <p>First two rounds increased immunization rate by 6.5% per year. It had 5 phases</p> <ul style="list-style-type: none"> • Phase I - 201 districts • Phase II - 352 districts • Phase III - 216 districts • Phase IV - North-eastern states • Phase V - 190 low performing districts |
| Intensified Mission Indradhanush (IMI) - | October 8, 2017 | <p>Aimed to achieve at least 90% pan-India immunisation coverage by 2022.</p> <ul style="list-style-type: none"> • IMI 2.0 - December 2019 - March 2020 • IMI 3.0 - February 2021 - March 2021 • IMI 4.0 - From February 2022 |

Intensified Mission Indradhanush 4.0 launched during February 2022

- The IMI 4.0 will have three rounds and will be conducted in 416 districts (including 75 districts identified for Azadi ka Amrit Mahotsav) across 33 States and UTs.
 - In the first round (Feb-April 2022), 11 states conducted IMI 4.0. -These are Assam, Uttarakhand, Gujarat, Jammu & Kashmir, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim, Tripura and Chhattisgarh.
 - The others (22 states) will conduct the rounds from April to May 2022.
- These rounds of IMI 4.0 have been planned to catch up on the gaps that might have emerged due to the COVID-19 pandemic

The Full Immunization Coverage of IMI among children aged 12-23 months of age has increased from 62% (NFHS-4) to 76.4% (NFHS-5).



Update:

- Valoctocogene roxaparvovec (AAV5-hFVIII-SQ) is an adeno-associated virus 5 (AAV5)-based gene-therapy vector containing a coagulation factor VIII complementary DNA driven by a liver-selective promoter.
- An open-label, single-group, multicenter, phase 3 study in 13 countries from December 19, 2017 to November 15, 2019 was done to evaluate the efficacy and safety of valoctocogene roxaparvovec in men with severe hemophilia A, of age >18 years. Overall 134 patients received infusion of valoctocogene roxaparvovec and follow up was done as per plan. Mean factor VIII activity had increased by 41.9 IU/dl. Mean annual rates of factor VIII concentrate use and treated bleeding had decreased after infusion by 98.6% and 83.8% respectively. All participants had at least 1 adverse event and 22 participants had serious adverse events.

◦ Reference: N Engl J Med 2022;386:1013-25., DOI: 10.1056/NEJMoa2113708