Autism spectrum disorfer

Dr.Mansoureh Mirzadeh

Child & adolescent psychiatrist

Mashhad Medical sciences Islamic Azad university

- Autism spectrum disorder (ASD) is a common neurodevelopmental disorder abstract with reported prevalence in the United States of 1 in 59 children (approximately 1.7%).

- Standardized screening for ASD at 18 and 24 months of age with ongoing developmental surveillance continues to be recommended in primary care

- because ASD is common, can be diagnosed as young as 18 months of age, and has evidenced-based interventions that may improve function.

- ASD affects more than 5 million Americans, with an estimated prevalence of approximately 1.7% in children

- Direct and indirect costs of caring for children and adults with

ASD in the United States in 2015 were estimated to be $268 billion, more

than the cost of stroke and hypertension combined.

- The lifetime cost of education, health, and other service needs for an individual with ASD ranges from $1.4 to $2.4 million dollars, depending on whether he or she has any co-occurring intellectual disabilities.

PREVALENCE

- Because of the heterogeneity of symptoms and severity in ASD, it may be diagnosed in children at different ages
- What is reported is age at recognition of symptoms, not the actual onset.
- As a result, prevalence is more typically reported than incidence, reflecting rates of ASD in the population at a point in time.

prevalence of children with ASD has increased over time , This increase may be attributable to several factors , including:

- broadening in the diagnostic criteria with ongoing revisions of (DSM)
- increased public awareness of the disorder and its symptoms
- recommendations for universal screening for ASD
- increased availability of early intervention and school-based services for children with ASD.

- the increasing numbers of children with a diagnosis of ASD may reflect:
- diagnostic substitution,
- the recognition of ASD in children previously primarily diagnosed with intellectual disability
- a co-occurring genetic syndrome
- A true increase in the prevalence of ASD associated with other biological risk factors is also possible.
- Regional variation in prevalence may also reflect availability of services, local provider practices for ASD screening, educational policies, school and/or community resources

- **The CDC published data:**

- lower prevalence rate for diagnosis(1.34%) in children who are 4 years of age(approximately 30% less than that of children 8 years of age)
- later diagnosis of children with ASD may be attributable to average range cognitive abilities

- The National Survey of Children's Health (2011–2012) and the National Survey of Children with Special Health Care Needs (2009–2010) were analyzed for the age the parents reported diagnosis as well as for parent reported subjective severity.

- The minority of children were identified as having ASD before 3 years of age.
- Diagnosis later than 6 years of age was reported in one-third to half of children.
- Later age at diagnosis was associated with reported mild presentation.

CLINICAL SYMPTOMS

Although symptoms of ASD are neurologically based, they manifest as behavioral characteristics that present differently depending on age, language level, and cognitive abilities.

- Core symptoms cluster in 2 domains:

- social communication/interaction
- restricted, repetitive patterns of behavior),

Regressive Autism

- Approximately one-quarter of children with ASD will be reported to have a regression in language or social skills, most typically between 18 and 24 months of age
- The reason for this loss of previously acquired milestones is not yet known

- Although medical evaluation of loss of milestones is indicated, a history of regression in language and social interaction in children with ASD within the expected age range is not likely to be attributable to seizures or neurodegenerative disorders

- Note that the processes underlying regression are not yet well understood
- Current theories include synaptic "over pruning" in response to genetic factors.

- The DSM-5 notes that a diagnosis may be made at older ages,
- when the demands of the social or school environment may result in functional impairment.

C. Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities)

- Early primary caregiver report no longer essential
- Early Childhood" approximately age 8 and younger (flexible)

- The DSM-5 criteria have been shown to appropriately identify younger children and those with mild symptoms.
- These children with milder cognitive and adaptive symptoms may be the ones most likely to have significant change with early intervention services

- The DSM-5 includes course specifiers that help describe the variation in symptoms of individuals with ASD.

- ***Course specifiers include***:

- the presence or absence of intellectual impairment,
- language impairment,
- catatonia,
- medical conditions,
- known genetic or environmental etiologic factors.

- Specify if:

  - With or without accompanying intellectual impairment

  - With or without accompanying language impairment

  - Associated with a known medical or genetic condition or environmental factor (Coding note: Use additional code to identify the associated medical or genetic condition.)

  - Associated with another neurodevelopmental, mental, or behavioral disorder (Coding note: Use additional code[s] to identify the associated neurodevelopmental, mental, or behavioral disorder[s].)

  - With catatonia

روندهای ثبت

- ۱- مواردی از اختلال که همراه با یک بیماری شناخته شده ژنتیک ,طبی ,عامل محیطی یاهمراه یک اختلال رفتاری ,روانی یا رشدی –عصبی دیگر هستند بصورت (اختلال طیف اوتیسم مرتبط با «نام بیماری اختلال یا عامل») ثبت میگردد.
- ۲-میزان حمایت مورد نیاز در هریک از دو حوزه ی سایکو پاتولوژی (مثلا نیاز به حمایت شدید در نقایص موجود در ارتباط اجتماعی و نیاز حمایتی کم در مورد رفتارهای تکراری)
- ۳- همراه با نقصان هوشی یا بدون نقصان هوشی
- ۴- وجود یا عدم وجود اختلال زبانی
- اگر اختلال زبان وجود دارد باید سطح فعلی عملکرد کلامی ثبت گردد(مثلا همراه با تخریب زبانی _فقدان تکلم مفهوم «یا» همراه با نقایص زبانی –گفتار عبارتی)
- ۵- در صورت وجود کاتاتونی ,بعنوان کاتاتونی مرتبط با اختلال طیف اوتیسم ثبت می گردد

Prognosis

- The prognosis and trajectory of development for a young child diagnosed with ASD typically cannot be predicted at the time of diagnosis
- most children ($80%) who are diagnosed with ASD after a comprehensive evaluation at less than 3 years have retained their diagnosis
- It may be more difficult to recognize mild symptoms of ASD in children younger than 3 years of age, especially if they have average or above-average cognitive abilities.

- Approximately 9% of children who are diagnosed with ASD in early childhood may not meet diagnostic criteria for ASD by young adulthood.

Youth who no longer meet criteria for ASD are more likely to have:

- a history of higher cognitive skills at 2 years of age,
- to have participated in earlier intervention services,
- to have demonstrated a decrease in their repetitive behaviors over time

- A change in clinical diagnosis (eg, to ADHD or obsessive-compulsive disorder [OCD]) is more likely in children who were diagnosed with ASD ***before 30 months*** of age

SCREENING AND DIAGNOSIS

- ***Children Younger Than Age 18 Months***
  - M-CHAT
  - Autism Diagnostic Inventory-Revised (ADI-R),
- ***Children Ages 18 to 30 Months***
  - M-CHAT
  - Childhood Autism Rating Scale, Second Edition (CARS-2)
- ***Children Older Than 30 Months***
  - The Social Communication Questionnaire (SCQ)
  - ADOS-2

Barriers to Identifying Risk for ASD

- Children with milder symptoms and/or average or above-average intelligence may not be identified with symptoms until school age, when differences in social language or personal rigidities affect function.

- Some children who are later diagnosed with ASD are initially believed to have precocious language ,reading, or math skills, and it is not until the social demands of school that the social language symptoms become problematic
- Specific coexisting conditions (For example, 1 study revealed that children who were initially identified with ADHD in primary care were diagnosed with ASD 3 years later compared with children who did not have earlier symptoms of ADHD

Evaluation of Co-occurring Developmental Conditions

- ***Cognitive Testing***: determine developmental levels of younger children and IQ in children older than 3 years.
- ***Language Testing:***
- ***Adaptive Function Testing:*** Vineland Adaptive Behavior Scales and the Adaptive Behavior Assessment System
- ***Motor Assessment***
- ***Sensory Assessment: Hearing***
- ***Sensory Assessment: Vision***
- ***Sensory Assessment: Sensory Processing***

- Children with a diagnosis of ASD should be assessed for potential etiology and common coexisting medical conditions When a specific syndrome or metabolic disorder is suspected,
- the clinician should proceed with the appropriate targeted testing or referral to a pediatric geneticist or neurologist
- The presence of dysmorphic features or intellectual disability is generally associated with increased likelihood of finding a genetic abnormality

ETIOLOGIC EVALUATION

Medical Workup of the Child With ASD

- Genetic Testing
- chromosomal microarray (CMA) the most appropriate initial test for etiologic evaluation of children with ASD

- Whole exome sequencing (WES)
- A genetic counselor is helpful in explaining the reason for testing as well as the results.

- Neuroimaging Incidental findings are common in neuroimaging studies obtained in the workup of children diagnosed with ASD but rarely provide etiologic information or require intervention

- The need for clinical MRI should be directed by a history and physical examination

- ***MRI may be indicated in the evaluation of***:
  - atypical regression,
  - microcephaly,
  - macrocephaly,
  - seizures,
  - intracranial manifestations of genetic disorders,
  - abnormal neurologic examination,

- Imaging technology used to examine brain structure and function provides valuable insight into the neurobiology of ASD in ***research settings*** and may lead to **useful clinical applications in the future**

Metabolic Testing

- *The yield of routine metabolic testing for children with ASD is low and not recommended for regular use*

- fasting plasma amino acid levels,
- urine organic acid levels,
- Acylcarnitine metabolite levels
- and other testing for specific metabolic disorders.

- Children who present with motor delay should be evaluated with :
- Creatine kinase
- thyroid-stimulating hormone testing

- There is no evidence at this time for routine testing of hair, blood, or urine for environmental toxins or heavy metals outside of laboratory screening for lead exposure

EEG

- EEG is not recommended as a routine baseline evaluation in the absence of clinical concern about seizures,
- ***suggest EEG if:***
- atypical regression,
- Other neurologic symptoms on history examination

- **Late or atypical loss of language**, as might be observed in ***electrical status epilepticus of sleep*** with loss of language, should be evaluated with an ***overnight EEG***

The Biology of ASD

- Genetics and ASD
- Environmental Exposures
- Immunologic Exposures
- Epigenetics

- ***Genes*** that contribute to ASD are involved in a variety of biological functions, with convergence on aspects of brain development and function, including synaptic structure and function, intracellular signaling, transcription regulation, and chromatin remodeling.

- ***Environmental factors*** may present independent risk to prenatal brain development or may affect gene function in individuals with genetic predisposition

- ***The pathogenic role of circulating maternal antibodies*** directed to fetal brain tissue and the potential value of maternal antibody panels as biomarkers of ASD are currently being studied

- ***Epigenetic modifications,*** such as DNA methylation and posttranslational histone modification, produce heritable changes in gene expression that do not involve a change in the DNA sequence.

Regressive Autism Spectrum Disorder

- Immune dysfunctions including inflammatory and autoimmune processes

- (a) elevated levels of circulating cytokines;
- (b) B-cell activation which has been suggested to trigger the onset of regression,
- (c) auto-antibodies against fetal brain in mothers of patients with regression
- ***HLA haplotype may exert a protective effect against regression***
- secreted amyloid precursor protein-α (sAPPα), and secreted amyloid precursor protein-β (sAPPβ) in children diagnosed with RA levels were significantly higher in children with RA than in children with NRA or in TD controls
- triggers inducing inflammatory conditions in specific time windows in this clinical subset

pediatric acute-onset neuropsychiatric syndrome (PANS)

- refers to the sudden onset of neuropsychiatric symptoms that are triggered by several infectious and non-infectious factors
- anti-neuronal antibodies in PANS triggered by GAS infection,
- we lack models for identifying pathophysiological mechanisms of PANS associated with other infectious and noninfectious triggers

Autoimmune Encephalitis and Autism Spectrum Disorder

- The resultant cognitive, psychiatric and neurological symptoms that follow AE have also included ASD or autism-like traits and states
- AE may either act as a potentially causative agent for ASD, and/or produce symptoms that could easily be mistaken for or misdiagnosed as autism
- Where autism is accompanied by regression and atypical onset patterns, it may be prudent to investigate whether a differential diagnosis of AE would be more appropriate.

Thank You for Your Attention