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Clinical Spectrum and Associated Features of Autism Spectrum Disorders: Experience in A Tertiary Level Hospital

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Abstract:

Background: *Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder with a heterogeneous and complex presentation of clinical symptoms related to social communicative and interactive behavior. Thus, the aim was to evaluate the clinical features and associated condition of autism spectrum disorder in Bangladeshi children.*

Materials & Methods: *A cross-sectional study was done in Out-patient department of Paediatric Neurology, Bangabandhu Sheikh Mujib Medical University, Dhaka from January 2023 to June 2023 Children age 3 to 10 years who satisfied the inclusion and exclusion criteria and met the diagnostic criteria (DSM-V) of ASD were enrolled in this study. In all confirmed cases, clinical features and co-occurring condition were evaluated. Data was collected by a structured questionnaire supplied by department of Pediatric Neurology. Informed written consent was taken from all legal guardians.*

Results: *A total of 75 children of 3-10 years were included. Mean age was 4.27±1.99 with male predominance. Among the associated features; pointing, social interaction, response to call and eye contact were absent in 94.67 %, 97.33%, 92% and 86.67% cases respectively. In this study more than three fourth of studied children were presented with speech delay (80%) and more than half of the children presented with speech regression. ADHD (46.67%), bruxism (25.33%) constipation (22.67%), epilepsy (5.33%), febrile seizure (9.33%) and gratification syndrome (12%) were mostly observed in ASD children.*

Conclusion: *In our study, more than one-third of studied children had ADHD and sleep disturbance followed by bruxism, epilepsy, febrile seizure, gratification syndrome and constipation as other associated features.*

Keywords: **Autism spectrum disorder (ASD), associated features**

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Introduction:

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder. 0It is characterized by a qualitative impairment in verbal or message exchange and reciprocal understanding. ASD also includes confined, monotonous, and stereotypical interests and behaviors[1].

The Autism and Developmental Disabilities Monitoring Network reports that in 2000, 1 in 150 children were reported to have an ASD[2]. The total prevalence rate of ASD in Bangladesh is 1.55/1000; in rural areas, it is 0.68/1000, while in the city of Dhaka, it is 30/1000[3]. Autism usually appears in children within first three years of life during maximum neuronal development of brain. Number of autisms is increasing day by day worldwide but still risk factors of autism is not clearly identified.

Autism often manifests as linguistic and social impairment in the first three years of life; occasionally, symptoms are mild and detected later in childhood[4]. Children under the age of three can be diagnosed with ASD in Bangladesh using the most widely used screening tool, the M-CHAT (Modified Checklist for Autism in Toddlers). If there is a clinical suspicion of ASD, the child is assessed using a different test (e.g., DSM-V and ADOS- Autism Diagnostic Observation Schedule). It is important to note that children with ASD may frequently have both epilepsy and intellectual disability (ID), or both[5-7]. It's unclear if there is a unique relationship between these three variables (ASD, epilepsy, and ID) and whether this association is random. Early identification of an ASD is crucial, as is the start of focused therapy.

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A number of studies have been conducted recently to investigate the behaviors of infants and toddlers with ASD using parental reports, early home videos, screening tools, developmental surveillance of siblings[8]. Different data regarding ASD are reported about the age at onset of the early signs: for example, the first decline of social interactions may occur between 2 years to 2 year 6 months[9]; children who are at risk for ASD may experience more changes in their sleep, eating, and temperament during the first year of life[10513]. Regression in language and social interaction around 16–20 months of age is sometimes a defining feature of the onset mode[14].

According to many studies, ASD diagnosed before the age of three had the least stable diagnoses and the most positive outcomes[15,16]. They explain that early diagnosis and early intervention of ASD in children and absence of associated comorbid conditions have a greatest benefit regarding the disappearance of core features of ASD. Therefore, it could be possible to evaluate the clinical features and associated features of autism spectrum disorder in Bangladeshi children.

Materials & Methods:

This cross sectional study was done in Out-patient department of Paediatric Neurology, Bangabandhu Sheikh Mujib Medical University, Dhaka without interrupting standard care practice of the department. The duration of the study was 6 months from January 2023 to June 2023. Children age 3 to 10 years who satisfied the inclusion and exclusion criteria and who were diagnosed as ASD according to DSM -V criteria were selected and enrolled in this study. All syndromic children including down syndrome and fragile-X syndrome, cerebral palsy, neurometabolic disorders were excluded from this study. In all confirmed cases of ASD age, sex, social status, parents' education, birth history, developmental history, clinical manifestations and associated features were evaluated in out-patient department of Paediatric Neurology, BSMMU. ADHD was diagnosed according to DSM -V criteria. Data was collected by a structured questionnaire supplied by department of Pediatric Neurology. Informed written consent was taken from all legal guardians. Data analysis was done by Statistical Package for Social Science (SPSS), version-22. Results were shown in text and tables. The study was not associated with any social or legal risk to the subjects or any distortions of privacy.

Results:

The distribution of study participants according to particulars of patients' is described in table I . It was observed that more than three fourth 62 of patients were aged ≤5 years. The mean age was 4.17±1.78 years ranged from 3 to 10 years. Majority of ASD cases were found male, from urban & middle-class family. It was observed that almost three fourth 59 of babies' mode of delivery was LUCS. Perinatal asphyxia was present among thirteen (17.33%) patients and 8(10.67%) had low birth weight.

Table I

Distribution of study participants by baseline features (N=75)

Particulars of patients	Number of patients (n)	Percentage
Age (years)		
≤5	62	82.67
>5	13	17.33
Mean±SD	4.27±1.99	
Range (Min-Max)	3-10	
Sex		
Male	58	77.33
Female	17	22.67
Residence		
Rural	13	17.33
Urban	62	82.67
Social Class		
Lower	9	12
Middle	45	60
Higher	21	28

It was also observed that 6 (7.5%) of cases had parental consanguinity. History of IVF born baby was 2(2.67%) and ASD affected another sib was found in 1(1.33%) case.

The mean of fathers age was 36.6±5.57 years and ranged from 25 to 58 years. The mean of mothers age was 29.92±5.82 years ranged from 20 to 45 years. Almost half of the fathers (53.33%) had completed graduation and above. More than one-third of mothers (37.33%) had completed graduation and above. More than one-third of the families' (40%) monthly income ranged from 25,000 -50,000 Tk.

The distribution of study population according to clinical features is presented in table II. Nearly three fourth of studied children had speech delay and speech regression found in more than half of the cases. Other common clinical presentations were lack of social interaction, absent eye contact, non-responsive to call, absent pointing and abnormal stereotyped hand movement.

Table-II

Distribution of study population by clinical presentation (N=75)

Clinical manifestation	Number of patients (n)	Percentage
Speech delay according to age		
Present	60	80
Absent	15	20
Speech regression		
Present	44	58.66
Absent	31	41.33
Stereotyped hand movement		
Present	62	82.6
Absent	13	17.3
Pointing		
Present	4	5.33
Absent	71	94.67
Social interaction		
Present	2	2.67
Absent	73	97.33
Respond to call		
Present	6	8
Absent	72	92
Eye contact		
Present	10	13.33
Absent	65	86.67

It was seen that more than one-third of the patients had ADHD and sleep disturbance. Others were bruxism, constipation, epilepsy, febrile seizure, gratification syndrome in cases (Fig-1).

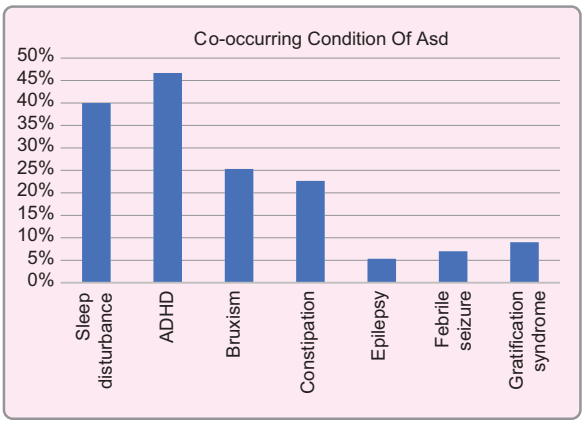

Figure 1: *Distribution of study participants according to their associated condition*

Discussion:

Studying the clinical spectrum of ASD and its associated conditions are vital to choose appropriate management plan for the patient. The observations of this research will help to the overall perception of associated features and utilization of health services for children with ASD. This study aims at determining the presence of associated situations of Autism among children referred to the outpatient clinic of Neurodevelopmental disorders.

In this study , most of the patients were of <5 years (62/75; 82.67 %), mean age was 4.27±1.99 with male predominance . Dizitzer Y et al. & Mpaka DM et al. also found same feature in their study[17,18]. 82.67% patients were from urban area and most of them belonged to middle class family.In our study, 17.33% cases had history of perinatal asphyxia, Fezer et al., 2017 also depicted the same feature. In their study perinatal asphyxia was found in 8% cases. Low birth weight is a significant ASD risk factor. In our study 10.67% patient had low birth weight. Fezer GF et al found 42.6% cases having low birth weight in their study[19]. Lampi et al also some studies that showed association of low birth weight with ASD in their study[21].

According to earlier research, there is a higher chance of autism in children born to older parents. In our study it was found that mean age of fathers and mothers were 36.6±5.57 and 29.92±5.82 years respectively. Some studies found the association of higher parental age with ASD[21]. But Wu et al. showed that siblings of younger fathers had a higher risk of autism and lower cognitive scores, while siblings of older parents had higher cognitive scores[22].

Liang liu et al. have looked into the relationship between the use of assisted reproductive technology (ART) and the risk of autism spectrum disorder (ASD) in offspring, but the findings are still inconclusive. In our research, only 2 patients were born of ART. It was found ART as an important risk factor for development of ASD among the babies in their study[23].

Recurrence of ASD within the family is a burning issue. We found only one patient had affected sibling. HANSEN et al. told that an older sibling with ASD was found to be associated with an 8.4-fold increased risk of ASD compared to the risk in unaffected families²t . Recurrence risk for cousins was found to be two times higher. The risk of recurrence of ASD in siblings varied significantly based on gender, as well.

Among Bangladeshi population, consanguinity is relatively common. In our observation only 8% cases had consanguinity. Pickels et al, said that ASD cases had significant level of consanguinity when compared with control[24].

Numerous medical and psychological conditions, including speech difficulties, sleep disorders, epilepsy, food intolerance, gastrointestinal disorders, mood disorders, aggressive and self-injurious behaviors, are co-occurring conditions with ASD. Regression in speech or language development is one of the first indications of autism. Since the presence of speech before the age of five is the strongest predictor of better outcomes in autism, it has become increasingly important to identify the neural signature of this deficit in very young children²u . In our study 80% children had speech delay, while 58.67 had speech regression.

Pointing and social interaction were absent in 94.67% and 97.33% cases respectively. Only 8% of the patients responded to call and eye contact was present among 13.33% cases.

In our study sleep disturbance was found among 40% cases. Koo et al. showed 36.7% of ASD children had any one type of the sleep disturbances. Anxiety, depression, mood swings, bruxism, gratification disorder, hyperactivity, tantrums, oppositional behavior, physical aggression, irritability, self-injury, and inattention have all been associated with poor sleep. It was observed in our study that 25.33% patients had bruxism 12% patient had gratification syndrome[25]. Granja et al. showed ASD group was prone to develop bruxism than the control group (OR: 3.80; 95% CI: 2.06-7.01) although the significance was “very low” for the occurrence of bruxism in ASD[26].

ADHD is frequently associated with autism. The diagnosis is sometimes difficult to make when it is associated with autism. In this study; ADHD was associated among 46.67% participants. It is higher than Mpaka et al. showed in their study in which ADHD was evident in 14 .5% cases; but lower than those of Leyfer et al and Gillberg et al who described respectively 55% and 65 to 80% of cases.

Constipation, which is four times more common in children with autism spectrum disorders (ASD) than in children without it[27]. It is one of the gastrointestinal symptoms that kids on the spectrum frequently experience. In our study, constipation was observed in 22.67% cases. According to Pang et al., almost 23.7% cases with constipation among ASD children. Afzal et al. found that 36% of autistic children had chronic constipation[28].

Epilepsy was present among 5.33% cases in our study that is lower than Mpaka et al. showed in their study in which frequency of epilepsy 72.50%[18] . Febrile seizure is common. We found 9.33% cases had experienced febrile seizure.

Conclusion:

In our study, more than three fourth of studied children had speech delay, lack of social interaction, absent eye contact, no response to call, absent pointing and presence of abnormal stereotyped hand movement. Among associated features, more than one-third of ASD children had ADHD and sleep disturbance followed by bruxism, epilepsy, febrile seizure, gratification syndrome and constipation.

Conflict of interest: There was no conflict of interest.

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