Doi: 10.32677/IJCH.2017.v04.i03.021

Original Article

Clinical and developmental profile of children with Autism

Sameer Prakash Mhatre, Sanjay Natu, Sarika Londhe, Sanaa Khan

From Department of Paediatrics, Smt. Kashibai Navale Medical College and General Hospital, Narhe, Pune, Maharashtra, India

Correspondence to: Sameer Prakash Mhatre, Smt. Kashibai Navale Medical College and General Hospital, Narhe, Pune - 411 041, Maharashtra, India. Phone: +91-9823833235. Email: sameerjjh@yahoo.com.

Received – 30 January 2017 Intial Review – 27 February 2017 Published Online – 06 June 2017

ABSTRACT

Background: Autism spectrum disorders (ASD) are neurodevelopmental disorders characterized by deficits in reciprocal social interaction as well as communication and a restrictive repertoire of activities. Indian studies on this subject have been few. **Objectives:** The aim of this study was to assess clinical characteristics of children with ASD in Indian scenario. **Methods:** We conducted a cross-sectional observational survey in special schools involving diagnosed autistic children, and their parents using a pretested standardized questionnaire based on diagnostic and statistical manual IV criteria. **Results:** Males (n=25) outnumbered the females (n=11). Only 6 cases (16.7%) were diagnosed as autistic before 3 years of age. 39% cases were detected between ages of 3 and 4.11 years. 22% cases were diagnosed in each of 5-6.11 years and 7 years and above category. The must watch behavior characteristics that our study found were impaired eye to eye gaze, impaired peer relationships, poor facial expressions, language delay, lack of pretend play, and inflexible adherence to rituals. **Conclusion:** Clinicians should be educated and encouraged to make timely diagnosis of ASD so as to initiate early interventions for these children.

Key words: *Autism, Autism spectrum disorders, Behavior, Communication, Diagnosis*

Autism spectrum disorders (ASD) are a complex group of developmental disorders characterized by qualitative impairments in communication skills, social interaction and imagination, stereotyped repetitive behaviors, and restricted interests [1]. Children with autistic spectrum disorders differ widely from each other in individual behavioral mannerisms and cognitive abilities and in severity of the presentations.

Autism was first described by Leo Kanner way back in 1943 in his classic report of 11 children in a landmark article "Autistic disturbances of affective contact" [2]. Since then ASD has evolved over these many years. The American Psychiatric Association's diagnostic and statistical manual (DSM) provides standardized criteria to help diagnose ASD. This has been used worldwide to identify cases of ASD.

It has been found that autism is a significant child health problem worldwide as well as in India, and there is a need for definitive research in ASD. Early identification of children with ASD is necessary as early intervention programs have resulted in significant improvement in their behavior functioning and cognition [3]. There is very little research available from India and other developing countries on autism [4]. The aim of this study was to assess developmental and clinical characteristics of children with ASD in Indian scenario.

METHODS

A cross-sectional observational questionnaire-based survey was conducted by us in special schools over a period of 2 years involving diagnosed autistic children and their parents. All the children from 2 to 18 years of age, already diagnosed as autism by DSM IV criteria were included in this study. Children with a diagnosis of autism by other than DSM IV criteria were excluded from the study. The study was approved by the Institutional Ethics Committee. After obtaining an informed consent, parents of children who were included in the study were interviewed using a standardized questionnaire based on "autism diagnostic interview - Revised" [5]. A detailed history of natal events and developmental milestones was taken. Another relevant information pertaining to diagnosis was also included in the study. No examination of the children was performed.

A total of 36 children were included in our study. The children that were included were already diagnosed cases of autism either by pediatric neurologist or by developmental pediatrician by DSM IV criteria. Out of 10 children that were excluded from our study, 8 children did not fulfill DSM IV criteria for ASD and 2 parents did not participate in complete interview. The data collected from questionnaire and history was analyzed.

Table 1: Demographic characteristics

Characteristics	Sub group	Number (%)
Age	<5.0 years	3 (8.3)
	5-7 years	16 (44.4)
	8-10 years	6 (16.6)
	11-13 years	6 (16.6)
	14-16 years	5 (13.8)
Sex	Male	25 (69.4)
	Female	11 (30.6)
Socioeconomic status	Upper class	4 (11.1)
	Upper middle class	30 (83.3)
	Lower middle class	2 (5.6)
Gestational age	Pre term	1 (2.8)
	Full term	34 (94.4)
	Post term	1 (2.8)

Table 2: Age at which abnormality was detected by parents

Abnormality	Age of detection	Number of cases (%)
Abnormal behavior	1-2 years	13 (36.1)
	2-3 years	23 (63.9)
Decreased eye to eye contact	1-2 years	13 (36.1)
	2-3 years	21 (58.3)
Impaired facial expressions	1-2 years	10 (27.8)
	2-3 years	16 (44.4)
Impaired peer relations	1-2 years	12 (33.3)
	2-3 years	18 (50)
Impaired pointing to objects	1-2 years	6 (16.7)
	2-3 years	24 (66.7)

RESULTS

Mean age of our study group was 8.5 years (standard deviation 4.1). Males (n=25) outnumbered the females (n=11) as seen in Table 1. Most of the children were from upper middle class (80%) as per modified Kuppuswamy classification for socioeconomic scale. 34 children were born full term (94%) and 24 were born of normal vaginal delivery (67%) not requiring any resuscitation. 8 children (22%) were born of cesarean section and 4 required instrumental assisted delivery. Only 3 had required NICU admission. Of these, 2 were admitted for respiratory distress at birth and 1 for preterm care. As seen in Table 2, abnormal behavior in the children was noticed by 64% of the parents between 2 and 3 years of age and by 36% parents between 1 and 2 years of age.

Only 6 cases (16.7%) were diagnosed as autistic before 3 years of age. 39% cases were detected between ages of 3 and 4.11 years. 22% cases were diagnosed in each of 5-6.11 years and 7 years and above category. Only 3 children were diagnosed as autistic by pediatricians (8%). 22 children were diagnosed by pediatric neurologist while 10 children were diagnosed by developmental pediatrician. 1 case was detected by trained teacher at special school and later assessed by developmental pediatrician. The most common other diagnosis offered was mental retardation in 8 cases (22%) and attention deficit hyperactive behavior in 3 cases (8%).

Table 3: Distribution of behavioral abnormalities

Abnormality	Number of cases (%)
Language delay	31 (86.1)
Lack of language	01 (2.7)
Absent pretend play	28 (77.7)
Conversational difficulties	24 (66.7)
Repetitive Language	13 (36.1)
Hand flapping	15 (41.7)
Preoccupation with objects	09 (25.0)
Follows same rituals	29 (80.6)

Table 4: Distribution of characteristics of diagnosis

Diagnosis aspect	Details	Number of cases (%)
Age of diagnosis	<3.0 years	6 (16.7)
	3.0-4.11 years	14 (38.9)
	5.0-6.11 years	8 (22.2)
	>7.0 years	8 (22.2)
Diagnosed by	Pediatrician	3 (8.3)
	Pediatric neurologist	22 (61.1)
	Development pediatrician	10 (27.8)
	Trained teacher	1 (2.8)
Other diagnosis offered to parents before confirmation of ASD	Mental retardation	8 (22.2)
	ADHD	3 (8.3)

ASD: Autism spectrum disorders, ADHD: Attention deficit hyperactivity disorder

Qualitative impairment in social interactions: 34 (95%) children had been observed to have marked impairment in eye to eye gaze between 1 and 3 years of age. Impaired peer relationships and poor facial expressions were seen in 83% and 72% children, respectively, in 1-3 years age group. One more feature noted in our study was that 83% children had impaired pointing to objects in 1-3 years of age.

Qualitative impairment in Communication: 86% children in our study had delay in language milestone as a feature while 67% children had impairment inability to initiate or sustain conversation. 78% children had a lack of pretend play.

Restricted and stereotyped behavior: 15 children (42%) had repetitive motor mannerisms like hand flapping or twisting movements and 29 (81%) showed inflexible adherence to specific rituals (Table 3).

DISCUSSION

There has been a documented increase in the prevalence of autism worldwide [6,7]. Honda et al. reported cumulative incidence up to 5 years of age of childhood autism as 27.2/10,000 calculated among a birth cohort for four successive years [8]. Recent reviews of studies on ASD have reported increasing incidence of autism and the current median ASD prevalence estimate to be around 62 in 10,000 [9]. Although there is not much data available from India regarding prevalence rates of autism, authors of recent case series have stated that autism is not uncommon in India [10]. The diagnosis of autism is many times missed due to insufficient knowledge about

ASD among health professionals [11]. According to a recent survey, the prevalence of autism in India is around 1 in 250 [9].

Our study depicted male preponderance, male: female ratio being 2.3:1. Similar ratio of 2.5:1 was reported by Honda et al. in 2005 [8]. Most of the other studies have shown this male dominance. This is being attributed to possibility of androgen exposure to prenatal brain. 80% of children in our study were from higher middle class. This could be explained by the fact that higher class have better affordability and access to best of health-care facilities and special schools. Our study could not depict any association between gestational age and development of autism which is similar to most of the other studies.

Our study confirmed the must watch behavior characteristics in children with ASD which have been noted in previous studies, viz., (1) impaired eye to eye gaze, (2) impaired peer relationship, (3) poor facial expressions, (4) delay in language milestone, (5) lack of pretend play, and (6) inflexible adherence to rituals. Children with ASD are content being alone, rarely making eye contact [12]. Delay in language milestone, impairment of verbal and non-verbal communication has been seen in children with ASD. Children with ASD may not have clear or functional speech and may be poor in communication [13]. Studies have shown that behaviors that consistently differentiate ASD children from those with non-autism developmental delays are eye contact, affect sharing, social referencing, and joint attention. [14]. The previous studies have demonstrated stereotypical behavior, unusual preoccupations, hand and finger mannerisms which have been seen in our study [15].

Our study showed that 94% children were diagnosed after 3 years of age. In India, most of the children with ASD are diagnosed between 3 and 6 years of age [16,17]. A number of factors are responsible in this delay including limited knowledge of ASD among physicians and lack of awareness regarding diagnostic ASD instruments for young children. This results in delayed intervention. In autistic children, interventions should be started as early as possible, before the change from the normal routine of development has progressed too far. Early tackling can improve their communication skills and deviant behaviour. Another interesting feature which our study pointed was only 8% of cases were diagnosed by pediatricians suggesting their poor awareness of autism and DSM criteria.

This study had a small sample size as compared to other international studies; hence, a study with a larger sample size would definitely help in establishing the clinical spectrum of ASD. Furthermore, our study did not focus on the management, follow-up and improvement of the subjects.

CONCLUSION

Our study depicts that behavioral characteristics of autism evolve over the first 3 years of age in the majority of autistic children. Hence, pediatricians should be educated regarding the early markers and encouraged to make a timely correct diagnosis. Increased awareness for early identification of features of autism among parents and timely referrals by clinicians would enable ASD children to enroll in intervention strategies earlier, resulting in better outcomes.

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Funding: None; Conflict of Interest: None Stated.

How to cite this article: Mhatre SP, Natu S, Londhe S, Khan S. Clinical and developmental profile of children with autism. Indian J Child Health. 2017; 4(3):364-366.