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ORIGINAL ARTICLE

Assessment of autism spectrum disorder in children

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ABSTRACT:

Background: Autism spectrum disorder (ASD) is a category of neurodevelopmental disorders characterized by social and communication impairment and restricted or repetitive behaviors. The present study was conducted to assess autism spectrum disorder (ASD) in children. **Materials & Methods:** 25 autistic children of age ranged 2-15 years of both genders was taken and 25 controls were also recruited. In all, childhood autism rating scale (CARS) autism severity rating scorings were performed and categorized into mild, moderate and severely autistic. **Results:** Age group 2-5 years had 8 cases, 5-10 years had 7 and 10-15 years had 10 cases. Common symptoms were poor social interaction in 45%, stereotyped behavior in 30%, poor eye contact in 92%, global developmental delay in 14% and attention deficit hyperactive disorder (ADHD) in 6%. 34% gave history of seizures and 30% were on antiepileptic medications. The difference was significant (P< 0.05). CARS score in group I was 34.2 and in group II was 12.3. The difference was significant (P< 0.05). **Conclusion:** Most common symptoms found in autism children were poor social interaction, stereotyped behavior, poor eye contact, global developmental delay and attention deficit hyperactive disorder.

Key words: Autism, attention deficit, behavior

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INTRODUCTION

Autism spectrum disorder (ASD) is a category of neurodevelopmental disorders characterized by social and communication impairment and restricted or repetitive behaviors. ASD affects more than 5 million Americans, with an estimated prevalence of approximately 1.7% in children.[1] The care needs of children with ASD are significant, affect parents and siblings as well, and require substantial community resources.[2] To deliver timely and effective medical, behavioral, educational, and social services across the lifespan means that primary care providers must understand the needs of individuals with ASD and their families. ASD is more commonly diagnosed now than in the past, and the significant health, educational, and social needs of individuals with ASD and their families constitute an area of critical need for resources, research, and professional education.[3]

In 2000, the US Centers for Disease Control and Prevention (CDC) established the Autism and Developmental Disabilities Monitoring (ADDM) Network as a population-based public health surveillance system to estimate the prevalence of ASD in children 8 years of age.[4] Neuroimaging plays an integral role in complimenting the clinical research, multiple studies have been conducted to correlate the association between the imaging and clinical findings which would in turn benefit the early diagnosis and treatment.[5] Diffusion tensor imaging (DTI) is an advanced magnetic resonance imaging (MRI) technique which studies the microstructural integrity of white matter tracts in the brain.[6] The present study was conducted to assess autism spectrum disorder (ASD) in children.

MATERIALS & METHODS

The present study comprised of 25 autistic children of age ranged 2-15 years of both genders. Parental consent was taken and children were included in the study. Cases were diagnosed by diagnostic and statistical manual of mental disorders fourth edition [DSM-IV] criteria and 25 controls were also recruited. In all, childhood autism rating scale (CARS) autism severity rating scorings were performed and categorized into mild, moderate and severely autistic. All children underwent MRI imaging of the brain. Imaging was performed with 3 Tesla MRI using an 8 channel dedicated head coil as per the standard operating procedure. Images were studied by experiences radiologists and results were statistically analysed. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of cases

Age group (Years)	Number	P value
2-5	8	0.15
5-10	7	
10-15	10	

Table I, Graph I shows that age group 2-5 years had 8 cases, 5-10 years had 7 and 10-15 years had 10 cases. The difference was non- significant (P> 0.05).

Graph I Distribution of cases

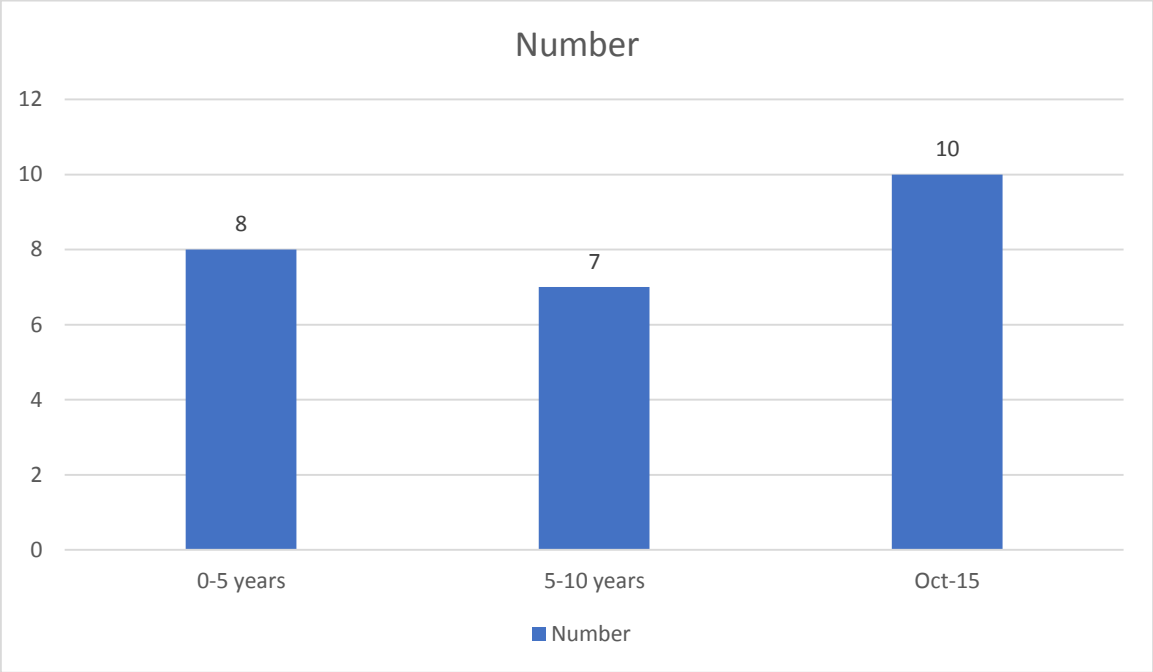

Table II Patients characteristics

Characteristics	Variables	%	P value
Symptoms	Poor social interaction	45%	0.021
	Stereotyped behavior	30%	
	Poor eye contact	92%	
	Global developmental delay	14%	
	ADHD	6%	
History of seizures		34%	-
Antiepileptic medications		30%	-

Table I shows that common symptoms were poor social interaction in 45%, stereotyped behavior in 30%, poor eye contact in 92%, global developmental delay in 14% and attention deficit hyperactive disorder (ADHD) in 6%. 34% gave history of seizures and 30% were on antiepileptic medications. The difference was significant (P< 0.05).

Table III Assessment of scoring

Characteristics	Group I	Group II	P value
CARS score	34.2	12.3	0.001

Table III shows that CARS score in group I was 34.2 and in group II was 12.3. The difference was significant (P< 0.05).

DISCUSSION

The diagnosis of ASD continues to be based on identifying and reporting behaviorally defined clinical symptoms. The challenges in determining accurate prevalence rates, in part, relate to the need for consistency in clinical diagnosis of a very heterogeneous disorder.[7] In 2013, the DSM-5 consolidated the diagnosis of ASD into a single category and emphasized the importance of identifying coexisting developmental and behavioral disorders and symptoms.[8] In the years since the 2007 AAP clinical reports on ASD, both professional education and public awareness have promoted recognition of symptoms that might lead to early

identification of ASD, use of standardized screening approaches, and management of associated medical and behavioral features of ASD from infancy through adolescence.[9] The present study was conducted to assess autism spectrum disorder (ASD) in children.

We found that age group 2-5 years had 8 cases, 5-10 years had 7 and 10-15 years had 10 cases. Common symptoms were poor social interaction in 45%, stereotyped behavior in 30%, poor eye contact in 92%, global developmental delay in 14% and attention deficit hyperactive disorder (ADHD) in 6%. 34% gave history of seizures and 30% were on antiepileptic medications. Dawson et al[10] investigated the microstructure of primary neurocircuitry involved in autistic spectral disorders as compared to the typically developed children and evaluated the various white matter tracts in Indian autistic children as compared to the controls using TBSS. Prospective, case-control, voxel-based, whole-brain DTI analysis using TBSS was performed. The study included 19 autistic children (mean age 8.7 years ± 3.84, 16 males and 3 females) and 34 controls (mean age 12.38 ± 3.76, all males). Fractional anisotropy (FA), mean diffusivity (MD), radial diffusivity (RD), and axial diffusivity (AD) values were used as outcome variables. Compared to the control group, TBSS demonstrated multiple areas of markedly reduced FA involving multiple long white matter tracts, entire corpus callosum, bilateral posterior thalami, and bilateral optic tracts (OTs). Notably, there were no voxels where FA was significantly increased in the autism group. Increased RD was also noted in these regions, suggesting underlying myelination defect. The MD was elevated in many of the projections and association fibers and notably in the OTs. There were no significant changes in the AD in these regions, indicating no significant axonal injury. There was no significant correlation between the FA values and Childhood Autism Rating Scale.

We found that CARS score in group I was 34.2 and in group II was 12.3. Co-occurring conditions are common in children with ASD and may have great effects on child and family functioning and clinical management. Examples include medical conditions such as sleep disorders and seizures; other developmental or behavioral diagnoses, such as attention-deficit/hyperactivity disorder (ADHD), anxiety, and mood disorders; and behavioral disorders, such as food refusal, self-injury, and aggression. Approximately 30% of children with a diagnosis of ASD will also have intellectual disability, and 30% are minimally verbal.[11]

Children with a diagnosis of ASD should be assessed for potential etiology and common coexisting medical conditions. At the time of the 2007 AAP clinical reports on autism, karyotype and DNA testing for fragile X syndrome were the state-of-the-art etiologic investigations. Soon thereafter, chromosomal microarray (CMA) was endorsed by the American College of Medical Genetics and Genomics and the American Academy of Child and Adolescent Psychiatry as the most appropriate initial test for etiologic evaluation of children with ASD.[12]

CONCLUSION

Authors found that most common symptoms found in autism children were poor social interaction, stereotyped behavior, poor eye contact, global developmental delay and attention deficit hyperactive disorder.

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