General Characteristics of Children with Autism Spectrum Disorder at Autism Research and Treatment Center, King Saud University, KSA

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Abstract— Autism severity in Eighty two (n=82) children with behavioral disorders (aged from 3 to 12 years) were assessed. The behavioral symptoms were evaluated by the Autism Treatment Evaluation Checklist (ATEC) of specific domains of autistic disorders symptoms (Speech/Language/Communication, Sociability, Sensory/Cognitive Awareness, and Health/Physical/Behavior) in a group of autistic children having a clinical diagnosis by Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and Childhood Autism Rating Scale (CARS) of autism spectrum disorder (ASD). Our findings suggest that the behavioral observation using Autism Treatment Evaluation Checklist ATEC has potential as a simple and clinically useful component of a comprehensive evaluation for possible autism.

Keywords— Autism spectrum disorder (ASD), Autism Treatment Evaluation Checklist (ATEC) Assessment, Childhood Autism Rating Scale (CARS), Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)

I. INTRODUCTION

The aim of this study is to investigate the general characteristics of ASD subjects at the Autism Research and Treatment Centre, King Khalid University Hospital King Saud University.

Autism is neurodevelopmental disorder characterized by impairments in social interaction, communication, repetitive behaviors, abnormal movement patterns, and sensory dysfunction [1]. These symptoms often begin by the age of three years, and persist throughout the life span. The spectrum of autistic features is variable, with severity of symptoms ranging from mild to severe, sometimes with poor clinical outcomes [2]. The pathophysiological etiologies which precipitate autism symptoms remain elusive and controversial in many cases, but both genetic and environmental factors (and their interactions) have been implicated. Few reports have been published about the occurrence of autism in developing countries. Studies from the Middle East on this topic have been particularly rare [3]. One report estimated that in Saudi Arabia there were 42,500 confirmed cases of autism in 2002 and that many more remained undiagnosed [4].

Autism prevalence has increased dramatically over the past two decades. In fact, it has increased an estimated 600%. It affects 1 in 110 children in USA in 2009 [5]. Autism in Saudi Arabia is slightly higher than reported in developed countries [4].

II. MATERIALS & METHODS

This paper reports on the baseline levels of children with autism. Neither group of children had taken any medication prior to the study. This study was conducted with the approval of the medical ethical committee of King Saud University.

A. Enrollment criteria

1) Age 3-12 years old;
2) Autism Group: prior diagnosis of autism, by a psychiatrist or similar professional, with written verification.

B. Participants

The characteristics of the study participants are listed in Table I, and their physical and behavioral symptoms (per the ATEC) are presented in Fig.1-4.

TABLE I
CHARACTERISTICS OF PARTICIPANTS

<table>
<thead>
<tr>
<th>Total Participants</th>
<th>82</th>
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<tbody>
<tr>
<td>Male</td>
<td>(80 %)</td>
</tr>
<tr>
<td>Female</td>
<td>(20 %)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>3-12</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Autism spectrum disorder</td>
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</tbody>
</table>

C. Study Protocol/ Clinical evaluation

1. Participant parents contacted the study coordinator. Consent/assent forms were sent to the parents for review, and then signed copies were brought to the study coordinator. The Principal Investigator also discussed the study personally with each participant.


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3. The study physician conducted a physical examination to determine that the children were in adequate health for participating in the study.

4. In addition, a parent/guardian of each child participated in a psychiatric interview about their son/daughter and each child was examined to evaluate autistic symptom severity by clinical observation and ASD Checklist (ATEC) tool [6].

D. Autism Treatment Evaluation Checklist (ATEC)

The Autism Treatment Evaluation Checklist (ATEC) was developed by Bernard Rimland and Stephen M. Edelson of the Autism Research Institute San Diego, CA [6]. The ATEC is designed to collect information on development and behavior. It consists of four major categories:

I. Speech/Language Communication (14 items); II. Sociability (20 items); III. Sensory/ Cognitive Awareness (18 items); and IV. Health/Physical/Behavior (25 items). Each category contains multiple symptoms that are each rated on a scale of 1–3. Each subject’s score on each of the dimensions of the ATEC was calculated as a percentage of the highest possible score for that dimension. Purpose of ATEC is to assist clinicians in the diagnosis, differential diagnosis and management of autistic spectrum and other developmental disorders affecting social interaction and communication.

III. RESULTS

ATEC respond from participants (n=82) is presented in figures 1-4. Scores in Percentage were calculated on the basis of assessment obtained in 82 individuals in above ATEC categories.

Category I. Speech/Language/Communication.

Fourteen different developmental domains were covered. Items were scored (%) on a three-point scale marked as not true, somewhat true or Very true (due to clarity only very true scale is shown in fig.1).

As for as this category is concerned about 80 % of children knew their own name, responded to No or Stop and followed some verbal commands. Half of study group used 1-3 words at a time; however 41% of the population knows 10 or more words. More than 70% of children were not able to use sentences with 4 or more words, ask meaningful questions and did not carry on a fairly good conversation. They also didn’t have normal ability to communicate for their respective ages.

Fig.1 Graphical Representation of ATEC response in Speech/Language Communication.

Category II. Sociability/Social interaction

Twenty different developmental domains were covered in this category. Items were rate on a three-point scale marked as not descriptive, somewhat descriptive and very descriptive (due to clarity only very descriptive scale is shown in fig.2).

Fig.2 Graphical Representation of ATEC response in Sociability

Overall the quality of the interaction was poor and inappropriate. No interaction with friends/companions and to avoid contact with others was common. Quarter of group ignores other people, pays little attention when addressed and uncooperative and resistant behavior was also found. Inappropriate (or lack of) emotional response to parents was also common. One-sided social approaches or no approach at all was also reported in the group. Many individuals in the group with ASD disliked being held/cuddled and did not share and show physical expressions of affection. Poor eye contact was reported in more than half of the group and less than 20% of the group rarely smiles.
#### Category III. Sensory/ Cognitive Awareness

Eighteen different items were covered in this category and assigned a three-point scale marked as not descriptive, somewhat descriptive and very descriptive (due to clarity only very descriptive scale is shown in fig.3).

Less than half of the study group was reported to have some kind of impairing auditory/ sensory abnormality. However 65% of the group responded well to own name and praise. Fifty percent of the study group showed normal responses to visual stimuli and reported to look at people, animal and pictures (TV). Less than half of group enjoyed drawing, coloring art and play with toys appropriately. Appropriate facial expression with difficult to understand explanations and stories on T.V was observed in some individuals. About 60% of study group was not aware of the environment and danger.

#### Category IV. Health/Physical/Behavior

As shown in fig.4 twenty five different developmental domains were covered in this category. Items were scored on a three-point scale marked as minor problem, moderate problem, not a problem and serious problem (due to clarity only serious problem scale is shown in fig.4).

Majority of the study group reported that they did not have a problem with bed-wetting, wets/soil pants/diapers, diarrhea and constipation. About half of participants had minor or moderate sleep and eating problems. Hyperactive and lethargic behavior was reported as not a problem in half of the ASD group.

90% of the study group had minor, moderate and not a problem with hits or injures self and others along with destructive behavior. However, majority of group had problem with some degree of sound and pain sensitivity. Shouts or screams and unhappy crying were also common problem in these children. Repetitive movements and agitated behavior in 30% of children was found as serious problem.

#### IV. DISCUSSION

This study investigated the general characteristics which can be used as tool to evaluate, measure severity of autism at our centre.

The ATEC examines the four domains (Speech/Language, Sociability, Sensory/Cognitive Awareness, and Health/Physical/ Behavior) that are affected in ASD and provides a score as to the level of difficulty the child has in that area. For example, the Speech and Language score quantitatively shows how severely the child is affected in the use of language and communication, e.g., does the child have speech, can the child use words meaningfully, and can the child use the words to communicate with others? The Sociability domain quantitatively describes the child’s ability to interact with others. The Sensory domain shows the extent of difficulty the child has with processing sensory information and understanding their world. The Health/Physical/Behavioral section quantitatively describes the daily problems that the child and their families have to confront such as incontinence, inability to sleep, screaming, agitation, etc. Although, the ATEC is not a direct measure of brain dysfunction, however the ATEC can indirectly show that the child’s brain has limitations in these specific areas and the extent of the impairment.

All the participants in this study diagnosed in early childhood with ASD, still showed impairment related to their ‘autism features’. Almost all individuals included in the present study still met clinical DSM-IV and CARS diagnostic criteria for autism. This means that the vast majority showed above-threshold symptoms in the three triad domains. However, the detailed analyses of symptom patterns performed in the present study showed that there was a great degree of variability of symptoms across subjects.

First of all, various types of symptoms in the communication category were still extremely common. Seven of the 14 symptoms included in the category affected half or more of the study group. Several communication impairment
Symptoms typical of young children were reported. The most common problem in communication in the ASD group was the lack of reciprocity and odd or limited non-verbal communication [7].

Secondly in the social interaction category fifteen of 20 symptoms were reported to still be present in half or more of the study group, which have been characteristic of the ASD. Thirdly, in the Sensory/ cognitive awareness category majority of 18 symptoms were present in ¼ of participants. In the final category, health/physical behavioral domain comprises a variety of different impairing symptoms such as bed-wetting, wets pants/diapers, constipation, sleeping & eating problems, repetitive movements etc. Only few symptoms from this category, was reported as serious problems to be present in quarter of the study group.

Children with ASD usually find it hard to communicate with others in a typical way and have difficulty understanding social conventions. As a result, individuals with autism may respond in unusual ways to everyday situations and changing environments. Children with ASD develop differently and at different rates from other children their age in the areas of motor, language, cognitive and social skills. They might be very good at advanced or complex skills but find the "easy" things, like talking or making friends’ very difficult. Some children with ASDs develop large vocabularies and can read long words but may be unable to vocalize the sound of a single letter. A child may also learn new skills, such as saying a number of words, but lose this ability later on [8].

All types of autism have autism symptoms in various degrees. However, not every child with autism will show every characteristic for autism. Some children will have more signs of autism than other children. Every autistic child is different from every other autistic child and special [9].

V. CONCLUSION

This study investigated the general characteristics which can be used as tool to evaluate, measure severity of autism and progress over time in young children with ASD. The behavioral observation using Autism Treatment Evaluation Checklist ATEC has potential as a simple and clinically useful component of a comprehensive evaluation for possible autism.

ACKNOWLEDGMENT

We thank to Autism Research and Treatment Centre, Al-Amodi Autism research chair, King Saud University, KSA for sponsor and financial support.

REFERENCES


