GVANTSA ARVELADZE, TEIMURAZ MIKELADZE, SARINA BAKHTIARIAN, MARIKA AREVADZE

THE NECESSITY OF CONDUCTING AUTISM DIAGNOSTIC OBSERVATIONS SCHEDULE AN ADOS TEST IN CHILDREN WITH LANGUAGE AND COMMUNICATION PROBLEMS FOR EARLY DETECTION OF THE AUTISTIC SPECTRUM DISORDERS

The University of Georgia, Clinic "Mziuri Med"

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გვანცა არველაძე, თეიმურაზ მიქელაძე, სარინა ბახთიარიანი, მარიკა არევაძე

ენის, მეტყველების და კომუნიკაციის პრობლემების მქონე ბავშვებში აუტისტური დარღვევების სკალის ADOS - ტესტის ჩატარების აუცილებლობა აუტისტური სპექტრის დარღვევების დროული გამოვლენის მიზნით

საქართველოს უნივერსიტეტი, სამედიცინო ცენტრი ,,მზიური მედი"

რეზიუმე

კვლევის მთავარი მიზანი იყო საქართველოში ენისა და კომუნიკაციის პრობლემების მქონე ბავშვებში აუტისტური სპექტრის დარღვევების გამოვლენისთვის დიაგნოსტიკური ღონისძიებების ჩატარების აუცილებლობის დროული გამოვლენა და შეფასების საჭიროების განსაზღვრა. სამედიცინო კლინიკა მზიური მედში სკრინინგისა და მეთვალყურეობის პროგრამაში მონაწილეობდა 1-დან-16 წლამდე 234 ბავშვი და მოზარდი, რომლებმაც მიმართეს ნევროლოგებს კონსულტაციისა და ნეიროფსიქოლოგს სკრინინგული შეფასებისთვის, დასწავლის უნარების ტესტის (LAP)-ის საშუალებით. აღსანიშნავია, რომ ყველა მათგანს აღენიშნებოდა ენისა და კომუნიკაციის პრობლემა. აუტისტურ სპექტრზე ეჭვი იქნა მიტანილი 101 (43,16%) პაციენტში, რომლებიც დიაგნოზის დასადასტურებლად გაიგზავნენ ADOS ტესტის ჩასატარებლად. განხორციელდა მეტყველების, კომუნიკაციისა და ქცევითი პრობლემების მქონე ბავშვებისთვის ჩატარებული სკრინინგული გამოკვლევის შედეგების პროცენტული შედარება 2 კატეგორიას შორის, შედარდა აუტიზმის ტესტირების ჩატარების აუცილებლობის მქონე ბავშვები მათთან, ვისთანაც არ დადგა ამის საჭიროება.

აუტიზმის ადრეულ დიაგნოსტირებას და ჩარევას, რაც მოიცავს ადრეული განათლების დაგეგმვას, ინფორმირებას და მხარდაჭერას ოჯახის/მომვლელისთვის, შესაბამისი სამედიცინო დახმარების გაწევას და მასთან დაკავშირებულ მკურნალობას აქვს უდიდესი და დადებითი გრძელვადიანი გავლენა სიმპტომებზე და შემდგომ უნარების განვითარებაზე. შემუშავებულია სკრინინგის რამდენიმე ვარიანტი სამ წლამდე ასაკის ბავშვებში, ადრეული სოციალური და ენობრივი ეტაპების შეფასებისთვის. ერთ-ერთი ასეთი სკრინინგული ტესტია აუტიზმის მოდიფიცირებული განახლებული კითხვარი ადრეული ასაკის ბავშვებისთვის, შემდგომი შეფასების სქემა/კითხვარით (M-CHAT-R/F) TM - რომელიც არის ორეტაპიანი ინსტრუმენტი ასაკის რისკის შესაფასებლად; ის განკუთვნილია 16-დან 30 თვემდე ასაკის პატარებისთვის.

Introduction: The "autism spectrum disorders" (ASD) are considered as an overlapping neurodevelopmental condition that have variable impacts on different individuals. This variability arises from dynamic interactions between biological and non-biological risk factors, which bring about increasing differentiation between individuals over time. Although this differentiation continues well into adulthood, the infancy period is when the brain and behavior develop rapidly, and when the first signs and symptoms of autism appear [1]. Autism spectrum disorders are not rare and they have been increasingly noticed by the media, clinicians, and from the general public [2].

Autism spectrum disorders (ASD) include the DSM-IV diagnoses of Autistic Disorder, Asperger's Disorder, and Pervasive Developmental Disorder-Not Otherwise Specified [3]. According to DSM-IV criteria, Autistic Disorder is characterized by persistent and heterogeneous neurodevelopmental disorder and deficiencies in the areas of communication, reciprocal social interaction, and restricted/repetitive behaviors and interests, with an onset prior to three years of age [4]. While children with Asperger's Disorder characterized by a greater or lesser degree of impairment in language and communication skills, as well as repetitive or restrictive patterns of thought and behavior and interests, they do not have

cognitive delays. Children with Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) characterized by impairment in the development of social interaction, verbal and non-verbal communication, imaginative activity and a limited number of interests and activities that tend to be repetitive. Symptoms associated with Autistic Disorder but do not meet the full diagnostic criteria [5].

Early identification of autism spectrum disorder (ASD) and other developmental disorders often allows access to interventions, which is an important step in optimizing outcome. Early identification leads to an earlier education planning, more understanding and support from family/caregiver, delivery of appropriate medical care and treatment of associated conditions, genetic counseling (particularly if the child has a condition associated with ASD, such as tuberous sclerosis complex), early individualized intensive intervention depends on the specific strengths, weaknesses, and needs of the child and family, early and appropriate interventions are critical for optimizing outcomes in individuals with ASD [6-13]. Therefore, these emphasize on the importance of surveillance and screening for ASD [14].

Surveillance is a flexible, continuous process which knowledgeable professionals collect information from multiple sources (e.g., observation of children during child health care visits, asking specific questions to elicit caregiver concerns) for identifying the potential risk factors for developmental and behavioral disorders and addressing developmental concerns [15,16]. Developmental surveillance is supported at every health supervision visit, as is as the administration of standardized screening tests at the 9-, 18-, and 30-month visits [17]. Screening is defined as a brief, formal, standardized evaluation with the purpose of early identification of patients with unsuspected deviations from the norm. Screening instrument enables readily detection of conditions/concerns that may not be readily perceived without screening. Effective screening results arise from combination of standardized screening tests and clinical judgment. Screening does not provide a diagnosis; it is for determining the need for further investigation (e.g., a diagnostic evaluation) by clinicians with special expertise in ASD [18].

Target groups for screening include symptomatic children with clinical features associated with ASD. Symptomatic children include those with delayed language/communication milestones identified by screening tests or caregiver report, children with social or language skills regression, siblings of autistic children, children (regardless of age) whose parents, care provider, or clinician raise concerns regarding ASD (e.g., those with atypical behaviors, difficulty socializing, rigidity of behavior that interferes with function) [19]. ASD-specific screening at 18 and 24 months of age is recommended for children without clinical features associated with ASD [20]. Some factors might delay diagnosis, such as less severe symptoms, female sex, coexisting problems (e.g., anxiety, hyperactivity, mood disorder), lack of continuity of care, hearing impairment, oversensitivity to pain, attribution of regression of skills to "stressors" (e.g., birth of a sibling), language barriers, being in an underrepresented ethnic group, living in a rural area, and lower socioeconomic status [21-24]. The presence of coexisting problems (e.g., anxiety, hyperactivity, mood may mask or exacerbate ASD and impact on the timing or accuracy of diagnosis [25]. Delayed diagnosis can be largely prevented by recognizing early signs and red flags of ASD which are often present before 18 months of age and frequently are of concern to caregivers. The initial developmental concerns expressed by caregivers are delayed language and social/communication skills, frequent tantrums or intolerance to change. The problems of most children with developmental problems were detected through clinical judgment based on caregivers' concern.

Prospective studies of children at risk for ASD and retrospective studies using home movies to examine the early development of children with ASD have recognized a number of early symptoms and signs of autism are not present at birth but begin to appear after approximately six months of age. According to age, infants below 6 months exhibit mean decline in eye fixation from 2 to 6 months of age (as measured by eye-tracking technology); The changes are documented with technology were not visible to the naked eye. In fact, earlier eye-gaze studies done without eye-tracking technology failed to capture the pattern. Therefore, caregivers of young infants should not be concerned if the infant does not always meet their eyes. That early signs of autism can be detected in infants between the ages of 6-12 months include reduced response to name, gaze to faces, social smiling, reactivity, social interest and vocalizations to others and a tendency to fixate on particular objects in the environment. Toddlers between 12-24 months at risk for an ASD might talk or babble in a voice with an unusual tone, display unusual sensory

sensitivities, carry around objects for extended periods of time, reduced frequency of sharing experiences, interests, or attention with others, repetitive behaviors, delayed expressive and receptive language, and problems with eye contact, orienting to name, pretend play, imitation, and nonverbal (e.g., gestural) and verbal communication.

Several screening tools have been developed for assessing early social and language milestones in children younger than three years old [25]. One of these screening tests is the Modified Checklist for Autism in Toddlers, revised (M-CHAT-R) which is a two-stage tool to assess risk for ASD; It's intended for toddlers between 16 and 30 months of age. The first stage is a 20-item, yes/no caregiver-report questionnaire, which takes less than 5 minutes (a combination of questions from the CHAT and questions addressing core symptoms of ASD). The current recommended scoring algorithm is categorized in three groups; M-CHAT Total Score 0-2 which do not need Follow-Up. If child is younger than 24 months, screen again at 24 months (or after 3 months has elapsed). Continue developmental surveillance-CHAT Total Score 3-6 which in this case, conducting the M-CHAT/F is important to evaluate risk. If child continues to score 3 or higher, refer immediately for clinical evaluation and to determine eligibility for early intervention services. If Follow-Up score is 2 - monitor carefully, since child may need referral. And finally-CHAT Total Score 7-23 is considered as a risky group for ASD or other developmental delays. It is acceptable to refer immediately without completing the M-CHAT Follow-Up. The second stage consists of a structured follow-up questionnaire administered by a health care professional which consists of the same questions as the first stage but for obtaining additional information and examples of at-risk behaviors for any items failed on the first stage. It takes approximately 5 to 10 minutes to administer.

Another screening tool is (STAT) which stands for screening Tool for Autism in Toddlers and Young Children. (STAT) is an interactive, play-based screening measure that can be used for screening in children age 24 to 36 months which consists of 12 activities assessing imitation, play, and communication that take about 20 min to administer. It was designed specifically to differentiate young children with autism from those with other developmental concerns.

The Infant Toddler Checklist (ITC) is another tool to identify different aspects of development in infants and toddlers; this checklist should be completed by parents of children ages 6 to 24 months or children of that age who exhibit communication delays, including autism spectrum disorder (ASD) to determine if referral for evaluation is necessary. Parent's Observations of Social Interactions (POSI) is one component of the Survey of Wellbeing of Young Children (SWYC) that was designed to detect Autism Spectrum Disorder (ASD). It is a 7-item screening tool that was developed from the Modified Checklist for Autism in children 16 months to 35 months. The (POSI) includes five of the six critical items of the M-CHAT and two questions about behavior based upon the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria. In general, diagnosis of (ASD) is a two-step process: (a) screening, and (b) a comprehensive diagnostic evaluation. Therefore, after administration of screening tests, children with a positive result are referred for diagnostic evaluation.

The Autism Diagnostic Observation Schedule (ADOS) is one of the few standardized diagnostic tests which includes scoring direct observations of the child's social interaction, communication, play, and restricted and repetitive behaviors in children and that accounts for the developmental level and age of the child. During an ADOS™-2 assessment, a specialist interacts directly with the child in social and play activities. The test takes 30 to 60 minutes to conduct and consists of four different diagnostic algorithms that allow the examiner to observe the behavior at different levels of development and language based on chronological age of the child. For example, Modules 1 and 2, which are intended for use with children with a language level of less than 48 months who are preverbal or have single-word language or with phrase speech abilities, include playing with bubbles, the release of an inflated balloon, and a pretend birthday party. Modules 3 and 4, which are designed for older children, adolescents, and adults with fluent speech and have the ability to use complex sentences and talk about things that are not immediately present, include questions about emotions and relationships as well as retelling a story from a book and demonstrating a routine activity. The examiner can use more than one module to adjust the complexity of module for a child. The goal of the ADOS is to provide a hierarchy of "presses" (social structures) that provoke behaviors in standardized contexts related to ASD. ADOS classifications are based on specific

coded behaviors that are included in a scoring algorithm based on the DSM-IV diagnostic criteria, resulting in a Communication score, a Reciprocal Social Interaction score, and a Total score (a sum of the Communication and Reciprocal Social Interactions scores).

ADOS items regarding play and stereotyped behaviors are also coded but duo to lack of time, they are not included in the diagnostic algorithm. Behaviors are coded using a 0- to 3-point coding system, with a 0 representing that the behavior is not abnormal in the way specified in the coding description, 2 representing a definite difference, and a 3 representing that a behavior is abnormal and interferes in some way with the child's functioning. Scores are compared with an algorithm cut-off score for autism or the more broadly defined ASD in each of these areas; If the child's score meets or exceeds cut-offs in all three areas, they are considered to meet criteria for that classification on the measure. An ADOS autism classification requires meeting or exceeding each of the three thresholds (social, communication, and social-communication total) for autism; if thresholds for autism are not met, an ADOS classification of ASD is appropriate when the three ASD thresholds are met or exceeded. In all cases, the ASD thresholds are lower for ASD than those of autism.

The purpose of this article is to evaluate the necessity of conducting an ADOS test in children with language and communication problems in Georgia. Georgia is a lower middle-income country with 3,970,720 inhabitants.

Materials and methods: We extracted the data on 234 children in the age range of 1 to 16 years who had referred to neurologists and neuropsychologist to perform Learning Accomplishment Profile™ (LAP) due to speech and language problems.

Exposure: Speech and Language problem

Children characteristics: age, language and speech development, verbal and non verbal communication skills, movement skills, mental development, behavioral characteristics, sensory and integration development, cognitive skills, eating and sleeping habits

Outcomes: Language and developmental problems, Mental development problems, ASD, ADHD

Inclusion criteria: Children in age range 1 to 16 years during study period (09.14.2020 - 12.23.2022) had speech and language problems.

Children who had speech and language problems during pediatric consultation or neurology consultation, had referred to a neurologist and psychiatrist for a screening test related to the autism spectrum and developmental assessment. We extracted data from the Medical record of patients at Mziuri clinic. All children who had speech and language problem and been refered to Mziuri Med clinic in Georgia during study period (09.14.2020 - 12.23.2022) were included in the study.

Statistical analysis: We will use descriptive statistics for frequency tables.

The results of the research conducted in the "Mziuri Med Clinic" - The number of patients participating in the screening in 2020-2022 were 234, who came to clinic" Mziuri Medi" with various complaints, among which all of them had language and communication problems. Autistic spectrum was suspected in 101 patients. To confirm the diagnosis, these patients, i.e. 43.16%, were sent for the ADOS Test.

Quantity of Patients	Age range	Complaints	Screening results	Psychologist's conclusion	ADOS necessity	%
234	1.10Y-16Y	Speech delay	language and communication problems	Autistic spectrum signs	101 patients	43,16

(Autism pathway preassessment questionnaire for clinicians)
https://www.southwestyorkshire.nhs.uk/wp-content/uploads/2014/10/1455-Autism-pre-assessment-questionnaire.pdf
(Communicative difficulties questionnaire)
https://www.scielo.br/j/rsbf/a/C9b5xrkh5wsJqSrjZVyFK9c/?lang=en&format=pdf
(Social communication Questionnaire)
https://www.questionpro.com/blog/social-communication-questionnaire/

Guideline for parents:
https://www.autismspeaks.org/sites/default/files/2018-08/Parents%20Guide%20to%20Autism.pdf
https://iapindia.org/pdf/Ch-018-IAP-Parental-Guideline-AUTISM.pdf

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The University of Georgia, Clinic "Mziuri Med"

SUMMARY

Background: Children and adolescent, in the 1 to 16 years age group in Georgia participated in screening and surveillance program for autism spectrum disorders at "Mziuri Med" clinic.

Aim: to evaluate the necessity of conducting an Autism Diagnostic Observation Schedule in children with language and communication problems in Georgia.

Method: Conducting screening tests for children with speech, communication and behavioral problems and evaluating their screening test results and comparing the percentage of children who have

referred to do Autism Diagnostic Observation Schedule with those who have not. We used Excel to do basic data analysis tasks

Results: The study showed that 43.16% of children with speech, communication and behavioral problems, whose screening tests' results were positive, were sent for the Autism Diagnostic Observation Schedule.

Conclusions: The early diagnosis and interventions for autism have major long-term positive effects on symptoms and later skills. Such as earlier education planning, more understanding and support from family/caregiver, delivery of appropriate medical care and treatment of associated conditions.

Keywords: autism spectrum disorders, language and communication problems, screening tests, ADOS test