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Case Report

Diagnosing Autism Spectrum Disorder: A Case Study

Weniger*, Sung Kim

Loma Linda University Behaviroal Medicine Centre, California, United States

ABSTRACT

Autism Spectrum Disorder (ASD) is one of the most extensively studied neurodevelopment disorders in the field. While extensive research has been conducted on ASD, many unknown areas remain to be investigated. Due to ASD's high comorbidity rates with other mental disorders, misdiagnosing ASD continues to be prevalent. This current case study focuses on a young adult who was recently diagnosed with ASD after being misdiagnosed with ADHD. His misdiagnosis with ADHD is much more than just a diagnostic issue, as he lost valuable time in which to receive proper treatment for ASD. As much as the field is aware of the high rates of comorbidity between ASD and other disorders, we lack an objective assessment to measure ASD and the easily overlooked indications of ASD. Additional trainings and more objective measurements for health alliance staff and professionals for diagnosing ASD are clearly needed.

Keywords: Autism Spectrum Disorder; Bipolar Disorder; Gastroenterology; ADHD; Neurological Development; ASD

Misdiagnosis of ASD as ADHD: A Case Study

The following literature review and case study highlight the need for improved training among allied health and educational professionals with the diagnosis of Autism Spectrum Disorder (ASD). A brief review of the literature will demonstrate the need for better staff training for professionals who work with children regarding the early detection and diagnosis of ASD, and advocacy toward the use of digital behavioral measures. The case study summarizes the assessment data for a 19 year old man who was misdiagnosed with ADHD instead of ASD throughout primary and secondary school.

ASD misdiagnosed as ADHD

There are several symptoms that overlap between Attention Deficit Hyperactivity Disorder (ADHD) and ASD such as overactivity, difficulty with social skills, and problems managing behaviors and attention deficits [1]. Previous research findings are consistent with a comorbidity between ADHD and ASD [2-5]. The executive skills dysfunction that is often observed in ASD may cause attention deficit. It was explained that unusual focus on detail in individuals with ASD could be viewed as a deficit in sustained attention. In addition, sensory overstimulation in ASD may exacerbate hyperactivity [6]. Considering the high level of comorbidity between ASD and ADHD, the chances of missing a diagnosis appear to be high [7].

Co-morbid Diagnosis of ASD and Bipolar Disorder

Bipolar Disorder (BD) is a mood disorder that is characterized by recurrent depression and manic/hypomanic episodes. BD has the highest comorbidity rate with ASD [8]. Comorbidity symptoms between ASD and BD include depressive or elevated mood, irritability, sleep disturbances and other symptoms [9]. Possible commonness in neurodevelopmental pathways and genetic features between ASD and BD has been found as well [10,11].

Sleep Difficulties and Sensory Issues with ASD

Along with other co-occurring behavior issues with children with ASD, sleep difficulty in ASD has been known to be a prominent issue [12-14]. It has been suggested that one of the causes of sleep disturbances in children with ASD is the high level of abnormalities in specific sensory sensitivities [15]. The tactile sensitivity would include, for example, the texture of food or the texture for touching and being touched. Hypersensitivity over the tactile is known to be a challenging area for people with ASD. Previous findings on the cause of tactile impairment were based on psychophysical assessment. Most of the previous research and results suggested that patients had difficulty filtering unrelated sensory input and altered tactile processing [16,17]. The deficiency in the somatosensory inhibitory system in children with autism was indicated as one cause for the hyper/hypo sensitivity of the tactile [18].

***Correspondence to:** Weniger, Loma Linda University Behaviroal Medicine Centre, California, United States, E-mail: Weniger@llu.com

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IQ fluctuations with individuals on the ASD spectrum

A new trend in the research results indicates that a stability in the Intelligent Quotient (IQ) in children with ASD [19], which suggests that in majority of cases there were no changes in IQ over time. However, earlier research results indicated an increase in IQ as children aged [20]. The possible causes of IQ differences in children with ASD over the course of years could be caused in part by other psychological tests. Another reason was suggested that there is a high level of IQ variability of cognitive assessment in younger children with ASD. In addition, the cultural adequacy of the cognitive instruments and potential variables may affect their IQ scores such as the level of the collaboration with the examiners and the degree of attention that children with ASD had at the moment of the testing [21].

Background Information

The patient is 19 year old Native American male presenting symptoms were trouble concentrating, aggression, conduct problems, depression, and learning problems. Patient's mother reported that he had a history of extensive testing when he was in the public school system, but never specifically for autism. The patient lived at home with his parents and is unemployed. The patient had a prior diagnosis of ADHD and below average IQ. He met special education requirements when younger based on his diagnosis of ADHD. He reported being bullied and teased throughout school and felt misunderstood by others most of the time. Additionally, the patient reported severe insomnia, dermatillomania, a history of esophageal functioning issues which were treated by a gastroenterologist, and eczema. He was not taking any medications during the time of evaluation.

Review of Medical Records

The assessment included a review of prior evaluations conducted by school psychologists, speech and language pathologist, audiologists, occupational therapists, optometrists, IEP reports, and a neuropsychology report. A dysphonetic dyslexia pattern which may be associated with reading difficulties was noted. An optometry report noted inadequate eye tracking, problems focusing his eyes, and eye teaming difficulties. The audiology reported indicated normal hearing in the left ear and possible slight hearing loss in the right ear. The neuropsychological report indicated that he had a reading disorder, to rule out ADHD and his FSIQ on the WISC-IV=67-77. The school psychology report indicated ADHD and an FSIQ=74. The occupational therapy report indicated definite dysfunction with body awareness, some problems with balance and motions and definite dysfunction with planning and ideas, some problems with social participation, some problems with hearing and vision. He did qualify for occupational therapy. The speech and language report indicated that he has low average auditory comprehension skills, but he did not qualify for speech therapy. A follow up IQ test by a school psychologist indicated that his FSIQ=67-77 in the low average range and very low functioning with visual processing skills.

Although this patient went through extensive testing by multiple different professionals throughout primary and secondary education no one specifically evaluated him for Autism Spectrum Disorder. The patient's mother reported that a teacher mentioned that he "might be autistic" when he was in elementary school but no formal evaluation was conducted for ASD. Sadly, this patient went 19 years being misdiagnosed with ADHD. The signs and indications for ASD were present with his impaired eye modulation, poor body awareness and impaired motor skills, problems with balance, delayed speech, problems with social and emotional reciprocity, problems with reading comprehension and communication, emotional outbursts, repetitive skin picking behaviors, hyper sensitivity to some stimuli, perseverative and fixated interests, and lower than average performance on IQ tests. He struggled throughout school and was placed in Resource Specialist Program (RSP) and special education classes. He has been unable to work as an adult and he does not have his driver's license. He struggles with activities of daily living and requires assistance from his caregiver to meet some basic needs.

Assessment Data

The Adaptive Behavior Assessment System-Third Edition (ABAS-3) indicated a standard score in the conceptual domain=66 (1%), social domain=69 (2%), practical domain=56 (0.2 %), and a general adaptive composite (GAC) =59 (0.3 %). The Autism Diagnostic Observation Schedule (ADOS-2) Module 4 results indicated a communication total=2, social interaction total=7 and total score=9 which is within the range for Autism Spectrum diagnosis. On the Autism-Spectrum Quotient (AQ) the patient received a total score of 16 on the AQ, indicating a non-clinically significant level of autistic traits. It is believed that due to patient's limited insight into relationships and his own behaviors that symptoms were under-reported on the AQ.

The patient had already taken multiple Wechsler intelligence tests throughout his childhood and adolescence. In order to avoid practice effects which can lead to false conclusions [22] the Reynolds intelligence test was administered. The composite intelligence (CIX)=51 (0.1%), verbal intelligence index (VIX)=59 (0.3%), nonverbal intelligence (NIX)=53 (0.1%), composite memory index (CMX)=72 (3%), speed processing index (SPI)=46 (<0.1%). However, patient appeared to give up easily on some tasks and the RIAS appeared to be an under estimation of his cognitive abilities, and the CIX was significantly lower than prior IQ tests WISC=67-77. The patient's pattern of under-reporting his own symptoms was evident on the MCMI-IV as well due to an elevated desirability index=78, disclosure index=68 and debasement index=5. The highest clinical elevation on the MCMI-IV was Bipolar=82. Due to this elevation a structured clinical interview was conducted with patient's mother to determine if patient met the diagnostic criterion for Bipolar disorder. Mother endorsed a strong family history for Bipolar disorder. She reported that the patient has a history of mood lability, becoming easily agitated and anxiety. He struggles with a decreased need for sleep at times; he can be hyperverbal, impulsive and grandiose. In addition, mother reported that patient fluctuates between these periods of manic behaviors and depressive episodes. The diagnostic criterions for Bipolar Disorder were met. The diagnostic conclusions were Autism spectrum Disorder Level II requiring moderate support with intellectual impairment, Bipolar Type I, Insomnia, Eczema, Dermatillomania and a history of an esophageal functioning disorder [23-27].

CONCLUSION

This patient was misdiagnosed with ADHD throughout primary and secondary school. The combination of the symptoms indicated a comorbid ASD diagnosis with intellectual impairment and Bipolar Disorder. The patient struggles with poor communication,

difficulties with social and emotional reciprocity, sleep issues, poor eye modulation, perseverative thinking, hypersensitivity to some stimuli, learning difficulties, reading and comprehension problems, skin picking, feeling misunderstood by others, mood swings, emotional volatility, hyper-verbal at times, and grandiose thinking. Physical problems such as vision impairment, gastrointestinal issues, sleep problems, communication problems and challenging behaviors are commonly associated with ASD.

There is a significant amount of overlap between ADHD and ASD, and between ADHD and Bipolar Disorder which complicates differential diagnosis. The ASD symptoms were clearly present throughout childhood however independent evaluations by multiple different professionals never specifically assessed for autism. The diagnostic assessment procedures for detecting ASD continue to be inconsistent among primary care providers. There is a need for speech and language therapists, occupational therapists, psychologists, nurses and other allied health professionals to receive more training on the early detection and diagnosis of ASD. For improving the detection and diagnosis of ASD by the use of digital behavioral assessment tools which have a clear advantage of quantifying behaviors and will allow clinicians to have more objective measurements of ASD. Clearly, there is a need for more pervasive staff training with multiple educational and healthcare professionals and also with objective diagnostic assessment measures.

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