

Comorbidity of Autism Spectrum and Obsessive-Compulsive Disorders

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In this paper, we review aspects of the comorbidity between autism spectrum disorder (ASD) and obsessive compulsive disorder (OCD) in a representative manner. We consider issues of co-morbidity more generally, and then review the rates of OCD and ASD separately, before considering them together. We then consider aspects of the function significance of the interaction of the two conditions, and call for additional research into this important overlap of symptoms.

[N A J Med Sci. 2015;8(3):109-112. DOI: 10.7156/najms.2015.0803109]

Key Words: autistic spectrum disorder, mental flexibility, stress, cortisol

INTRODUCTION

Autism Spectrum Disorders (ASD) shows a broad range of expression in severity, clinical and biological abnormalities, and in likely etiologies. The resultant heterogeneity in presentation is a common feature in many neurodevelopmental conditions and other complex psychiatric disorders, such as schizophrenia.¹ In addition to sources of variability within the disorder, many additional sources of variability may also contribute to the expression of ASD. Some of these may be primarily environmental in nature. Better mother-child relationships, including higher levels of maternal praise, for example, contribute significantly to reductions in ASD symptoms and maladaptive behaviors in high functioning, community-dwelling children and adolescents.² Similarly, high functioning children with ASD and problems with sensory processing difficulties (i.e. sensory under-responsiveness/sensation seeking) show auditory filtering difficulties, which places them at greater risk than typically developing children to process verbal instructions effectively in noisy classroom environments.³ Other sources of heterogeneity include interactions between genetic and environmental etiological factors, which are expressed through gene x environmental interactions and epigenetic influences.^{4,5}

From a different, though related, perspective, heterogeneous presentations often reflect the influences of comorbid disorders. Like the perspectives noted above, they are also important because they contribute to heterogeneity, and to the identification of factors that contribute to dysfunction when they occur together. To the extent that such factors may be dissociated from each other, they thus provide potentially

important treatment targets. In this paper, we will emphasize and review the co-morbid occurrence of obsessive-compulsive disorder (OCD) and obsessive-compulsive symptoms in ASD. We selected this disorder because it contains features such as repetitive and constricted behaviors, which are common in ASD, and which contribute to reduced functioning in a variety of interpersonal, educational and occupational capacities. It thus contributes significantly to the burden of the disorder, and to the need for novel intervention strategies. We start first with representational overviews of comorbidities in neurodevelopmental disorders. We then review OCD and ASD alone and then together, followed by recommendations for future study.

COMORBIDITY OF ASD WITH OTHER PSYCHIATRIC DISORDERS

A variety of disorders or other conditions show elevated rates of comorbidity with ASD. One large, recent study, for example, used DSM-IV-based categories to assess developmental (e.g. intellectual disability, attention deficit/hyperactivity disorder (ADHD), learning disability, sensory integration disorder), psychiatric (e.g. OCD, oppositional defiant disorder, depression, schizophrenia, bipolar disorder) and medical (e.g. Down syndrome, tuberous sclerosis, epilepsy, cerebral palsy, Tourette's syndrome) disorders in a multi-site, population-based sample of 2,568 8-year-old children who were diagnosed with ASD.⁶ While these categories were not mutually exclusive (e.g. schizophrenia and bipolar disorder are often viewed as developmental as well as psychiatric disorders), it was notable that 83% of the sample had at least one non-ASD developmental disorder, 10% had at least one psychiatric disorder, and 16% had at least one neurologic diagnosis. Consistent with the likelihood that many psychiatric disorders onset (or are at least diagnosed) at later ages than developmental disorders, another recent study that focused

Received: 07/15/2015; Revised: 07/20/2015; Accepted: 07/23/2015

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on older children (10 to 14 years old) showed that 70% demonstrated at least one comorbid psychiatric disorder, and 41% showed at least two such disorders.⁷ These rates are particularly striking in psychiatrically-referred samples.

OBSESSIVE-COMPULSIVE DISORDER

Obsessions are defined as recurring thoughts, impulses or images that cause anxiety or distress, are intrusive and unwanted, and lead to attempts to neutralize and ignore these thoughts. Compulsive behaviors are repetitive actions that may reduce the anxiety associated with obsessions, but which also cause anxiety when they are resisted. The DSM-5 diagnosis for OCD is now a part of its own chapter called Obsessive Compulsive and Related Disorders, whereas in the DSM-IV OCD was a part of the Anxiety chapter.⁸ Now, to receive a diagnosis of OCD, a major feature of the disorder must be the presence of both obsessions and compulsions, whereas before, the diagnosis only required one or the other. Also, the symptoms must significantly affect daily life. In addition, a patient's obsessions and compulsions must meet certain criteria to receive a diagnosis. For example, the obsessions must be intrusive and persistent thoughts, impulses, or images that cause distress and are repetitive. These obsessions also must be very hard to suppress and ignore. Similarly, the compulsions must meet certain criteria as well. They must be excessive and repetitive ritualistic behavior that the patient feels obligated to perform to prevent a "punishment". These rituals must take at least an hour per day and must be performed to reduce the anxiety caused by the obsessive thoughts.

OCD is a relatively common disorder with a lifetime prevalence of about 2.3% and a 12 month prevalence of about 1.2%.⁹ The onset of OCD occurs during adolescence or early adulthood with more than 20% of patients reporting onset before age 14. In children and adolescents, the disorder is more frequently encountered among males than females, and starts earlier in males.¹⁰ The onset of the adult form of OCD also occurs earlier in men than in women. The prevalence of OCD in children is comparable to that in adults. The usual mean age of onset in adults is about age 19 and ranges between ages 18 and 24, with a substantial proportion experiencing onset in childhood.¹¹ There are strong genetic and environmental components influencing the development of the disorder. For example, individuals who have a first degree relative with OCD are five times more likely to develop the disorder.¹² Lastly, OCD patients suffer a chronic course, with very few individuals achieving spontaneous remission without some residual symptoms.

AUTISM SPECTRUM DISORDERS

Since the early 1900s, autism has been used to refer to a range of psychological conditions. The word "autism" comes from the Greek word "autos", meaning "self". The term describes conditions in which a person is removed from social interaction. In the 1940s, researchers in the United States started using the term to describe children with emotional or social problems. Leo Kanner, a doctor from Johns Hopkins University, used the term "autism" to describe

several withdrawn children that he was studying. At about the same time, Hans Asperger identified a similar condition that is now called Asperger's Syndrome. From the 1960s through the 1970s, treatments for autism consisted on LSD, electric shock, and behavioral change techniques using pain and punishment. During the 1980s and 1990s, behavior therapy and highly controlled learning environments emerged as primary sources of treatment for many forms of autism.

The DSM 5 diagnosis for autism has also undergone some large changes from DSM-IV. The largest change is that the separate diagnostic labels of Autistic Disorder, Asperger's Syndrome, and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS) have been replaced with the umbrella term of "Autism Spectrum Disorders (ASD)". To receive a diagnosis, persistent deficits in social communication and interaction must occur across multiple contexts. These include, for example, deficits in social-emotional reciprocity, nonverbal communication used for social interaction, and developing, maintaining, and understanding relationships. The restrictive, repetitive behaviors must be manifested by at least two of the following dimensions of function, including 1): the presence of repetitive movements, use of objects, or speech; 2) an insistence on 'sameness' and inflexible adherence to routines; 3) highly restricted and fixated interests that are abnormal in intensity and focus; 4) hypo- or hyperactivity to sensory input; and /or unusual interests in sensory aspects of the environment. Symptoms must appear in the early developmental period and cause significant impairment in social, occupational, or other areas of function or life roles.

ASD is another relatively common disorder.¹³ However, prevalence rates vary among sex and racial/ethnic groups. Approximately one in 42 boys and one in 189 girls are found to have ASD. White children were almost 30% more likely to develop ASD than African-American children and almost 50% more likely than Hispanic children. The mean age of development is 53 months and does not vary among sex or racial/ethnic groups.¹⁴ The prevalence of ASD has increased around the world since the 1970s and especially since the 1990s.¹⁵ There is a very large genetic factor involved in ASD. Among identical twins, for example, if one child has ASD, the other will have ASD 36-95% of the time. In fraternal twins, if one child has ASD, the other child is affected 0-31% of the time.¹⁶⁻¹⁹ Also, parents who have a child with ASD have a 2-18% chance of having a second child with ASD.^{20,21}

Upon initial examination, obsessive-compulsive disorder and autistic disorder seem highly different. OCD is defined as a presence of unwanted and recurring thoughts, urges, and images that elicit anxiety with which individuals with OCD engage in ritualistic behaviours (compulsions) to mitigate the anxiety. Meanwhile, autism spectrum disorder patients experience significant social, communication, and behavioural challenges. However, definitions of the two disorders have started to blur together because of growing evidence that supports a phenomenological overlap between OCD and ASD.

For comorbid diagnoses of OCD in ASD samples,²² the rate has differed widely from 1.5% to 81%. In another study focusing on obsessions and compulsions in children with Asperger's, they found that children with ASD may experience a similar level of impairment from obsessive-compulsive (OC) symptoms as children with OCD (Mack et al, 2010). Then, in Russel et al, 2005, it was found that obsessions and compulsions are common in adults with ASD and are associated with significant amounts of distress. Obsessive and compulsive traits in autism individuals are very similar to the traits in OCD patients. For example, these individuals show ritualistic and avoidance behaviors, such as hand washing rituals and checking. On the other hand, studies have also shown similar results for the presence of autism spectrum traits (AST) in OCD samples. In one study, AST were prevalent in the OCD sample and there was a presence of ASD in the OCD patients.²³ In another study,⁷ between 3% and 7% of individuals diagnosed with OCD also meet criteria for Asperger's. While prevalence estimates vary internationally, liberal estimates²⁴ still suggest that a 3% to 7% rate is 6 to 14 times the rate in the general populations.

While rates of diagnostic comorbidity suggest a relationship between ASD and OCD, more general similarities have been found. Multiple studies evaluating anxiety in ASD samples have indicated that OCD symptoms are among the most common causes of anxiety in ASD patients.²⁵⁻²⁹ Inversely, other studies have suggested that 20% of individuals with OCD may have autistic features.^{30,31} And according to data from,²³ autistic features occur about 10 times as frequently in OCD patients than the general population.

CONCLUSIONS AND FUTURE DIRECTIONS

Despite a growing interest on the overlap between OCD and ASD, the relationship is still understudied. Several review papers have studied specific areas of overlap between ASD and OCD, such as the genetics of repetitive movements³² and other biological similarities (e.g.,³³). However, considering the existing literature present on the overlap, there is still relatively little research on the potentially important shared impairment of cognitive abilities. Although both disorders show widespread co-morbidity, there are likely functional consequences of ASD-OCD comorbidity. For example, among a sample of individuals with OCD, those with comorbid ASD responded less well to cognitive behavioral therapy than those who did not have ASD.³⁴ Moreover, recent formulations of the relationship between ASD and OCD have emphasized the hypothesis that the negative emotions related to OCD, an anxiety-related disorder, likely contributes to restricted interests in ASD.³⁵ In this view, the restricted interests may serve as a maladaptive coping response to the negative emotional tone contributed by the OCD. This view is also consistent with the theme of an earlier review showing how effects of physiological stress are inversely related to efficient cognitive functioning, particularly involving executive functions such as mental flexibility, which is related to the notion cognitive and behavioral flexibility, and is inversely related to the notion of constricted interests. For each of these reasons, the negative

interaction between ASD and OCD constitute an area of enquiry in need of additional attention. Hopefully, the benefits of doing so will become apparent in better diagnostic and treatment options, and in a deeper understanding of the underlying environmental, neurobiological and genetic factors that govern the relationship.

CONFLICT OF INTEREST

None.

ETHICAL APPROVAL

This work meets all the ethical guidelines.

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