

Increased Hyperacusis with Risperidone in an Autistic Child

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ABSTRACT

Autistic spectrum disorder is a neurodevelopmental disorder characterized by qualitative impairment in social interactions and communication skills. In addition to these core features, sensory processing abnormalities such as auditory hypersensitivity have been frequently reported. Although the cause of auditory hypersensitivity remains unknown, it is thought to be associated with decreased inhibitory processing, possibly resulting from an abnormal sensory gating system or dysfunction of inhibitory interneurons. Its relation to drugs has not been well documented to date. In the literature, there is only one case on hyperacusis that worsened with risperidone in a 5-year-old girl with

autism. Here we represent the case of an 11-year-old boy with autism, in whom hyperacusis worsened with risperidone, decreased after the discontinuation of the medication, and re-occurred after the prescription of the drug again. Although auditory hypersensitivity tends to affect the child's daily life negatively and is found to be correlated with behavioral problems in autistic patients, we still know very little about its etiology, treatment, and conditions related to it. There is a great need for conducting further studies in this regard.

Keywords: Risperidone, hyperacusis, autistic spectrum disorder

INTRODUCTION

Hyperacusis has been defined as "unusual tolerance to ordinary environmental sounds" or "consistently exaggerated or inappropriate responses to sounds" that are neither uncomfortably loud nor threatening to a typical person. In most cases, the underlying medical condition cannot be found, but it can be related with some diseases, syndromes, and developmental and mental disorders (1). Autistic spectrum disorder (ASD) is one of these disorders found to be related with hyperacusis, which is a neurodevelopmental disorder characterized by qualitative impairment in communication skills and social interactions (2). In addition to these core features of ASD, sensory processing (SP) abnormalities such as auditory hypersensitivity have been frequently reported and may be a predictor of maladaptive behavior (3).

CASE PRESENTATION

An 11-year-old boy with ASD presented to our clinic with a complaint of "auditory hypersensitivity" by his parents. He has been attending special education and elementary school. He could read and write. He has been on 1 mg/day risperidone for a year, and his teachers did not mention any behavioral problems after treatment. Hyperacusis has always been present, but its severity increased 3 years ago when 1 mg/day risperidone was prescribed for hyperactivity and behavioral problems. Because of hyperacusis, risperidone was discontinued, and it decreased. Atomoxetine and then aripiprazole were prescribed, but they did not reduce symptoms satisfactorily, so risperidone was prescribed again.

According to his parents, he was particularly disturbed by the voice of children and electric appliances. Currently, hyperacusis started to affect his functionality. He refused to go out except to school, and in school, he was very disturbed and could not hold a pencil to write because he was covering his ears.

During his clinical assessment, intolerance to the usual noises of our clinic was observed. He was referred to the otorhinolaryngology and pediatric neurology departments to exclude the organic etiology. Physical examination and screening results were within the normal range. Risperidone was discontinued, and hyperacusis decreased to a tolerable level again.

Parents of the child were provided previous information about the case report and gave their written consent.

DISCUSSION

In recent years, interest in the SP of children with ASD has grown. Autistic children are frequently reported to exhibit behaviors associated with sensory sensitivity (e.g., covering ears because of loud voices and restricted food preferences), sensory seeking (efforts to provide intrinsic sensory stimulation e.g., hand flapping, rocking, and noise-making), or sensory under-responsivity (e.g., apparent indifference to pain/temperature) (3). Although the previous diagnostic criteria did not consider SP disturbance as a core deficit of ASD diagnosis, in the last edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) 5th edition, sensory abnormalities were appended to the diagnostic criteria for ASD (2).



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The reported coincidence of SP abnormalities in ASD is 42-88% (4). Among them, auditory hypersensitivity is the most common sensory impairment, interrupting behavioral adaptation (3). Autistic individuals perceive innocuous sounds to be a painful and frightening noise; in some cases, these sounds may be perceived as phobic stimuli and result in radical behavioral responses.

In earlier studies, researchers have reported differences in auditory processing in ASD patients compared with typically developing controls (5). The SH-V interpeak latency of the auditory brainstem response was longer in ASD patients than in control patients (6). Event-related potentials and magnetoencephalography studies also showed delayed responses to auditory stimuli in ASD (6,7,8). Although these electrophysiological studies showed auditory processing differences between autistic and control patients, the cause of auditory hypersensitivity remains unknown. Recently, it has been thought to be associated with decreased inhibitory processing, possibly resulting from the dysfunction of inhibitory interneurons or an abnormal sensory gating system (4,9). Its relation to drugs has not been well documented to date. In the literature, there is only one case report on hyperacusis that worsened with risperidone in a 5-year-old girl with autism; hyperacusis disappeared after the discontinuation of the medication and re-occurred in a re-challenge test (10). To our knowledge, our report is the second case about the possible effect of risperidone on hyperacusis in autism.

CONCLUSIONS

Auditory hypersensitivity tends to impair the adaptation to the daily routine and is found to be correlated to behavioral problems in autistic patients; however, we still know very little about its etiology, treatment, and conditions related to it (3). There is a great need for conducting further studies in this regard.

Informed Consent: Written informed consent was obtained from patient's parents who participated in this study.

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