Does Risperidone Improve Hyperacusia in Children with Autism?

By Ahmad Ghanizadeh

ABSTRACT ~ Introduction: Many of children with autism have hyperacusia, an increased sensation to sound. It can lead to their avoidance from some sounds or they may cover their ears. There was not found any published report about possible effect of any medication for improving hyperacusia in children with autism. Case Report: The patient is a 5 and half year old girl with autism and hyperacusia. According to her mother’s report, severity of hyperacusia was improved after taking risperidone. Conclusion: Hyperacusia was improved after initiation of risperidone and disappeared after discontinuation of risperidone. It re-happened in the re-challenge test. This supports the possible role of risperidone. To the author’s knowledge, this is the first report of possible risperidone effect on hyperacusia in the literature. Psychopharmacology Bulletin. 2009;42(1):108–110.

INTRODUCTION

Autism is a developmental disorder. There are deficits in auditory processing of children with autism that effect their communication with others. Some children with autism have hyperacusis, an increased perception to sound.1,2 Hyperacusia is defined as an abnormally disproportionate increase in the sensation of loudness in response to auditory stimuli of normal volume. These children might be frightened when they hear loud sounds. For example, they may cry when they hear sound of a vacuum cleaner, a car, or washing machine. It can lead to their avoidance from some sounds or they may cover their ears.3 This loudness sensation is not associated with intellectual abilities.1 The ethiology of hyperacusia is questionable, unknown and unclear. Both of the central and peripheral (middle ear or cochlea) mechanisms were reported.4 There is a speculation that hyperacusis in children with autism can be of central origin.1 Ineffective inhibitory control of sensory processing or deficits of sensory gating in retarded children with autism reflects excitation/inhibition imbalance.5 Deficits of inhibitory control of sounds may cause sensory overload and disruption of higher order processing in autism that leads to active avoidance of sounds.6 Having a deeper insight and improving their auditory processing might improve the social isolation of children with autism. Already, it had shown that improvement of auditory processing improves language and reading problems in dyslexia.7

Key Words: risperidone, hyperacusia, children, autism

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To the best of the author’s knowledge, there was not found any published report about possible effect of any medication for improving of hyperacusia in children with autism. This is a report of a child with autism and severe hyperacusia. Her hyperacusia was significantly improved after taking risperidone.

CASE REPORT

The patient is a 5 and half year old girl with autism according to DSM-IV diagnostic criteria. She has been very sensitive to sounds. She was usually frightened or escaped from loud sounds. For example, her mother reported that she doesn’t tolerate walking in the street. The sound of a car significantly disturbs her. Even, her mother has problems for using vacuum cleaner or washing machine because she cries by their sounds. She often covers her ears when there is a loud sound. She is also a case with a history of epilepsy. She had been prescribed haloperidol 0.8 mg/day for three months. It did not improve her problems. So, haloperidol was discontinued. One week later, sodium valporate 600 mg/day and risperidone 0.5 mg/day were prescribed. According to her mother’s report, seizure was controlled after one week and his behavior was improved significantly.

The parents were asked to indicate how much the hyperacusia she had on a 10-cm-long line with anchors of ‘no hyperacusia’ and ‘the worst possible hyperacusia’ on the visual analog scale. The severity of hyperacusia reported by her mother on the 10-cm-long line was about 10 before taking risperidone and sodium valporate. Its severity decreased to 3–4 about one week after taking the medications. Risperidone was discontinued for one month. Then, the hyperacusia score returned to 10. Risperidone was re-administered. One week later, hyperacusia improved and its score was about 4–5.

Now, she does not escape from loud sounds. She tolerates to be in the street and sound of a car does not disturb her. In addition, she does not cover her ears when there is a loud sound. According to her mother’s report, this is a significant change in their life. However, the effect decreased after about one month.

DISCUSSION

Hyperacusia improved after initiation of risperidone and disappeared after discontinuation of risperidone. It re-happened in re-challenge test. This is a possible evidence to support the role of risperidone and its association with improvement of hyperacusia. It is possible that risperidone improves deficits of sensory gating in retarded children with autism. It should be noted that cortical hyperexcitation and frontal deficit in reducing sensory gating is not exclusive to autism.
This phenomenon is also seen in children with epilepsy. The current case was also a case of epilepsy. So, the possible current effect cannot be exclusively associated with autism. There is a report that atypical neuroleptics including risperidone improves sensory gating deficits in schizophrenia. Risperidone modulates auditory information processing in patients with schizophrenia. Other conditions such as cochlear disease, vestibulocochlear nerve disease, and facial nerve disease may be associated with hyperacusia. Although there was not found any remarkable finding in neurological examination, more investigation are required for detecting other possible causes for her hyperacusia.

This report is rather descriptive with only one child with hyperacusia. The specific contribution of risperidone to the improvement of hyperacusia remains controversial. Future studies in this area could shed further light on the importance of this finding in large samples if risperidone can improve loudness perception in children with autism. Potentially, it improves the quality of life and their learning.

To the best of the author’s knowledge, this is the first report of possible risperidone effect on hyperacusia in the literature. Even, not any other medication was associated with improvement of hyperacusia. Further studies with long term follow ups are required to survey if risperidone is associated with improvement of hyperacusia and whether this effect is associated with the decrease of irritability or its sedative effects.

COMPETING INTERESTS AND FUNDING

There were no competing interests or funding to be declared.

REFERENCES