Methylphenidate Ameliorates Worsening Distractibility Symptoms of Misophonia in an Adolescent Male

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Misophonia is a condition characterized by a negative emotional/autonomic response to specific everyday sound stimulus.[1] Misophonia has been associated with psychiatric conditions such as mood disorder, obsessive-compulsive disorder, anorexia, and posttraumatic stress disorder, but we are unaware of any report of misophonia leading to increased distractibility.[2] We report a case of misophonia characterized by negative emotional response to a specific sound stimulus leading to increased distractibility.

Case Report

A 14-year-old white male presented with history of inattention, poor focusing, distractibility, and negative emotional/autonomic response to specific sound stimulus. The patient felt bored in the classroom, was easily distracted, missed details, had difficulty maintaining focus on 1 task, was not completing assignments, and did not get his work turned in to meet deadlines due to procrastination. He spent time talking in class instead of working and he compensated for the urge to fidget by tapping his pencils. He was unable to carry out multistep directions, and his grades dropped significantly. He reported having unpleasant emotional distress and feelings of disgust to the sound stimulus from his mother's voice. He did not like when his mother chewed food because he felt hypersensitive to the sound such that he had to leave the dining table. The hypersensitivity to the sound coming from his mother's voice made him avoid doing his homework near her, and he wore earphones to block her voice. He also reported worsening distractibility whenever he started having the negative emotional response to the specific sound stimulus from his mother. The patient denied any history of chronic irritability, drug use, obsessive-compulsive disorder, mood disorder, anxiety disorder, panic disorder, Tourette syndrome, or visual or auditory hallucinations. Past medical history, laboratory findings, general examination, and hearing examination were unremarkable.

A trial with methylphenidate was started to address his inattentiveness, while cognitive-behavioral therapy was initiated for the misophonia. The patient reported improvement in his concentration and focus. The distractibility associated with the misophonia was greatly improved. With methylphenidate treatment, he was better able to tolerate his mother's voice, and he reported resurgence of his misophonia on days when he did not take the medication. He also reported improved ability to get his schoolwork done.

Discussion

Most patients with misophonia have hearing sensitivity to certain sounds. Although misophonia patients have been reported to have other psychiatric conditions such as mood disorder, Tourette syndrome, attention-deficit/hyperactivity disorder (ADHD), trichotillomania, skin picking, panic disorder, and hypochondria, misophonia leading to increased distractibility has not been described. There are reports[3] of heightened state of excitation in the limbic and autonomic nervous systems, which may result in abnormal reaction to normal auditory input.

Research[4] has revealed that trigger sounds elicit increased responses in the anterior insular cortex, as well as abnormal functional connectivity between the anterior insular cortex and medial frontal, medial parietal, and medial temporal regions. Convergent data from neuroimaging, neuropsychology, genetics, and neurochemical studies suggest the involvement of the frontostriatal network as a likely contributor to the pathophysiology of ADHD.[5]

It is possible that the neural pathways in the frontocortical region associated with misophonia may synergistically act with the frontostriatal network that is involved in the pathophysiology of distractibility of ADHD. This case report suggests that use of methylphenidate may improve misophonia associated with worsening distractibility. Functional neuroimaging of misophonia patients with ADHD is needed to shed more light on the ability of methylphenidate to ameliorate distractibility among these patients.

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