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β-Blockers for the Treatment of Misophonia and Misokinesia

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Abstract: Misophonia is an adverse physical and emotional reaction to certain repetitive trigger sounds, usually generated by other people. Misokinesia refers to visual triggers that are sometimes (but not always) related to trigger sounds. Despite how common and disabling these conditions can be, medication treatment of misophonia and misokinesia is largely unexplored. We present the first case of using a β-blocker (propranolol) to successfully treat a patient experiencing misophonia and misokinesia. A moderate dose (60 mg) of propranolol completely eliminated multiple auditory and visual trigger symptoms related to other people eating. His trigger response symptoms included overwhelming negative emotions and prominent sympathetic overactivity (fight-or-flight response). These symptoms were so severe that he had avoided most meals with friends and family for the past several years. Propranolol eliminated the emotional and physiological effects of both the auditory and visual triggers, with an Amsterdam Misophonia Scale score reduction from 15 to 2. This enabled him to resume eating meals with family and friends with no distress. The medication was well tolerated. In summary, we report the novel finding that β-blockers were markedly effective at treating the physical and emotional symptoms of a patient with misophonia and misokinesia. This suggests a novel treatment approach for these conditions.

Key Words: misophonia, misokinesia, propranolol, β-blocker

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CASE PRESENTATION

The patient is a 16-year-old White adolescent boy who presented for evaluation and treatment of misophonia and misokinesia. The patient was triggered by the sounds of eating, coughing, and silverware clanking on plates. His misophonia symptoms began at age 9 years and was initially isolated to his sister eating with an open mouth. Triggers eventually generalized to other family and friends and to other dinner time sounds. In addition, the patient developed visual triggers (misokinesia) toward people moving their jaws while eating. Trigger response symptoms included:

- Increased heart rate
- Sweating
- Rapid breathing
- Jerking movements
- Tense muscle tone, such as a clenched jaw
- Strong desire to run away
- Intense fixation on the person making the trigger sound until it stopped
- Feelings of disgust and panic
- Overwhelming feelings of rage and aggression toward the trigger source.

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These symptoms were severe enough that he often left the dinner table in distress and would avoid social situations if eating was involved. This was deeply troubling as he otherwise enjoyed spending time with friends and family and felt isolated because of this problem.

Medical/Psychological History

The patient is a highly intelligent, articulate, thoughtful 16-year-old adolescent boy with normal development. He is talented at playing music and has no other psychiatric or health diagnoses. His family is loving and supportive and was distressed by how his misophonia/misokinesia symptoms limited his ability to share meals with them.

Treatment of Misophonia With an Audio Device

The patient used a hearing aid to play masking sounds during meals, which reduced the perceived intensity of the auditory triggers. However, to hear table conversation, sound volume had to be limited such that some chewing sounds were still audible. Masking sounds, therefore, did not fully treat his trigger response, and his visual triggers also were not helped by the hearing device.

Treatment With Propranolol

The β-blocker propranolol was initiated to treat fight-or-flight (adrenergic) symptoms caused by auditory and visual triggers. Dosing began low (10 mg) to minimize adverse effects and was increased over several weeks to 60 mg, taken 1 hour before meals. He experienced mild sedation during initial dose titration and at doses greater than 60 mg but otherwise tolerated it well with no ongoing adverse effects. Please note that this is an off-label (not Food and Drug Administration approved) use of this medication.

Course of Illness

Propranolol was reported as "100% effective" in reducing the previously listed physical and emotional trigger responses when taken before meals and when used in conjunction with his hearing aid for added masking sound. It was rated as 90% effective without using a hearing aid. If he forgot to take the medication an hour before a meal, the trigger response symptoms would reappear.

The Amsterdam Misophonia Scale (A-Miso-S)

The A-Miso-S rating scale was administered to measure the effects of propranolol treatment. A-Miso-S score decreased from 15 (no propranolol before meals) to 2 (taking propranolol).

Treatment satisfaction was rated as very high, and he was able to resume social meals with family and friends. The symptoms were reduced to the extent he often did not notice triggers and would sometimes forget that certain sights and sounds had ever been triggers. This was a sharp contrast to the constant distress from multiple triggers at virtually every meal.

DISCUSSION

To our knowledge, this is the first reported case of using β-blocker medication to treat symptoms of misophonia and represents a novel mechanistic approach to treating this complex disorder.

It is also one of the first reported cases of using any medication to treat misokinesia.

The use of selective serotonin reuptake inhibitors to treat misophonia has been previously reported in a few individual cases.[1,2] Beyond this, there are little data about using any medication to treat this disorder.

Misophonia patients often report strong physical and emotional reactions to triggers. Symptom descriptions suggest abnormal activation of the sympathetic "fight-or-flight" response, as in this present case. This abnormal sympathetic response is also thought to help mediate the pathology of certain psychiatric conditions, such as panic disorder,[3] and posttraumatic stress disorder (PTSD).[4] For example, a soldier experiencing PTSD after a military explosion might have a strong fight-or-flight response to a benign auditory stimulus (eg, fireworks). Medications that block the effects of sympathetic activity (eg, β-blockers) block the actions of stress hormones adrenaline (epinephrine) and norepinephrine, which are released by the sympathetic nervous system when the brain detects a threat and enters into a fight-or-flight response. Blocking these stress hormones can, therefore, alleviate the fight-or-flight symptoms arising from panic and PTSD triggers.

By analogy to PTSD and panic, we reasoned that the fight-or-flight symptoms induced by misophonia/misokinesia triggers might also be similarly reduced by β-blockers, and indeed, propranolol completely eliminated these symptoms in this case. It is noteworthy that blocking the adrenergic response also resolved the emotional symptoms caused by triggers. Anger, disgust, and panic symptoms were all quickly eliminated with treatment, suggesting that the sympathetic fight-or-flight response may have a prominent role in mediating both the physical and emotional symptoms common in misophonia and misokinesia.

New research suggests that misophonia may be activated in part by the brain's motor cortex and mirror neurons. This finding suggests a strong neurological basis for this disorder and argues against it simply being an extension of other psychiatric disorders, such as anxiety, or being primarily a psychological or relationship problem. The data from this report similarly suggest a strong role for physiological abnormalities in misophonia and misokinesia, perhaps analogous to the physiological abnormalities seen in PTSD and panic disorder.

Future research should examine, under controlled conditions, the role of propranolol and other adrenergic-modulating medications in treating misophonia symptoms, perhaps paralleling studies already done for PTSD. β-Blockers, clonidine, and prazosin are ideal candidates for future research. Meantime, we believe that β-blockers offer new hope as a relatively safe treatment consideration for patients experiencing misophonia and misokinesia.

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