

## Case report

## Tic Modulation Using Sensory Tricks

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### Abstract

**Background:** A sensory trick, or geste antagoniste, is defined as a physical gesture (such as a touch on a particular body part) that mitigates the production of an involuntary movement. This phenomenon is most commonly described as a feature of dystonia. Here we present a case of successful modulation of tics using sensory tricks.

**Case Report:** A case report and video are presented. The case and video demonstrate a 19-year-old male who successfully controlled his tics with various sensory tricks.

**Discussion:** It is underappreciated by movement disorder physicians that sensory tricks can play a role in tics. Introducing this concept to patients could potentially help in tic control. In addition, understanding the pathophysiological underpinnings of sensory tricks could help in the understanding of the pathophysiology of tics.

**Keywords:** Sensory tricks, tics, Tourette's syndrome

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### Introduction

Here we present a case of a 19-year-old male with a tic disorder who controls his most bothersome tic with a sensory trick.

### Case report

The patient first developed tics when he was 10 years old. The first tic consisted of brief movements of his head to the left. The tics evolved to include sniffing, throat clearing, and blinking. The patient also developed significant attentional disturbances and subsequent difficulties in school. At the age of 12 years, he was diagnosed with Tourette's syndrome. Multiple medications were tried. Typically, his tics would initially respond well to the various medication trials, but he would always relapse within 5–6 weeks. His medication history includes guanfacine (1 mg twice a day), clonidine patch (0.1 mg patch daily), clonazepam (up to 1 mg at bedtime), risperidone (up to 0.5 mg three times a day), propranolol (up to 10 mg three times a day), and levetiracetam (up to 750 mg twice a day) for tics, as well as atomoxetine (up to 60 mg) for attentional deficits. From the ages of 12 to 18 years, he did very poorly in school, which was likely due to a combination of attention deficit disorder and the sedating side effects

of his various medications. He had very mild compulsive tendencies, such as excessive counting, but this did not interfere with functioning. Towards the end of high school, he weaned himself off all his medications as none were particularly effective, and currently he is not taking any medications.

During high school, the neck-turning tic began to be pervasive. He discovered that if he applied gentle pressure to anywhere along his head circumference, the tics, and the accompanying urge to perform them, would be completely quelled. Touching his lower face was also effective, although less so. His sensory tricks included resting the back of his head against a wall, resting his chin on his hand, and wearing a bandana or hat. Unfortunately, his school did not allow headgear and this limited his ability to control his neck tic. Now that he is at university, he wears a baseball cap every day with much success in tic control. His other tics, such as sniffing and blinking, which are significantly less bothersome than his neck tics, are not responsive to sensory tricks. Video 1 demonstrates this phenomenon.

### Discussion

Here we have described a case report about highly successful sensory tricks for tic control and have demonstrated this phenomenon

**Video 1. The patient is able to control the leftward turning of his neck when his baseball cap is on.** Other tics such as blinking and left arm movements continue. When the cap is removed, the tics, and the sensory urge to perform them, begin almost immediately. The patient can achieve the same tic relief when he puts his hand along the side of his mouth and when he rests his head on the back of the chair. A bandana also aborts the tics, and they re-emerge as soon as the bandana is removed.



in Video 1. Sensory tricks are most frequently described as features of dystonia. In fact, the presence of a sensory trick is considered supporting evidence for the diagnosis of dystonia. However, the phenomenon of sensory tricks has also been reported for tics, and may be clinically underappreciated. In 1995, Wojcieszek and Lang reported that 15 of 45 patients surveyed with Tourette's syndrome or chronic motor tics used a sensory trick to help control tics.<sup>1</sup> Interestingly, most of the tics that responded to tricks were dystonic in nature. In our case, the patient's tics were brief head-turning movements, reminiscent of torticollis, and therefore also fit the characterization of dystonic tics. Although this small study demonstrated that one-third of tic patients experience this phenomenon, it is not a feature that movement

disorder physicians tend to ask about, despite the fact that this is a standard question when exploring the clinical features of dystonia. One implication of the observation that tics can be controlled with sensory tricks is that alteration in the electrical activity of the sensory cortex may modify, and perhaps suppress, tics. This possibility should not be surprising as other sensory phenomena are well described features of tics, such as the sensory urges that precede tic production and the relief felt after tic completion.

Modulation of sensory circuits, however, has not been explored as a treatment option for tics. This could potentially be accomplished via repetitive transcranial magnetic stimulation (rTMS), a neurophysiological tool that can either excite or inhibit brain regions depending primarily on the frequency of stimulation. Various studies have been conducted using rTMS to modulate tics, but the focus has been on targeting brain areas associated with motor and not sensory function.<sup>2</sup> It has been hypothesized by others<sup>3</sup> that TMS could be used to simulate the sensory trick to relieve dystonia, and similar logic may apply to tic control.

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