

Case Reports

Overuse Cervical Dystonia: A Case Report and Literature Review

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Abstract

Background: Overuse or task-specific dystonia has been described in a number of professions characterized by repetitive actions, typically affecting the upper extremities. Cervical dystonia (CD), however, has rarely been associated with overuse.

Case Report: We present a case report of typical CD that developed in the context of chronic repetitive movements associated with the patient's professional occupation as an office manager who spent many hours per day holding a phone to his ear.

Discussion: Overuse CD should be suspected when typical symptoms and signs of CD develop in the context of chronic repetitive use or overuse of cervical muscles, especially where exacerbating tasks involve asymmetric postures.

Keywords: Cervical dystonia, overuse, task specific, occupational, repetitive use

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Introduction

Overuse or task-specific dystonia has been described in a number of professions characterized by repetitive actions, typically affecting the upper extremities. Any occupation based on repetitive movements or overlearned tasks such as machinery or computer operation, writing, sports, or playing an instrument may lead to abnormal muscle contractions in predisposed individuals.¹ Prevalence estimates of task-specific dystonia range between seven and 69 cases per million in the general population and may be as high as 0.5% in musicians.²

Cervical dystonia (CD) has rarely been associated with chronic overuse, and we found only three prior reported cases. We present a case report of typical CD that developed in the context of chronic repetitive movements associated with the patient's professional occupation.

Case report

A 37-year-old non-Ashkenazi Jewish male, with no family history of neurologic disease, gradually experienced bilateral painful hand paresthesias. He was employed as an insurance company manager and his daily activities included typing (responding to as many as 150 emails

per day), data entry, and five or more hours on the phone daily. This asymmetric posture included cradling the phone typically against his right ear by tilting his head to the right while elevating his right shoulder and continuing to type. This became associated with neck muscle spasms and pain while holding that posture. A few months later, he developed involuntary head turn to the right at rest. He described a sensory trick relieving the abnormal head pulling by touching his left cheek. Neurological examination showed a 75° head rotation to the right and right shoulder elevation, as well as hypertrophy of the right levator scapulae and trapezius muscles. There were no other areas of dystonic involvement seen. He reported chronic, dull pain in the right posterior neck and shoulders. The Toronto Western Spasmodic Torticollis Rating Scale score was 56, with a severity subscore of 22, disability subscore of 20, and pain subscore of 14. On the basis of these symptoms and signs, he was diagnosed with CD.

Brain magnetic resonance imaging was unremarkable and electromyography/Nerve Conduction Velocity (NCV) showed bilateral mild compression of the median nerve at the carpal tunnel. Diagnostic ultrasound further demonstrated bilateral ulnar neuritis with hypermobility of the ulnar nerves at the elbow and fusiform enlargement of

Table 1. Cases Reporting Overuse Cervical Dystonia

| Reference | Age at Onset and Gender | Task/Provoking Factor | Affected Muscles | Response to Botulinum Toxin |
|---------------------------------|-------------------------|--|--|---|
| Wright and Ahlskog ⁹ | 39 male | Chronic overuse of sledgehammer | Trapezius | Substantial benefit to pain and shoulder elevation |
| Wright and Ahlskog ⁹ | 35 male | Chronic heavy lifting | Trapezius | Not administered |
| Schramm, et al. ⁶ | 35 male | Bilateral traumatic arm amputation at the age of 15. Writing and drawing, using tools held in his mouth. | Left sternocleidomastoid Right splenius capitis Left splenius capitis (antagonistic) | Injections of botulinum toxin into several cervical muscles up to a dose of 300 units botulinum toxin led to only a mild improvement. |
| Current case | 37 male | Repetitive typing, data entry, and cradling a phone to the right ear | Right levator scapulae Right trapezius Right splenius capitis | Multiple rounds of botulinum toxin injections failed to relieve neck spasms |

both median nerves at the wrists, consistent with cubital and carpal tunnel entrapment. Multiple rounds of botulinum toxin injections in the affected muscles failed to relieve involuntary head rotation, albeit improving shoulder elevation. Initial injections targeted the right (60 unit) and left (30 unit) splenius capitis, semispinalis capitis (60 unit) and trapezius (60 unit), in addition to the left SCM (30 unit). More recent injections added the right obliquus capitis inferior and right rectus capitis posterior for a total of 400 unit. Pharmacologic interventions with maximum doses (if available) included clonazepam, lorazepam (1 mg), baclofen (10 mg three times a day as needed), alprazolam (1.5 mg as needed), Flexeril (cyclobenzaprine) (20 mg daily as needed), Soma (carisoprodol), Flector (diclofenac patch), and Lidoderm (lidocaine) patches. Overall, these medications helped with associated pain and anxiety, but not the involuntary spasms.

Discussion

Historically, musicians, Morse code operators, writers, tailors, shoemakers, and hairdressers have been described to develop painful dystonias related to their activity.² Sports-related overuse conditions include “golfer’s yips,” “pistol shooter’s cramps,” and petanque player’s arm dystonia.² Modern jobs require heavy schedules of rapid alternating movements (e.g. computer programmers, data entry workers) or repetitive, sustained, coordinated movements.³ A number of risk factors, including improper keyboard techniques, asymmetrical postures with poor gravitational alignment, and forceful, rapid, repetitive movements can lead to overuse syndromes.³ This patient had evidence of compressive neuropathies based on history and electrodiagnostic testing, which supports his engagement in overuse behaviors. There is possibly no direct relationship between these injuries and the development of dystonia, but they are illustrative of the repetitive nature of his work.

Despite being the most frequent type of focal dystonia,⁴ CD has rarely been associated with specific tasks or repetitive use. Our case

presents the hallmark feature of prolonged asymmetrical postures (i.e. cradling the phone with right head and shoulder) described as risk factors for overuse dystonia. Although initially dystonic spasms occurred only while performing the specific action or task, over time they became present at rest as well, following a progression previously reported as typical of dystonia.⁵

The pathophysiology of CD remains poorly understood^{6,7} and overuse possibly represents an under-reported etiology.⁸ We found only three cases of CD associated with overuse in the literature (see Table 1). All three were reported in male subjects. The first case portrays a male forced to write and draw for many years using only his mouth (as a consequence of bilateral traumatic arm amputations at the age of 15), who in later life developed CD characterized by phasic involuntary head turning to the right side and severe neck pain. Botulinum toxin injections into the affected muscles led to mild improvement.⁶

Two more CD cases related to chronic overuse were embedded in a series of 13 cases of dystonia affecting primarily the shoulders.⁹ Both were male patients in their thirties. One used a sledgehammer professionally and the other engaged in heavy lifting. In both cases the trapezius muscle was affected. Botulinum toxin injection improved pain and shoulder elevation in one patient. Interestingly, we found indications that occupational CD may be more widely diagnosed in Japan, where it seems to be common in production line and visual display terminal workers developing symptoms of neck or shoulder stiffness.⁸ Many healthcare providers may not know how to recognize this condition, suggesting it is under-reported.

In conclusion, overuse CD should be suspected when typical symptoms and signs develop in the context of repetitive use or overuse of cervical muscles, especially where exacerbating tasks were asymmetric. As this is a rare condition, there are no specific management guidelines available beyond those relative to other overuse dystonias.

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