ISSN: 2474-9206

Case Report

Journal of Anesthesia & Pain Medicine

A Twist of Fate: An Involuntary Spasm of Head and Neck Muscles: A Case Report

Ajay Challapalli[1] and Terence K Gray DO[2,3*]

[1]*Alabama College of Osteopathic Medicine*

[2]*Maine Comprehensive Pain Management, PC*

[3]*Clinical Assistant Professor of Anesthesiology/Pain Management at the University of New England College of Osteopathic Medicine (UNECOM), United States*

[*]Corresponding Author
Terence K Gray DO, Maine Comprehensive Pain Management, 400 Enterprise Dr #1, Scarborough, ME 04074; Phone: (207) 289-6726
E-mail: Drgray@painmanagementmaine.com.

Submitted: 2024, Jul 18; **Accepted:** 2024, Aug 13; **Published:** 2024, Sep 10

Citation: Challapalli, A., Gray, T. K. (2024). A Twist of Fate: An Involuntary Spasm of Head and Neck Muscles: A Case Report. *J Anesth Pain Med, 9*(3), 01-03.

Abstract

A 51-year-old female presented to the clinic with worsening persistent and involuntary spasm of head and neck muscles that included a right head tilt, decreased cervical rotation and rhythmic twisting of the chin to the right laterally. The patient presented with significant medical history for anxiety, tremors, and depression. She stated her biological mother has had a similar presentation of symptoms for several years. Our patient was prescribed medications to treat her comorbid conditions. These included Fluoxetine, Gabapentin and Mirtazapine. It appears the use of Prozac and gabapentin exacerbated her symptoms of cervical dystonia. To alleviate the persistent symptoms, this case report aims to discuss how several drugs can worsen dystonia as well as how the use of onabotulinumtoxinA (Botox) or Botolinum toxin A can alleviate cervical dystonia symptoms.

1. Introduction

Cervical dystonia (also known as spasmodic torticollis) is commonly defined as a disorder characterized by an involuntary, protracted spasm of the cervical paraspinal muscle groups in the neck [1]. The literature has extensively documented that many individuals with CD have a severe head tilt or tremor because of spasm. For many physicians, this is the definitive definition of CD. There are two types of Cervical Dystonia: idiopathic (primary) or secondary. Individuals with primary cervical dystonia have either a genetic or sporadic cause and have no evidence by physical or history examination [2]. Secondary cervical dystonia can be caused by trauma, exposure to dopamine receptor antagonists, or a neurodegenerative disease [2]. The patient discussed in this case study appeared to have both primary and secondary cervical dystonia.

In most cases, the origin of the symptoms is unclear as there are a variety of causes that could begin the onset of cervical dystonia. Previous research studies conclude that people with dystonia have an inhibition for reciprocal inhibition [3]. Reciprocal inhibition is the main method that muscles use to inhibit the opposite muscle group when its counterpart is in use. This provides a smooth way for muscles to act without coming in the way of one another. Another research study done by Hallet et al. showed that in patients with cervical dystonia, reciprocal inhibition is limited so the opposite muscle contracts when its counterpart also contracts [4].

There are various treatments for cervical dystonia such as low pharmacotherapy agents like benzodiazepines, baclofen, anticholinergics [2]. It has been noted that higher doses of these medications in later stages often cannot be tolerated because of side effects (dry mouth, cognitive disturbance, drowsiness, diplopia, glaucoma, and urinary retention) [5]. Due to the side effects of these medications, onabotulinumtoxinA was authorized in 2000 for the treatment of CD in adult patients to lessen the intensity of their aberrant head position and neck pain [6]. Today, onabotulinumtoxinA or Botolinum toxin A (BtA) is the most used treatment for cervical dystonia [5]. BtA is intended to mimic the actions of Botulinum Toxin A by inhibiting the release of acetylcholine at the neuromuscular junction, resulting in flaccid paralysis. Although the exact mechanism underlying ONA pain alleviation is still being studied, the most popular ideas suggest that it involves inhibiting the sensitization of peripheral and central nerves, which in turn reduces the activation of secondary nociceptive neurons [7]. The most typical adverse effects are weariness, dry mouth, severe weakening of the injected or nearby muscles, injection site pain, and dysphagia due to dissemination to neighboring muscles [8-10]. Unusual side effects include headaches, malaise, and widespread weakness without obvious indicators of weakening [11].

This case study illustrates how Cervical Dystonia can be successfully treated with ONA in a 51-year-old female. The case report highlights the diagnosis, clinical management, and response to the treatment options present in cervical dystonia.

2. Case

A 51-year-old female presented to the clinic with neck pain, spasm, and headaches. Three years prior to presenting at the clinic she had two significant concussions that may have started the cycle of the spasms. Although, through history taking it was identified she has had more subtle but similar symptoms for many years. She also stated her mother has similar symptoms with the diagnosis of cervical dystonia. The patient describes the pain as a sharp, stabbing aching pain with right arm numbness and weakness. The right arm pain is reproduced with palpation of trigger points in the trapezius. On the Visual Analogue Scale (VAS) for pain, the patient reports her pain is a 7/10 in severity. The patient describes the pain worsened by activity, movement and relieved by rest. She underwent unsuccessful treatment with chiro, acupuncture, medications. A previous C-spine MRI that showed edema in the C6 endplate and C6-C7 neuroforaminal narrowing. The narrowing was mild/moderate on the right and moderate on the left.

During the encounter the patient complained of weakness and paresthesia in the right neck, shoulder and arm. She also has subjective weakness in the right hand. The patient past medical history is significant for anxiety, depression, hypotension, tremors, and syncope. Her surgical history is significant for appendectomy, three c-sections, cholecystectomy, partial hysterectomy, and scar tissue removals. Her family history is significant for her mother with cervical dystonia. Socially, she drinks alcohol 2-3 times a week, is married, does not smoke, has no dietary restrictions, and exercises once daily. She has no known allergies, and her current medications include baclofen, fluoxetine, and gabapentin.

During her exam, the patient was alert and oriented to person, place, and time. She did not have any neurological deficits, and she had 5/5 strength throughout bilateral upper and lower extremity myotomes and full range of motion in all major joints except her cervical spine. Physical exam showed persistent involuntary spasm of right greater than left cervical paraspinal, occipitalis, sternocleidomastoid and trapezius with a right head tilt and persistent fade to right often needing restraint with her hand.

Her original symptoms worsened after two car accidents in 2021. She had significant progression of symptoms in the fall of 2023 when she was started on Fluoxetine for her depression and anxiety. These symptoms worsened when Gabapentin was added to her medication by another provider to treat the neck pain and headaches in 2024. We discussed that Fluoxetine and Gabapentin may be contributing to her symptoms of cervical dystonia, so we slowly weaned her off her Gabapentin and Fluoxetine. However, she did get worsening symptoms of anxiety, so she was started on Propranolol at night and then later twice a day. We also discussed the use of Botox. About two weeks prior to seeing us she had a first round of Botox through her neurologist in the right splenius and levator and left sternocleidomastoid. She did not notice any significant benefit from this. We discussed a different treatment plan using BtA and our patient elected to undergo BtA bilaterally in occipitalis, trapezius, and cervical paraspinal groups.

3. Management and Outcome

On the day of the initial procedure, after pre-procedure checklists and monitoring were performed, trigger points were identified, marked, and scrubbed with Chlorhexidine. Then, first round of ONA injections was performed in occipitalis, cervical paraspinal, and trapezius muscle groups. The first round used a 30-gauge 0.5-inch needle, delivering a total of 100 units of ONA. After the first round of BtA injections, the patient reported a 70% improvement but was having more spasm in the right upper and lower trapezius muscles compared to the left and more spasm in left sternocleidomastoid compared to the right. Due to this the second round included BtA injections in the bilateral occipitalis, cervical paraspinal, trapezius (upper and lower) and sternocleidomastoid groups with a total of 170 units injected in the second round. She had the post injection discomfort after the second round and hence Tizanidine was prescribed with benefit of the post injection discomfort and no side effects noted by the patient. No complications were noted during the procedure and the patient's vitals remained stable.

Upon a follow-up patient call within one week of the injections, the patient had an uptick in anxiety and noticed less discomfort and said she could do more since her recent Botox injections with our practice. The patient was also concerned that the new low dose of Fluoxetine may cause worsening anxiety, so we decided to add Propranolol to assist while the patient tapers off the Fluoxetine. The patient followed up with another encounter two weeks later and noted pain was improved by 50% and spasm improved by 50% and head turning improved by 50%. The patient was followed by another call 1 month later and noticed that she felt "70% or more" improved than she was before coming to our clinic. The patient presented to the clinic for her second set of BtA injections at 90 days and noted that she was "much better than I was. Oh my God, 90%". Once fully weaned off the Fluoxetine and Gabapentin and on a stable dose of Propranolol twice a day she noted she still had anxiety. After a discussion we initiated treatment with Duloxetine 20 mg orally at night. We asked our patient to make us aware if she had any worsening of the dystonia with the addition of Duloxetine. While not a selective serotonin reuptake inhibitor (SSRI), Duloxetine is a serotonin and norepinephrine reuptake inhibitor (SNRI), and we were concerned it might worsen the symptoms due to the serotonin activity. She had no worsening of her dystonia with Duloxetine once a day. The Duloxetine was later increased to twice a day with improvement in the anxiety and no worsening of the dystonic symptoms.

4. Discussion

This paper covered the topics of rare presentation of cervical

dystonia. The patient presented with involuntary spasm of the head and neck muscles with continuous right head tilt and decreased rotation of the cervical spine. The patient's past medical history was positive for two significant concussions that might have contributed to her cycle of spasms, and the use of BtA has been successful in treating her CD symptoms. The patient reported a lower rating on subsequent visual analogue scale during later visits that can be explained only due to her lower severity of pain with the spasms. A pain decrease of thirty percent is regarded as clinically significant [11]. The patient reported more than 50% improvement to BtA injections two weeks post procedure to nearly 70% after 90 days of treatment. When presenting for the second round of Botox injections by our clinic our patient had 90% improvement in her symptoms.

The patient's debilitating case of dystonia was also exacerbated by two additional components: her medication history and the familial component of cervical dystonia. The patient was on two SSRIs, Fluoxetine and Gabapentin, that are used for the treatment of anxiety and depression which are known to cause movement related disorders like dystonia [12]. The exact mechanism behind the pathophysiology of SSRI induced dystonia is unclear, but it has been described that basal ganglia and cerebellum are involved in the cause [13]. Since these two SSRI class medications are known to cause an addition to her dystonia, we decided to wean her off and let us know if she had an uptick in her anxiety. To help with the anxiety we started her on an SNRI, Duloxetine, which are not known to have the side effect of causing movement disorders like dystonia which are seen in SSRIs. At the follow up 2 weeks, we found improvement in the anxiety and no worsening of dystonic symptoms, so we increased the Duloxetine to 20mg orally twice a day. This provided improvement in her pain, less anxiety and no worsen in g of the dystonia.

This study details an effective BtA injectable treatment for CD and offers evidence in favor of more investigation into the question of whether BtA should be a routine treatment for CD. Even though CD is frequently challenging to identify and treat, doctors ought to think about using BtA to reduce discomfort and treat spasms. In this report we present a patient with CD, that worsened after trauma and addition of Fluoxetine and Gabapentin, who received successful treatment with two rounds of BtA injections. The patient's cervical dystonia spasm symptoms and general discomfort had improved after the second round of Botox by at least 90% at 10 weeks into second round of injections and dipped to 70% improvement at the second interval of 90 days. She also had some post injection discomfort and was started on Tizanidine as needed which helped these symptoms.

References

1. Chan, J., Brin, M. F., & Fahn, S. (1991). Idiopathic cervical dystonia: clinical characteristics. *Movement disorders: official journal of the Movement Disorder Society, 6*(2), 119-126.
2. Velickovic, M., Benabou, R., & Brin, M. F. (2001). Cervical dystonia: pathophysiology and treatment options. *Drugs, 61,* 1921-1943.
3. Rothwell, J. C., Day, B. L., Obeso, J. A., Berardelli, A., & Marsden, C. D. (1988). Reciprocal inhibition between muscles of the human forearm in normal subjects and in patients with idiopathic torsion dystonia. *Advances in neurology, 50,* 133-140.
4. Hallett, M. (2011). Neurophysiology of dystonia: the role of inhibition. *Neurobiology of disease, 42*(2), 177-184.
5. Crowner, B. E. (2007). Cervical dystonia: disease profile and clinical management. *Physical therapy, 87*(11), 1511-1526.
6. Botox (onabotulinumtoxinA) [prescribing information]. Irvine, CA: Allergan Pharmaceuticals Ireland, a subsidiary of Allergan, Inc. 2020.
7. Matak, I., Bach-Rojecky, L., Filipović, B., & Lacković, Z. (2011). Behavioral and immunohistochemical evidence for central antinociceptive activity of botulinum toxin A. Neuroscience, 186, 201-207.
8. Poewe, W., Burbaud, P., Castelnovo, G., Jost, W. H., Ceballos-Baumann, A. O., Banach, M., ... & Picaut, P. (2016). Efficacy and safety of abobotulinumtoxinA liquid formulation in cervical dystonia: A randomized-controlled trial. *Movement Disorders, 31*(11), 1649-1657.
9. Brashear, A., Lew, M. F., Dykstra, D. D., Comella, C. L., Factor, S. A., Rodnitzky, R. L., ... & Koller, M. (1999). Safety and efficacy of NeuroBloc (botulinum toxin type B) in type A–responsive cervical dystonia. *Neurology, 53*(7), 1439-1439.
10. Lew, M. F., Brashear, A., Dashtipour, K., Isaacson, S., Hauser, R. A., Maisonobe, P., ... & Ondo, W. (2018). A 500 U/2 mL dilution of abobotulinumtoxinA vs. placebo: randomized study in cervical dystonia. *International Journal of Neuroscience, 128*(7), 619-626.
11. Farrar, J. T., Young Jr, J. P., LaMoreaux, L., Werth, J. L., & Poole, R. M. (2001). Clinical importance of changes in chronic pain intensity measured on an 11-point numerical pain rating scale. *Pain, 94*(2), 149-158.
12. Uvais, N. A., Sreeraj, V. S., & Kumar, S. S. (2016). Sertraline induced mandibular dystonia and bruxism. *Journal of Family Medicine and Primary Care, 5*(4), 882-884.
13. Gonzalez-Alegre, P., Schneider, R. L., & Hoffman, H. (2014). Clinical, etiological, and therapeutic features of jaw-opening and jaw-closing oromandibular dystonias: A decade of experience at a single treatment center. *Tremor and other hyperkinetic movements, 4.*