BACKGROUND
MR is a 45-year-old right-handed woman with a history of headaches since high school. When she was in her twenties, MR was diagnosed with so-called sinus headaches. Fifteen years ago, she developed severe headaches that occurred approximately twice annually. Six years earlier, the patient was diagnosed with migraines without aura, and she was treated with a variety of pharmacologic agents. She was able to manage her acute attacks successfully with triptans; however, she could not tolerate tricyclic antidepressants prescribed as prophylaxis.

Over time, her headache attack frequency increased to between 1 and 3 severe migraines monthly, in addition to near daily milder, dull, posterior to bitemporal headaches, accompanied by neck and shoulder pain.

MEDICAL HISTORY
Medical history is significant for depression and vertigo.

FAMILY HISTORY
There is no family history of movement disorders, but the patient’s mother has a history of migraine without aura.

SOCIAL HISTORY
The patient is employed as a nurse. There is no history of smoking or alcohol excess.

MEDICATIONS
She uses rizatriptan periodically to manage acute migraine headache, on average 4 to 5 tablets monthly.

PHYSICAL EXAMINATION
On physical examination, it was noted that MR’s head position appeared to be pulled backward and laterally to the right side, with a postural shift and a right shoulder elevation of 2 cm compared to the left side. She had limited flexion of her neck. Neurologic examination was normal. No dystonic features were noted in the limbs, and coordination and rapid alternating movements were normal (Figure 1).

DIAGNOSTIC TESTS
Magnetic resonance imaging of the brain was within normal limits.

DIAGNOSIS AND TREATMENT PLAN
MR was diagnosed with cervical dystonia and chronic migraine (CM), and treatment was begun with botulinum toxin type A. Figure 2 illustrates her case history.
injection pattern, which differs from that of the typical patient with chronic daily headache (CDH) because she received doses in her sternocleidomastoid and scalene muscles, as well as into the trapezius, semispinalis, and splenius capitis muscles, to a total of 300 U. Since then, she has had repeated injections at approximately 12-week intervals because she notes wear down of benefit with gradual buildup of low-level daily neck and shoulder pain.

**FOLLOW-UP**

Following treatment with botulinum toxin type A, MR’s shoulder and neck discomfort improved, and her backwards head pulling was reduced. The daily headaches resolved, and she returned to her previous pattern of episodic migraines, which occurred 1 to 2 times/month and were responsive to triptans.

**BACKGROUND INFORMATION**

The patient had a headache attributed to cranio-cervical dystonia, which is not the common pattern seen in the patient with CM. The International Headache Society’s diagnostic criteria for this disorder (International Classification of Headache Disorders 11.2.3) are outlined in the Table.1

Blumenfeld and Silberstein investigated the prevalence of underlying subtle dystonia among a population of patients with CDH. There were a total of 161 individuals studied (86 patients, 75 controls). They performed a standardized physical and neurologic examination, including myofascial assessment, videotaped the patients, and then sent the videotapes out for independent review by movement disorder neurologists. Demographically, the vast majority of patients in this group had CM. A small portion had chronic tension-type headache and a very small portion had cluster headache. The primary features noted on examination were abnormal posture, tenderness, shoulder elevation, and some loss of dexterity of head movements. A large portion of the patients had tenderness, most frequently in the trapezius, splenius capitis, scalene, and sternocleidomastoid muscles. There was also some muscle hypertrophy. However, in comparison to the typical patient with cervical dystonia, these patients did not have severe postural abnormalities or head tremor. They also did not have distal dystonias. Dystonia was diagnosed by video assessment in approximately 6% of patients—nearly a 650-fold increase over what would be anticipated in a general population (A. Blumenfeld, MD, Oral communication regarding unpublished data, August 2006).

Figure 3 illustrates the typical doses per muscle for treatment of cervical dystonia in terms of injection sites for botulinum toxin type A. It is imperative for the practicing neurologist to perform a thorough myofascial examination, in addition to an examination of the head, neck, shoulders, and a standard neurolog-

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**Table. International Headache Society Criteria for Headache Attributed to CranioCervical Dystonia**

<table>
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<th>Criteria</th>
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<td>A. Sensation of cramp, tension, or pain in neck, radiating to back of the head or to the whole head and fulfilling criteria C and D</td>
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<td>B. Abnormal movements or defective posture of the neck or head as a result of muscular hyperactivity</td>
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<td>C. Evidence that pain is attributed to muscular hyperactivity based on ≥1 of the following:</td>
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<tr>
<td>1. Demonstration of clinical signs that implicate a source of pain in the hyperactive muscle</td>
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<tr>
<td>2. Simultaneous onset of pain and muscular hyperactivity</td>
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<tr>
<td>D. Pain resolves within 3 months after successful treatment of the causative disorder</td>
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Data from Headache Classification Committee of the International Headache Society.
ic examination. Evaluation of a patient’s posture and movement also is essential because failure to do so may result in a missed opportunity to refine the patient’s diagnosis and treatment. This approach assists in identifying which muscle groups are involved in the patient’s pain, and these muscle groups may then be appropriately targeted with botulinum toxin type A.

For patients who have posterior cervical pain as part of their headache pattern, in which the underlying headache pattern is CM, the target muscles and doses for botulinum toxin type A injection in the suboccipital and paraspinal region includes 10 to 20 U into 1 to 2 injection sites of the splenius capitis and semispinalis capitis muscles. If the plan includes injecting the scalene muscles, this should be performed with electromyographic guidance because of the proximity to the brachial plexus.

Transitioning from posterior pain to anterior pain (but still potentially with dystonia or abnormal muscle activity), we may consider the patient who has temporomandibular symptoms. Patients with migraine may have as part of their clinical picture a constant high level of activity in the trigeminal pathways, and this may result in muscle clenching and tightening. It is important to examine the jaw and temples in these individuals. For these patients, the injection strategy may include 10 to 20 U at 4 sites within the temporalis muscle, and 10 to 20 U within 2 sites within the masseters.

In summary, it is important to recognize that patients may be complex in their presentations of headache; they may have myofascial pain that transitions into a form of dystonia, and there may be overlap between so-called patients with headache and patients with dystonia. The majority of patients with cervical dystonia (93%) had an initial chief complaint of head and neck pain; therefore, it is important to attempt to uncover the layers of what is occurring to assure the best outcome for our patients.2

View highlights from panel discussion that followed this presentation: www.jhasim.com/cdb.

REFERENCES