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Postoperative Cervical Dystonia: Is It an Occult Injury to the Corticospinal Tracts?

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Dear Editor,

We read with interest the recent report by Loher et al. [1], 'Dystonic Movement Disorders and Spinal Degenerative Disease'. We find the relationship between spinal disorders and dystonia very interesting. We have recently seen a few patients that were referred to our clinic for evaluation of dystonia after cervical spine surgery. There was a recent case report of cervical dystonia that occurred postoperatively after a three-level cervical corpectomy for myelopathy [2]. The authors implied that cervical dystonia is a rare complication in spinal surgery. We would like to offer an additional case and a few comments on the pathophysiology of cervical dystonia and its relationship to postoperative cervical spine surgery. First, postoperative cervical spine dystonia has been reported in numerous cases [3–7]. Cappelle et al. [3] presented 6 patients that developed movement disorders associated with persistent dermatomal or segmental pain after spinal surgery and the anatomic distribution of the movement disorder was related to the nerve or spinal segment of the corresponding level of surgery. The authors concluded that the postoperative pain syndrome is an important factor in the pathogenesis of postoperative movement disorders related to spine surgery [3]. Krauss et al. [5] also describe 2 cases of postoperative cervical dystonia after cervical spine surgery, one related to an intramedullary tumor in the cervical spinal cord and the other after anterior discectomy.

Takemoto et al. [2] postulate that the spine surgery in this case may have been the traumatic event leading to cervical dystonia. Unfortunately, there are no definitive studies demonstrating which patients are at risk for developing postoperative dystonias. To further confuse the issue, there are cases of cervical dystonia resolving on myelopathic patients after cervical decompression [4]. A recent study utilized transcranial motor-evoked potentials and somatosensory evoked potentials to evaluate spinal cord function in cervical dystonia patients with concurrent myelopathy [8]. The authors found that the corticospinal tracts demonstrated dysfunction in all patients, while SSEPs remained normal [8]. The theory of corticospinal tract dysfunction or other long tract dysfunction, such a spinothalamic tract, is further supported by the case reports on cervical intramedullary tumors presenting with cervical dystonia [6, 7]. Several studies have attempted and failed in differentiating idiopathic cervical dystonia from posttraumatic cervical dystonia [9, 10]. It is obvious that there are

different etiologies for cervical dystonia, however, it appears that an occult injury to the spinal cord tracts may be a common link.

We offer a similar case on a 45-year-old male who presented to the neurosurgery clinic 2 years after a two-level anterior cervical discectomy and fusion for myeloradiculopathy by an outside surgeon. The patient presented with severe cervical dystonia with approximately 5–10 cervical 'tics' per minute and significant trapezius hypertrophy. He had developed the cervical dystonia approximately 3 months after his spine surgery and presented to us with a chief complaint of severe axial neck pain. Subsequent computed tomography and flexion-extension radiographs revealed pseudoarthrosis at both levels of previous surgery. The patient underwent a posterior fusion with lateral mass screws with significant improvement of his dystonia and total resolution of axial neck pain. We commend Loher et al. [1] on their report and would hope that surgeons will begin to evaluate patients preoperatively and postoperatively more closely for these cervical 'tics'. Cervical dystonia, especially in its mild form is likely more common than currently reported and may be a complication that should be discussed preoperatively with patients suffering from spinal cord compression.

References

- Loher TJ, Barlocher CB, Krauss JK: Dystonic Movement disorders and spinal degenerative disease. *Stereotact Funct Neurosurg* 2006;84:1–11.
- Takemoto M, Ikenaga M, Tanaka C, Sonobe M, Shikata J: Cervical dystonia induced by cervical spine surgery: a case report. *Spine* 2006;31:E31–E34.
- Cappelle HH, Wohrle JC, Weigel R, Bazner H, Grips E, Krauss JK: Movement disorders after intervertebral disc surgery: coincidence or causal relationship? *Mov Disord* 2004;19:1202–1208.
- Krauss JK, Loher TJ, Pohle T, Weber S, Taub E, Barlocher CB, Burger JM: Pallidal deep brain stimulation in patients with cervical dystonia and severe cervical dyskinesias with cervical myelopathy. *J Neurol Neurosurg Psychiatry* 2002;72:249–256.
- Krauss JK, Borremans JJ, Pohle T, Godov N: Movement disorders following nonfunctional neurosurgery. *J Neurosurg* 1999;90:883–890.
- Previdi P, Buzzi P: Paroxysmal dystonia due to a lesion of the cervical cord: case report. *Ital J Neurol Sci* 1993;14:187.
- Cammarota A, Gershanik OS, Garcia S, Lera G: Cervical dystonia due to spinal cord ependymoma: involvement of cervical cord segments in the pathogenesis of dystonia. *Mov Disord* 1995;10:500–503.
- Hiasa Y, Mitsui T, Kunishige M, Oshima Y, Matsumoto T: Central motor conduction in cervical dystonia with cervical spondylotic myelopathy. *Clin Neurol Neurosurg* 2005;107:482–485.
- Tarsy D: Comparison of acute and delayed-onset posttraumatic cervical dystonia. *Mov Disord* 1998;13:481–485.
- Goldman S, Ahlskog JE: Posttraumatic cervical dystonia. *Mayo Clin Proc* 1993;68:443–448.

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