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CASE REPORT

Tremors as an Atypical Presentation of Cervical Myelopathy

Melinda Hui Si Goh[1], Arun-Kumar Kaliya-Perumal[1], Jacob Yoong-Leong Oh[1]

[1]*Department of Orthopaedic Surgery, Division of Spine, Tan Tock Seng Hospital, Singapore*

Tremors are common especially in the elderly population. However, tremors occurring secondary to cervical myelopathy are rarely reported. We report the case of a 91-year-old gentleman who was admitted to the neurology service with chief complaints of bilateral upper- and lower-limb tremors. This had progressed rapidly over 2 weeks to the extent that he was not able to feed himself and was unable to walk without support. An initial working diagnosis of Parkinson's disease was made but was later dismissed because of the atypical features. A magnetic resonance imaging of cervical spine was subsequently performed which revealed a large disc herniation at C3–C4 level, causing severe spinal canal stenosis and cord compression. Given this radiological presentation and the absence of other objective pathologies on further investigations, we correlated his symptoms to the underlying cervical cord compression. He underwent anterior cervical discectomy and fusion which led to complete resolution of tremors by 8 weeks postsurgery. His unsteadiness eventually resolved, and there was no recurrence of tremors throughout our follow-up period. This case highlights a rare atypical presentation of cervical myelopathy as peripheral limb tremors. The diagnostic dilemma, management strategies, and hypothesis to explain this phenomenon are discussed.

Key words: Intervertebral disc displacement, neurologic manifestations, spine, spondylosis, tremor

INTRODUCTION

Literature regarding clinical manifestations of spinal cord compression is mostly focused on characteristic presentations such as unsteadiness, weakness, loss of fine motor skills, and certain pathognomonic signs.[1] Usually, patients with myelopathy present with one or more of the above-mentioned signs and symptoms; hence, making a diagnosis is relatively straightforward. However, myelopathy can rarely manifest in atypical forms masquerading as a different pathology.[2-4] One such manifestation is limb tremors, as seen in this reported case, which we postulated to have occurred as a result of cervical myelopathy. We intend to highlight this rare atypical presentation and the possible underlying pathophysiological processes.

CASE REPORT

A 91-year-old gentleman presented to the hospital with a 2-week history of tremors in all the four limbs, associated with unsteady gait and loss of hand dexterity. Premorbidly, he was home ambulant without walking aids and was independent in carrying out his activities. However, his symptoms progressed, eventually interfering with his physical functionality. He reported difficulty with fine motor skills such as using chopsticks and buttoning his shirt. He had a known history of hypertension, dyslipidemia, gastroesophageal reflux disease, and benign prostatic hyperplasia with chronic urinary retention. He had been a smoker for many years.

On examination, there was no cognitive impairment, and his higher functions were normal. He could neither walk nor perform tandem gait due to his unsteadiness. Both resting and action tremors were noted in all the four limbs, more evidently over his right limbs, which aggravated on stretching out his hands. Neurologically, there was hypertonia with associated hyperreflexia and clonus elicited over the right upper and lower limbs. There was no demonstrable cogwheeling or rigidity. Motor and sensory examinations of all the limbs were

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Corresponding Author: Dr. Jacob Yoong-Leong Oh, Department of Orthopaedic Surgery, Division of Spine, Tan Tock Seng Hospital, 11 Jalan Tan Tock Seng, Singapore 308433. Tel: +65 6257 7000, Fax: +65 6357 7715. E-mail: jacob_oh@yahoo.com

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unremarkable. Babinski, Romberg's, and Hoffman's tests were negative. His anal sphincter tone remained intact, and there was no saddle anesthesia.

He was initially admitted to the department of neurology with suspicion for possible stroke or Parkinson's disease. Magnetic resonance imaging (MRI) of the brain revealed background small-vessel disease with chronic lacunar infarcts and chronic cerebral microbleed. There was no acute infarct or intracranial hemorrhage. Magnetic resonance angiography showed atherosclerotic luminal irregularities with absence of flow-limiting stenosis. MRI of the cervical spine revealed a large disc herniation at C3–C4 level, causing severe spinal canal stenosis and cord compression [Figure 1]. Both cervical MRI and computed tomography scan were performed, and the findings remained consistent of spinal stenosis, leading to cord compression characterized by faint T2 hyperintensity within the cord.

Based on clinicoradiological assessment, the possibility of a medical disorder was ruled out, and a definite diagnosis of cervical myelopathy due to canal stenosis caused by C3–C4 disc herniation was made. He was then referred to our spine team, with the working impression that his limb tremors could be a nonspecific manifestation of myelopathy due to cord compression. We performed a C3–C4 anterior cervical discectomy and fusion to manage his condition [Figure 2].

Postoperatively, rehabilitation protocols were initiated as tolerated. We noted that the intensity of his tremors reduced over the course of his rehabilitation. At his first outpatient review, 8 weeks postsurgery, he reported complete resolution of limb tremors. Regarding functional mobility, his unsteadiness eventually resolved, and he was back to his premorbid baseline status. One year after surgery, he continues to be under our follow-up, and X-rays revealed solid fusion of C3 and C4 [Figure 3].

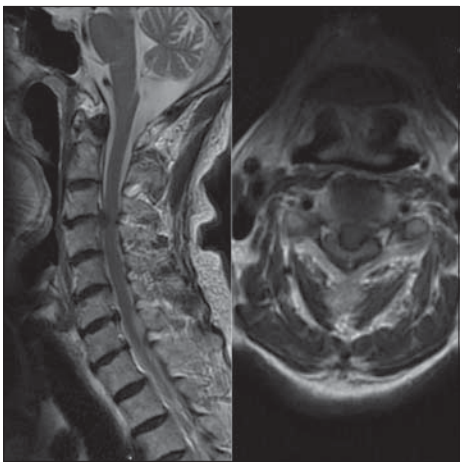

Figure 1: Sagittal and axial cut magnetic resonance images at the C3–C4 level showing large disc herniation causing severe spinal canal stenosis and cord compression

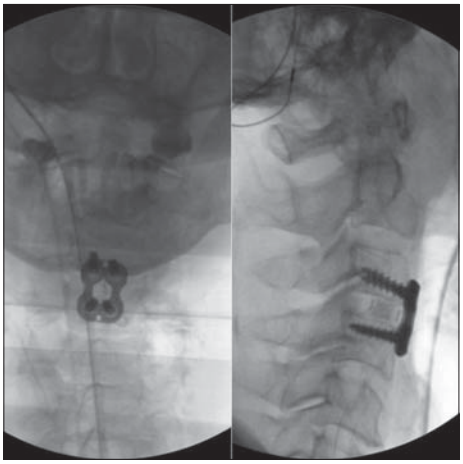

Figure 2: Intraoperative C-arm image showing C3–C4 anterior cervical discectomy and fusion

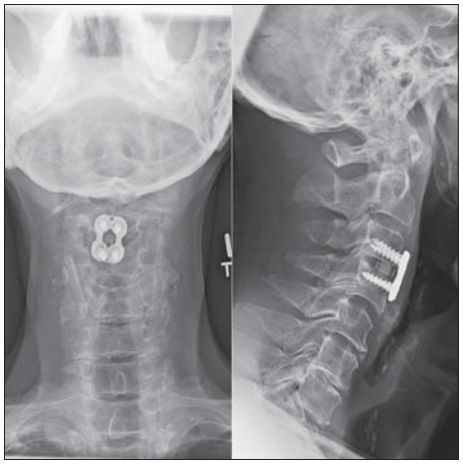

Figure 3: One-year postoperative follow-up X-ray image showing the implants *in situ* and solid fusion

DISCUSSION

Tremors are common especially in the elderly population, with majority being essential tremors due to various disorders which may not affect physical activities and thus require no treatment.[5] However, pathological tremors as in Parkinson's disease can be disabling and need to be intervened. Parkinson's disease classically presents with resting tremors that improve with intentional movements, although many other variations may exist.[6] However, in our patient, after a thorough neurological review by the neurologist, it was deemed that the symptoms were not due to a cranioneurological cause. Radiological evaluation revealed a large disc herniation at C3–C4 level, causing severe spinal canal stenosis and cord compression. Given this radiological presentation

and the absence of other objective pathologies on further investigations, we correlated the symptoms to the underlying cervical cord compression.

Even though the exact mechanism is unknown, various hypotheses can explain the relationship between movement disorders and cervical cord lesions.[7,8] These include altered sensory input of the proprioceptive pathways, abnormal processing of both input and output signals by the spinal neurons, and augmented excitability of the motor neurons in the spine. It has also been postulated that disruptions of the somatosensory pathway or that of the motor cortex to the striatum may also produce abnormal movements with absence of sensory impairment. However, it is not clearly understood why movement disorders secondary to spinal cord pathologies are rarely observed. It could possibly be that these disorders are underreported in the literature.

Some authors have reported cases with movement disorders such as pseudoathetosis and myoclonus occurring secondary to cervical myelopathy.[4,9,10] However, their presentation differed from our case as our patient did not have arrhythmic and anarchic brief jerks suggestive of myoclonus or writhing movements suggestive of pseudoathetosis.[9,10] Instead, resting and action tremors were noticed in addition to other signs of myelopathy. In this clinical scenario, the dilemma is whether the tremors would resolve following a decompression surgery addressing the cord compression. However, it was hard to predict the outcome because tremors are generally not described as a symptom of myelopathy. Given our patient's progressive deterioration and no clear evidence of other movement disorders, a decision was made to surgically relieve the cord compression. There was complete resolution of tremors after surgery which supports the hypothesis that cervical myelopathy can present with movement disorders such as tremors.

CONCLUSION

Tremors could be a rare atypical manifestation of myelopathy due to cord compression. A high index of suspicion is needed to diagnose this form of myelopathy by ruling out all the other possibilities. With clinicoradiological evidence of cord compression, it is essential to consider definite management in the form of decompression surgery to address this issue.

Declaration of patient consent

The authors certify that they have obtained appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Luo CA, Kaliya-Perumal AK, Lu ML, Chen LH, Chen WJ, Niu CC. Staged surgery for tandem cervical and lumbar spinal stenosis: Which should be treated first? Eur Spine J 2019;28:61-8.
2. Oh JY, Kwek KJ, Tee SW, Tan M. Megacolon as an atypical presentation of cervical myelopathy. J Spine Surg 2017;3:108-11.
3. Salome M, Barkhof F, Visser L. Hirayama disease; an atypical clinical manifestation of a cervical myelopathy with typical MRI features. BMJ Case Rep 2017;2017. pii: bcr2016217780.
4. Christodoulides I, Giamouriadis A, Bashford J, Barkas K. Spinal myoclonus: A rare presentation of cervical myelopathy. BMJ Case Rep 2018;2018. pii: bcr-2018-225455.
5. Deuschl G, Petersen I, Lorenz D, Christensen K. Tremor in the elderly: Essential and aging-related tremor. Mov Disord 2015;30:1327-34.
6. Hallett M. Parkinson's disease tremor: Pathophysiology. Parkinsonism Relat Disord 2012;18 Suppl 1:S85-6.
7. Yulug B, Bakar M, Ozer HH, Yilmaz M, Unlü B. Paroxysmal kinesigenic dyskinesia and cervical disc prolapse with cord compression: More than a coincidence? J Neuropsychiatry Clin Neurosci 2008;20:237-9.
8. Fraix V, Delalande I, Parrache M, Derambure P, Cassim F. Action-induced clonus mimicking tremor. Mov Disord 2008;23:285-8.
9. Marrero-González P, Pascual-Sedano B, Martínez-Domeño A, Díaz-Polo LE, Granell E, Rodríguez R, *et al.* Isolated propriospinal myoclonus as a presentation of cervical myelopathy. Tremor Other Hyperkinet Mov (N Y) 2018;8:598.
10. Bray K, Chhetri SK, Varma A, Silverdale M. Reversible pseudoathetosis induced by cervical myelopathy. Mov Disord 2012;27:1370-1.