

**Case Report****Localized girdle sensation of mid-trunk (false localizing sign) in a patient with compressive cervical myelopathy**Taruni NG<sup>1</sup>, Singh KR<sup>2</sup>, Sharma D<sup>3</sup>, Mangar A<sup>4</sup>, Shaheem A<sup>5</sup>, Gayatri<sup>6</sup><sup>1</sup>Dr NG Taruni

Professor

<sup>2</sup>Dr K Romeo

Associate Professor

karomdr@gmail.com

<sup>3</sup>Dr Dwijiraj Sharma

Senior Registrar

hdwijaraj@yahoo.in

<sup>4</sup>Dr Amrita Mangar

Postgraduate Trainee

amu\_smims@rediffmail.com

<sup>5</sup>Dr Ahammed Shaheem

Post graduate Trainee

drahamedshaheem@gmail.com

<sup>6</sup>Dr Gayatri

Postgraduate Trainee

dr.banta07@gmail.com

<sup>1,2,3,4,5,6</sup>Department of Medicine,

Regional Institute of Medical Sciences

RIMS, Imphal, Manipur, India

Received: 05-05-2016

Revised: 19-06-2016

Accepted: 28-07-2016

Correspondence to:

Dr NG Taruni

taruni.ng57@gmail.com

**ABSTRACT**

Patient with compressive cervical myelopathy sometimes present with localized girdle sensation in the mid trunk (called false localizing sign). This symptom often confuses physicians, but the clinical features and mechanism are still unclear. We present a male patient presented with localized girdle sensation in the middle trunk following fall. Later on diagnosis of compressive cervical myelopathy was made after MRI cervical spine.

**Keywords:** Girdle sensation, cervical cord, myelopathy, false localizing sign

**Introduction**

In patient with compressive cervical myelopathy often observed false localizing lesion which could not be accounted for compression. The mid trunk girdle like sensation often confuse with compressive lesion in the thoracic region. This girdle sensation so called cervical angina because the abnormal sensation appears constantly not episodic. After searching the pubmed and other internet resources regarding similar cases, we found that only few cases have been reported. It has shown that the girdle-like sensation will sometimes delay the diagnosis and will delay the appropriate therapy. Even in MRI or myelography based diagnosed cases of cervical myelopathy, there was no satisfactory explanation for the large discrepancy between the sensory level and level of cord compression. The exact pathophysiology of

cervical cord compression causing false localizing thoracic levels is not clear and several mechanisms have been proposed. Injury to the long tracts of the spinal cord and damage to neuronal cell bodies is in part the result of direct extrinsic mechanical compression at that level. Sensory changes occurring several segments below the level of the spinal cord involvement may be because the spinothalamic tract fibers cross obliquely and require 1 to 3 segments to reach the contralateral spinothalamic tract. The laminar arrangement of the spinothalamic tract must also be considered. Fibers from the lower body are located laterally and posteriorly, while those of the upper extremities and trunk are located medially and anteriorly. Compression of the cervical cord in a lateral or posterior direction will be manifested clinically as initially affecting pain and temperature

fibers from the lower extremities. Indirect factors may also play a role in producing the misleading thoracic levels seen in our patients. Intrinsic vascular changes have been suggested to explain the pathologic findings of hyalinization and thickening of arterial walls. Possible mechanisms suggested by other authors include spinal cord demyelination and atrophy, dural sheath thickening, tethering of foraminal arteries, anterior spinal or radicular artery ischemia, and venous drainage obstruction with hypoxia to the watershed zone (usually mid- to upper-thoracic cord). The wasting, ("remote atrophy") weakness, and areflexia may suggest the involvement of cervical cord segments well below the level of the foramen magnum lesion, hence are false localising. Similarly, a syndrome of "numb and clumsy hands" has been described with midline cervical disc protrusions at the C3/C4 level; concurrent with numbness of fingertips and palms, there may be a tightening sensation at mid-thoracic level. Cervical spinal cord lesions (cervical spondylosis, herniated disc) at or above the level of C4 in which finger and hand dysaesthesia with hand muscle atrophy preceded limb spasticity or gait disturbance.<sup>[1,2]</sup>

Diagnosis is difficult in patients presenting with false localising sign. In our case also patient's symptoms pointing to thoracic vertebra pathology only. But high index of suspicion help to make the diagnosis at the end. Reporting of this case is important in two ways. One is that, patient complaint of girdle like sensation over the thoracic area may lead you to think only about the thoracic pathology and will delay the diagnosis. Second thing is that even if you diagnose the cervical myelopathy in this patient, the reason for the girdle like sensation will be (false localising sign) unexplained.

### Case Report

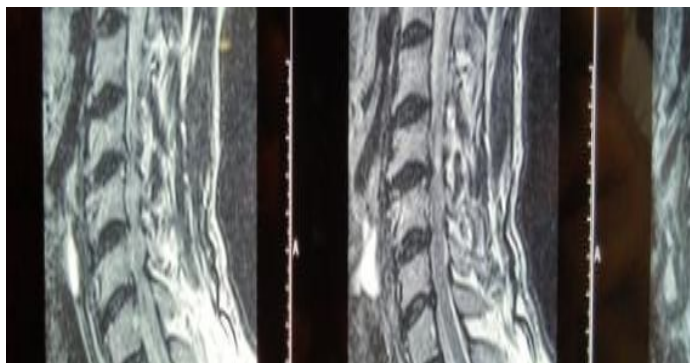
A 63 year old man from Sekmai with history of occasional alcohol intake presented with acute onset of weakness in the B/L lower limbs following fall for last one month along with bladder involvement, pain in the mid trunk which was of

girdle like sensation, tingling & numbness sensation in the B/L lower limb till mid thigh and B/L palm & finger of the both hand. There was no complaint of neck pain, loose motion, fever, sore throat & waxing & waning. On examination patient was conscious, co-operative & well oriented with time, place & person. Pallor, icterus, cyanosis, edema all were absent. Vitals: Pulse Rate: 74/min(R) with good volume, BP: 110/70mmHg, RR:16/min(R), Spo2:99% in room air.

CNS: Higher mental function, speech & language, memory, all cranial nerve were normal. Motor: upper limb right tone increased, left tone decreased, thenar & hypothenar muscle of both hand were wasted, lower limb B/L tone increased (clasp knife rigidity). Power upper limb (R) shoulder 5/5,(L)4/5, elbow(R)5/5, (L)4/5, wrist (R)3/5,(L)2/5, hand grip (R)0/5,(L)0/5, lower limb B/L 5/5. Reflexes upper limb biceps(R)3/4, (L)2/4, triceps(R)3/4, (L)2/4, supinator (R) 3/4, (L)2/4, Hoffman, finger flexion, watterberg reflexes present(R), lower limb B/L knee 4/4, ankle 4/4, plantar B/L extensor, abdomen reflex B/L absent. Primary sensory: temperature & vibration lost, pain, touch, joint position intact.

Chest: Bilateral clear, no added sound, Cardiovascular system: S1 and S2 heart sound heard, no added sound, no murmur, Abdomen: abdomen soft, Bowel Sound present, no tenderness, no guarding, no rigidity, no organomegaly, no thrill, no shifting dullness. Skull and spine were normal, no neck rigidity. MRI thoraco-lumbar showed only lumbar degenerative disc and spine disease Then MRI cervical spine & brain was done which showed myelomalacia at C4/5 level with compression of cord at C5-8. (Fig.1) MRI brain showed normal study. Patient main clinical features with thoracic girdle like sensation gave a clinical impression of thoraco-lumbar pathology. MRI was done for this area. As it was inconclusive MRI brain done to rule out any demyelinating diseases of brain (MS, ADEM, NMO etc) or tumours, but that was normal. So we did MRI cervical spine which shows myelomalacia at

C4/C5 level that made the diagnosis of cervical myelopathy with girdle sensation as false sign.



**Fig: 1 MRI cervical spine – showing myelomalacia at C4/5 level with cord compression at C5-8**

Other investigation report like Liver function Test, Kidney Function Test, serum electrolyte, RBS, Complete Blood Count, ECG, CXR PAV all were normal. Hep B, C and Retro Ab were negative.

Patient was treated conservatively with steroid pulse therapy (Inj. solumedrol 1000mg given for 3 days) and Neurosurgery consultation was taken and advised for surgery. Due to financial constraints patient was discharged after the final diagnosis. Final diagnosis was cervical compressive myelopathy by C5-8 disc herniation with myelomalacia at C4/5 level.

## Discussion

False localising signs occur in two major contexts: as a consequence of raised intracranial pressure and with spinal cord lesions. It includes cranial nerve palsies (especially sixth nerve palsy), hemiparesis, sensory features (truncal sensory levels), and muscle atrophy.<sup>[3]</sup> Findings are similar in cases published by Adams KK et al<sup>[4]</sup> where he showed case series of 4 people with cervical myelopathy with false localizing sign. Findings also found to be similar with the cases published by Ochiai H et al.<sup>[5]</sup> Ochiai H et al compared cervical compressive myelopathy patients with and without girdle like sensation (false localizing sign) to evaluate for the reason of sensation, he could not find any correlation between sensation and level of cord compression. Another study by Adams KK et al

showed 4 men with mostly lower limb weakness with girdle like sensation with Thoracic MRI normal which showed myelopathy in cervical MRI concluded that the diagnosis may be delayed because of false localizing sign (girdle sensation).

## False localising signs associated with intracranial lesions

Sixth nerve palsy, either unilateral or bilateral, occurs in the context of raised intracranial pressure (supratentorial or infratentorial space occupying lesion, idiopathic intracranial hypertension. The pathophysiological mechanism said to be stretching of the nerve in its long intracranial course, or compression against the petrous ligament or the ridge of the petrous temporal bone. But according to Collier, the sixth nerve palsy is mainly due to the mechanical effects of backward brain stem displacement by intracranial space occupying lesion, cerebral venous sinus thrombosis.<sup>[6]</sup>

Dysfunction of the fifth and seventh cranial nerves due to raised intracranial pressure may be hypoactive or hyperactive, i.e trigeminal neuropathy or trigeminal neuralgia, facial palsy of lower motor neurone type or hemifacial spasm<sup>[7, 8]</sup> usually seen in posterior fossa neoplasms or more diffuse neoplastic disease. Brain stem distortion resulting in traction on cranial nerves has been suggested as the pathophysiological mechanism in tumour associated cases.<sup>[9]</sup> Transtentorial herniation of the medial temporal lobe (uncus), as a consequence of shift of intracranial contents secondary to raised intracranial pressure, may be associated with third nerve palsy. Because of the intra-axial fascicular arrangement of fibres within the third nerve, the peripherally located pupilloconstrictor fibres are most vulnerable, results in unilateral mydriasis (Hutchinson's pupil) which is the earliest sign. Herniation of the temporal lobe through the tentorial notch compresses the third nerve and the ipsilateral cerebral peduncle; above the pyramidal decussation of corticospinal fibres, results in



contralateral hemiparesis & ipsilateral third nerve palsy.<sup>[10]</sup>

### False localising signs associated with spinal cord lesions

Lesions at the level of the foramen magnum may produce, suboccipital and neck pain and upper motor neuron signs, false localising signs: paraesthesia in the hands and lower motor neuron signs in the upper limbs. The pathophysiology of false localising signs: arterial, venous, and mechanical. The arterial hypothesis postulates that tumour compromises descending anterior spinal artery blood supply to the lower cervical cord with resultant focal ischaemia. Furthermore, the low pressure venous system is more vulnerable to the effects of compression than the arterial system, with resultant tissue stasis and hypoxia. Mechanical stresses within the spinal cord due to extrinsic compression of the spinal cord by the dentate ligaments cause false localizing sign.

Compressive cervical myelopathy may produce a false localising thoracic sensory level, sometimes called a mid thoracic girdle sensation, in addition to lower limb weakness and hyperreflexia. Similarly, lumbar spinal disease may be simulated by more rostral pathology; like, urinary retention, leg weakness, and lumbar sensory findings may be the presenting features of high thoracic cord compression. Ischaemia in the watershed zone of the anterior spinal artery, affecting the medial portion of the laminations of the spinothalamic tract, is the causative mechanism for the girdle sensation, rather than direct compression of spinothalamic fibres.<sup>[11,12]</sup>

### Conclusion

Patients with a sensory thoracic level and normal findings on thoracic magnetic resonance imaging should be further evaluated with cervical spinal cord to search for potentially treatable lesions. Failure to diagnose cervical myelopathy because of

the presence of a thoracic sensory level can delay appropriate treatment or lead to incorrect therapy.

### References

1. Nakajima M, Hirayama K. Midcervical central cord syndrome: numb and clumsy hands due to midline cervical disc protrusion at the C3–4 intervertebral level. *J Neurol Neurosurg Psychiatry* 1995;58:607–13.
2. Lerner AJ. False localising sign. *J Neurol Neurosurg Psychiatry* 2003;74:415–18.
3. Ro LS, Chen ST, Tang LM, Wei KC. Concurrent trigeminal, abducens and facial nerve palsies presenting as false localizing signs: case report. *Neurosurgery* 1995;37:322–4.
4. Adams KK, Jackson CE, Rauch RA, Hart SF, Kleinguenther RS, Barohn RJ. Cervical myelopathy with false localizing sensory levels. *Arch Neurol* 1996;53:1155–81.
5. Ochiai H, Yamakawa Y, Minato S, Nakano K, Wakisaka S. Clinical features of the localized girdle sensation of mid-trunk (false localizing sign) appeared in cervical compressive myelopathy patients. *J Neura* 2002;249:549–53.
6. Collier J. The false localizing signs of intracranial tumour. *Brain* 1904;27:490–508.
7. Davie C, Kennedy P, Katifi HA. Seventh nerve palsy as a false localising sign. *J Neurol Neurosurg Psychiatry* 1992;55:510–11.
8. Matsuura N, Kondo A. Trigeminal neuralgia and hemifacial spasm as false localizing signs in patients with a contralateral mass of the posterior cranial fossa. *J Neurosurg* 1996;84:1067–71.
9. Maurice-Williams RS. Multiple crossed false localizing signs in a posterior fossa tumour. *J Neurol Neurosurg Psychiatry* 1978;38:1232–4.
10. Round R, Keane JR. The minor symptoms of increased intracranial pressure, 101 cases with benign intracranial hypertension. *Neurology* 1988;38:1461–4.

11. Hellmann MA, Djaldetti R, Luckman J, Dabby R. Thoracic sensory level as a false localizing sign in cervical spinal cord and brain lesions. *Clinical Neurology and Neurosurgery* 2013;115:54–6.
12. Jamieson DRS, Teasdale E, Willison HJ. False localising signs in the spinal cord. *BMJ* 1996;312:243–4.

**Cite this article as: Taruni NG, Singh KR, Sharma D, Mangar A, Shaheem A, Gayatri. Localized girdle sensation of mid-trunk (false localizing sign) in a patient with compressive cervical myelopathy. *Int J Med and Dent Sci* 2017;6(1):1421-1425.**

**Source of Support: Nil  
Conflict of Interest: No**

