(e) ISSN Online: 2321-9599

(p) ISSN Print: 2348-6805

ORIGINAL ARTICLE

Assessment of radiological findings in cervical myelopathy patients

Mamta Gaur

Assistant Professor, Department of Radiodiagnosis, Career Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

ABSTRACT:

Background: Cervical myelopathy is a condition resulting from compression of the spinal cord in the cervical (neck) region. The present study was conducted to assess radiological findings in cervical myelopathy patients. **Materials & Methods:** 36 cases of cervical myelopathy of both genders were investigated with MRI of the cervical cord. Based on the location of the lesion on the MRI, the patients were split into three groups: (1) cervico-medullary lesions (from foramen magnum to C1); (2) upper cervical lesions (from C2-C4); and (3) lower cervical lesions (from C5-T1). Clinical symptoms, indicators, and lesion level were compared to MRI anomalies. **Results:** Out of 36 patients, males were 21 and females were 15. Site of lesion was cervico-medullary in 16, upper cervical in 12 and lower cervical in 8 cases. Symptoms were limb weakness in 36, sensory loss in 32, diaphragmatic weakness in 13, sphincter disturbances in 7 and scissoring gait in 9 cases. The difference was significant (P< 0.05).MRI diagnosis was cervical spondylotic myelopathy in 15, arterio-venous malformation in 4, atlanto-axial dislocation in 5, ossified posterior longitudinal ligament in 3, syringomyelia in 2, intramedullary neoplasm in 2, demyelination in 4, ischemic myelopathy in 1 case. The difference was significant (P< 0.05). **Conclusion:** Segmental features form the foundation for clinical localization of the level of lesion. MRI is useful in assessment of cervical myelopathy patients.

Keywords: Cervical myelopathy, herniated discs, MRI

Corresponding author: Mamta Gaur, Assistant Professor, Department of Radiodiagnosis, Career Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

This article may be cited as: Gaur M. Assessment of radiological findings in cervical myelopathy patients. J Adv Med Dent Scie Res 2017;5(8):138-140.

INTRODUCTION

Cervical myelopathy is a condition resulting from compression of the spinal cord in the cervical (neck) region. This compression can lead to a variety of symptoms and signs due to the disruption of normal spinal cord function.[1,2]The most common cause, including conditions like cervical spondylosis, osteophyte formation, and herniated discs, fractures or dislocations of the cervical spine, congenital abnormalities such as spinal stenosis or ossification of the posterior longitudinal ligament (OPLL), spinal cord tumors or metastatic cancer and conditions like rheumatoid arthritis etc.[3]

The existence of distinctive symptoms in cervical myelopathy patients, such as weakness and wasting in the upper limbs, L'hermitte's sign, and neck pain, might aid in localizing the lesion to the cervical cord.[4] Similar clinical indicators, such respiratory failure, dissociated sensory loss in the upper limbs, or loss of reflexes, might aid in segmental localization to the cervical cord.[5]An MRI of the cervical spine might be used to validate or refute the clinical impression. The latter, which much more accurately portrays intramedullary lesions, has particularly facilitated the detection of cervical cord lesions.[6] But just like other investigative techniques, MRI is not without its limitations. Therefore, in the event when there is clear evidence of a cervical cord injury, an MRI may still be normal.[7] Furthermore, it becomes challenging to pinpoint the exact location of the lesion causing a patient's symptoms when there are several lesions or diseases present, such as incidental lesions like spondylotic alterations in the elderly.[8,9]The present study was conducted to assess radiological findings in cervical myelopathy patients.

MATERIALS & METHODS

The present study was conducted on 36 cases of cervical myelopathy of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Clinically, the highest pyramidal, sensory, or segmental feature of involvement was used to identify the lesion site. All patients had been investigated with MRI of the cervical cord. Axial T1 and T2 weighted spin-echo sequences were performed at the level of lesion. Post-contrast (Gadolinium) images of the cervical cord were done in all patients.The anomalies observed at each spinal level determined the categorization of the MRI lesions. Based on the location of the lesion on the MRI, the patients were split into three groups: (1) cervico-medullary lesions (from foramen magnum to C1); (2) upper cervical lesions (from C2-C4); and (3) lower cervical lesions (from C5-T1). Clinical symptoms, indicators, and lesion level were compared to MRI anomalies.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 36		
Gender	**Male**	**Female**
Number	21	15

Table I shows that out of 36 patients, males were 21 and females were 15.

Table II Assessment of parameters

Parameters	Variables	Number	P value
site of lesion	cervico-medullary	16	0.01
	upper cervical	12	
	lower cervical	8	
Symptoms	limb weakness	36	0.77
	sensory loss	32	
	diaphragmatic weakness	13	
	sphincter disturbances	7	
	scissoring gait	9	

Table I shows that site of lesion was cervico-medullary in 16, upper cervical in 12 and lower cervical in 8 cases. Symptoms were limb weakness in 36, sensory loss in 32, diaphragmatic weakness in 13, sphincter disturbances in 7 and scissoring gait in 9 cases. The difference was significant (P< 0.05).

Graph I Assessment of parameters

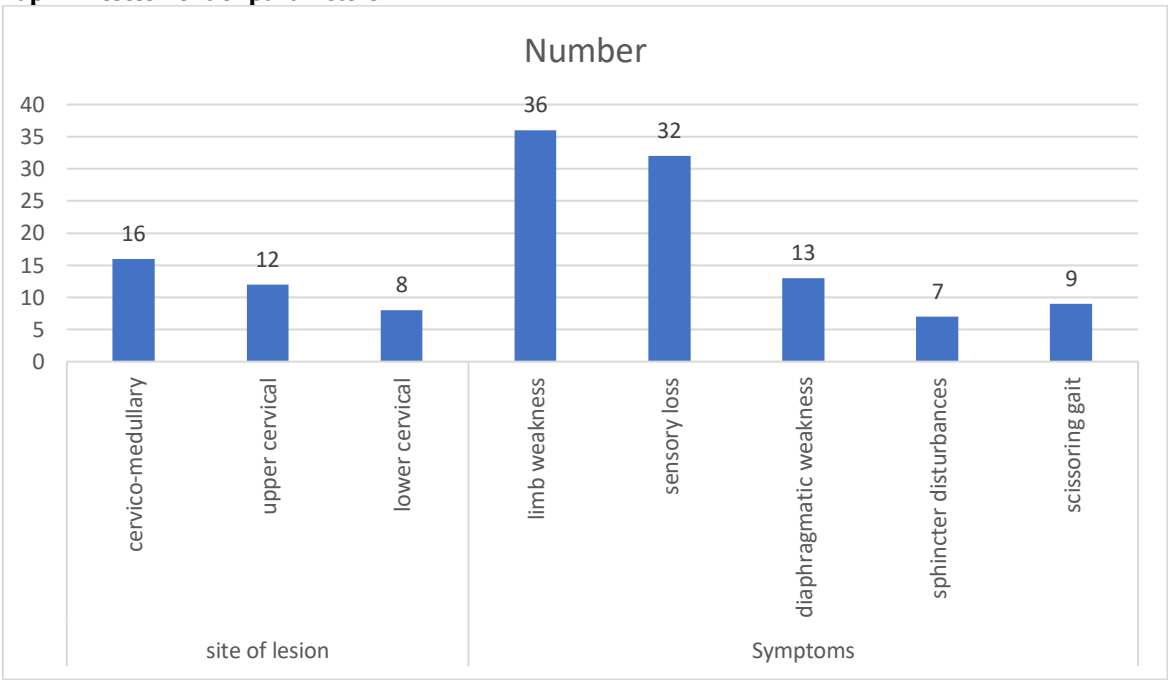

Table II Assessment of MRI diagnosis

MRI diagnosis	Number	P value
Cervical spondylotic myelopathy	15	0.05
Arterio-venous malformation	4	
Atlanto-axial dislocation	5	
Ossified Posterior Longitudinal Ligament	3	
Syringomyelia	2	
Intramedullary Neoplasm	2	
Demyelination	4	
Ischemic myelopathy	1	

Table II shows that MRI diagnosis was cervical spondylotic myelopathy in 15, arterio-venous malformation in 4, atlanto-axial dislocation in 5, ossified posterior longitudinal ligament in 3, syringomyelia in 2, intramedullary neoplasm in 2, demyelination in 4, ischemic myelopathy in 1 case. The difference was significant (P< 0.05).

DISCUSSION

There is a lack of information comparing segment-specific clinical features with the MRI abnormalities in cervical myelopathy, which is crucial for both pre-operative evaluation and intra-operative monitoring even though both clinical evaluation and MRI are complementary in the detection and precise localization of the level of lesion in patients with cervical myelopathy.[10,11]

We found that out of 36 patients, males were 21 and females were 15. Kumar et al[12] in their study thirty-one patients with cervical myelopathy and abnormal MRI of the cervical spine (signal changes in the cord) admitted to the neurology and neurosurgery wards during the study period were included in the study. Clinical evaluation showed limb weakness in all, sensory loss in 90%, sphincter disturbances in 67.7%, scissoring gait in 32.2%, diaphragmatic weakness in 12.9% of patients. Based on clinical examination the site of lesion was cervico-medullary in 9, upper cervical region in 4 and lower cervical region of involvement in five patients. The maximal antero-posterior extent of the lesion and neurological deficits were concordant (p-0.05). As compared to pyramidal signs or sensory abnormalities, segmental features – segmental sensory loss, weakness, wasting or 'reflex' loss – were most concordant with the MRI level of lesion (p - 0.03). Among 'motor', 'sensory' and 'reflex' levels, the 'reflex (DTR)' levels were most concordant with the MRI level of lesion (p – 0.04).

We found that site of lesion was cervico-medullary in 16, upper cervical in 12 and lower cervical in 8 cases. Symptoms were limb weakness in 36, sensory loss in 32, diaphragmatic weakness in 13, sphincter disturbances in 7 and scissoring gait in 9 cases. We found that MRI diagnosis was cervical spondylotic myelopathy in 15, arterio-venous malformation in 4, atlanto-axial dislocation in 5, ossified posterior longitudinal ligament in 3, syringomyelia in 2, intramedullary neoplasm in 2, demyelination in 4, ischemic myelopathy in 1 case. Adams et al[13]identified a syndrome of compressive cervical myelopathy with false localizing thoracic sensory levels.Four men, aged 24 to 60 years, presented with progressive weakness and hyperreflexia involving the lower extremities and distinct thoracic sensory levels ranging from T-4 to T-10. None of these patients had cervical pain, history of trauma, or upper extremity symptoms. Results of MRI scans of the thoracic spinal cord were unremarkable. Initially, 1 patient was suspected of having transverse myelitis and was treated with high-dose steroids. All 4 patients were eventually found to have cervical spinal cord compression, diagnosed by MRI. Three patients underwent surgery for decompression of the cervical lesion. While all 3 improved in lower extremity strength, 2 had persistent discrete thoracic sensory levels postoperatively.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that segmental features form the foundation for clinical localization of the level of lesion.MRI is useful in assessment of cervical myelopathy patients.

REFERENCES

1. Restuccia D, Lazzaro Di, Valeriani M, Tonali P, Mauguiere F. Somatosensory evoked potentials after multisegmental upper limb stimulation in diagnosis of cervical spondylotic myelopathy. J NeurolNeurosurg Psychiatry.1994;57:301- 08.
2. Restuccia D, Mauguiere F. The contribution of median nerve SEPs in the functional assessment of the cervical spinal cord syringomyelia. Brain. 1991;114:361-79.
3. Ibanez V, Fischer G, Mauguiere F. Dorsal horn and dorsal column dusfunction in intramedullary cervical cord tumors. Brain. 1992;115:1209-34.
4. Wong SH, Boggild M, Enevoldson TP, Fletcher NA. Myelopathy but normal MRI: where next? Practical Neurology. 2008;8:90-102.
5. Katz JD, Ropper AH. Progressive necrotic myelopathy: clinical course in 9 patients. Arch Neurol. 2000;57(3):355-61.
6. Mehalic TF, Pezzuti RT, Applebaum BI. Magnetic resonance imaging and cervical spondylotic myelopathy. Neurosurgery. 1990;26:217-27.
7. Lublin FD, Miller AE. Multiple sclerosis and other inflammatory demyelinating diseases of the CNS. In: Bradley WG, Daroff RB, Fenichel GM, Jankovic J (eds). Neurology in clinical practice. 5th edn. 2008; 1583-1613.
8. Carette S, Fehlings MG. Cervical radiculopathy. N Engl J Med. 2005;353:392-9.
9. Singhal BS. Multiple Sclerosis and related demyelinating disorders in the Indian context. Neurol India. 1987;37:1-12.
10. Gowrie-Devi M, Nagaraja D. Multiple sclerosis in South India. In: Kuroiwa Y, Kurland LT (eds). Multiple Sclerosis East and West. Kyushu University Press. Japan 1982; 135-47.
11. Woolsey RM YR. The clinical diagnosis of disorders of the spinal cord. Neurol Clin. 1991;9:573-81.
12. Kumar PS, Kalpana RY. Clinico-radiological correlation in a cohort of cervical myelopathy patients. Journal of Clinical and Diagnostic Research: JCDR. 2015 Jan;9(1):TC01.
13. Adams KK, Jackson CE, Rauch RA. Cervical myelopathy with false localizing sensory levels. Arch Neurol. 1996;53:1155-58