Case 16110

Eurorad

Intramedullary spinal cord metastasis

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Section: Neuroradiology
Area of Interest: Spine Thorax
Procedure: Diagnostic procedure
Imaging Technique: MR
Special Focus: Neoplasia Case Type: Clinical Cases
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Patient: 47 years, male

Clinical History:

47-year-old male patient presented with c/o sudden onset paraparesis (paralysis of both lower limbs) and acute urinary retention with constipation for 1 day. He was known to have left lung cancer and had been on chemotherapy for 3 months. On physical examination, muscle tone was 1/5 in both lower limbs.

Imaging Findings:

The physician was suspecting upper motor neuron pathology involving spinal cord after complete physical examination, he advised MRI of the dorso-lumbar spine.
Plain MRI of the dorso-lumbar spine shows altered signal intensity; an abnormal focal solid ill-defined lesion is seen within the lowest point of the spinal cord. The lesion is intramedullary in location causing minimal cord expansion. T2W hyperintense cerebrospinal fluid signal intensity syrinx formation is seen involving the long segment of the cord proximal to the above-mentioned intramedullary lesion and short segment of the cord (also involving conus medullaris) distal to it.
In a contrast MRI study, this lesion shows internal homogeneous as well as peripheral enhancement. No adjacent dural enhancing thickening or nodules are seen. Vertebral bodies are normal in signal intensities and heights. No focal osseous sclerotic or lytic lesion is seen within the visualised vertebral column. Cauda equina nerve roots appear to be unremarkable. No evidence of nerve root thickening or enhancement.
Surgical excisional biopsy was performed afterwards.

Discussion:

Incidence of intramedullary spinal cord metastasis is extremely rare worldwide. Very few cases are reported of intramedullary metastases from systemic malignancy [1]. The majority of such cases had lung tumour as systemic malignancy thought to be secondary to venous dissemination (likely Batson's plexus) or direct leptomeningeal infiltration followed by lymphoma, leukaemia, breast cancer, renal cell carcinoma and colorectal cancer. Clinically it presents with bilateral leg weakness/paralysis, pain, paraesthesia, ataxia, bowel/urinary bladder dysfunction [1].
MRI (with contrast) is the gold standard investigation to detect the number and size and extent of lesions [1]. Contrast MRI can provide more information in lesion size, extent and multiplicity.
On MR imaging, lesions appear as altered signal intensity solid or cystic lesions within cord parenchyma involving

any segment of cervical, dorsal cord, conus-medullaris or all together. They appear as hypointense or hyperintense in signal intensity in T2W images and iso or hypointense on T1W images. Cystic changes and haemorrhages within lesions are uncommon. Extensive surrounding parenchymal oedema (involving > 2 or 3 segments) as compared to size of lesion is a characteristic feature of intramedullary metastasis [2]. Intralesional enhancement is also a characteristic feature of these lesions. Enhacement pattern may vary from homogeneous internal enhancement to peripheral or patchy enhancement [2]. Intramedullary cord metastasis are generally associated with adjacent or diffuse leptomeningeal enhancing lesions or lesions in the brain, vertebra or adjacent soft tissue. Intralesional haemorrhages may appear as hypointensities on T2W and susceptibility-weighted images. Whole PET-CT scan has provided some additional benefits to confirm the diagnosis, as metastatic lesions are metabolically active and show tracer uptake within. It is also used to detect other lesions in the body.
Management includes surgical treatment, irradiation or palliative therapy (steroid administration). However, among all these treatment options, surgical treatment has the highest mean survival prognosis (about 8 to 10 months) as well as neurological symptoms improvement. [1] Steroid therapy can resolve the perilesional oedema but surgical therapy can provide significant symptomatic improvement. Depending on the patient's condition and wish, surgical treatment option can be selected to improve the patient's life expectancy and quality [1].

Written informed patient consent for publication has been obtained.

Differential Diagnosis List: Intramedullary spinal cord metastasis from lung cancer, Myxopapillary ependymoma, Intramedullary cord Inflammatory lesions (transverse myelitis), Multiple sclerosis

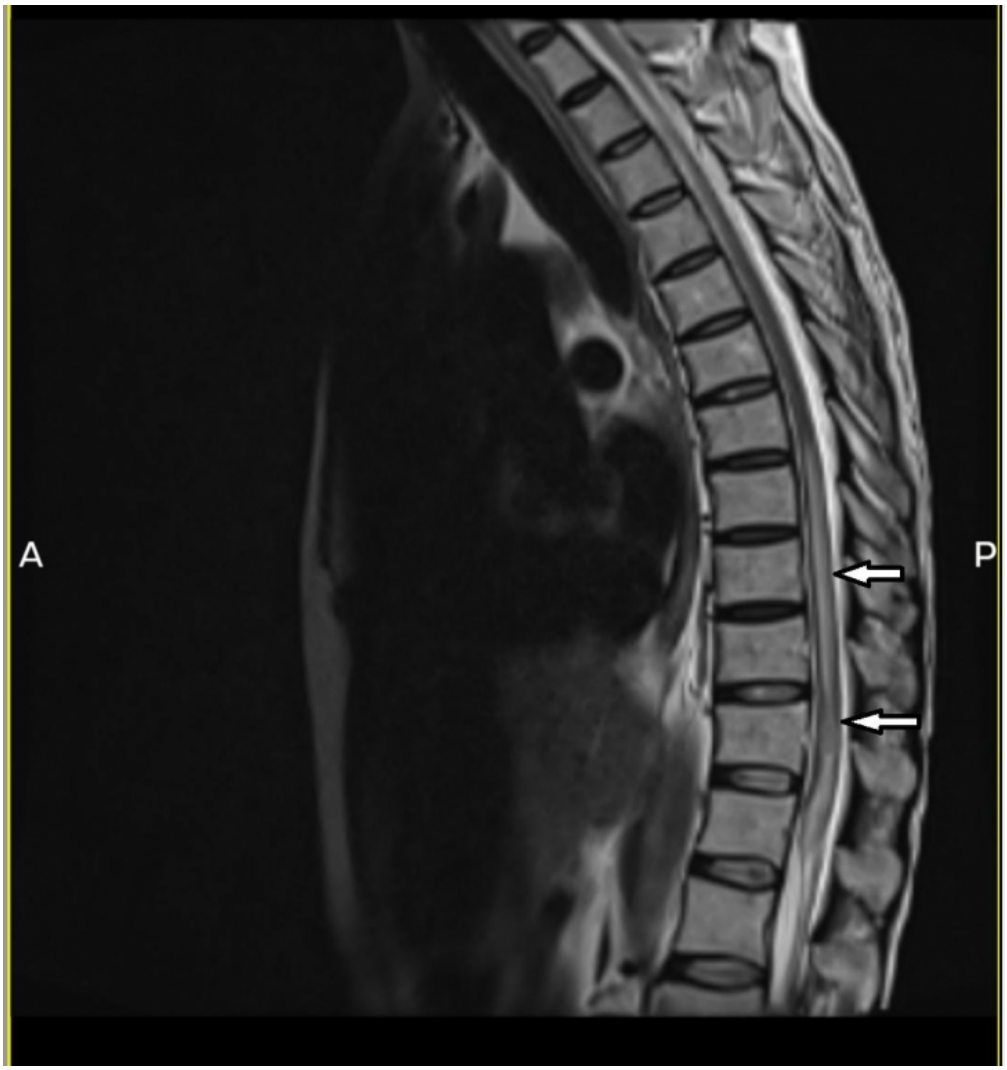
Final Diagnosis: Intramedullary spinal cord metastasis from lung cancer

References:

Hideo Soga, Osamu Imanishi (2016) Case of intramedullary spinal cord metastasis of renal cell carcinoma. World Journal of Clinical Urology 5(1): 72-74
J.B. Rykken, F.E. Diehn, C.H. Hunt, K.M. Schwartz, L.J. Eckel, C.P. Wood, T.J. Kaufmann, R.K. Lingineni, R.E. Carter and J.T. Wald (2013) Intramedullary Spinal Cord Metastases: MRI and Relevant Clinical Features from a 13-Year Institutional Case Series. American Journal of Neuroradiology 34 (10) 2043-2049 (PMID:25395656)

Figure 1

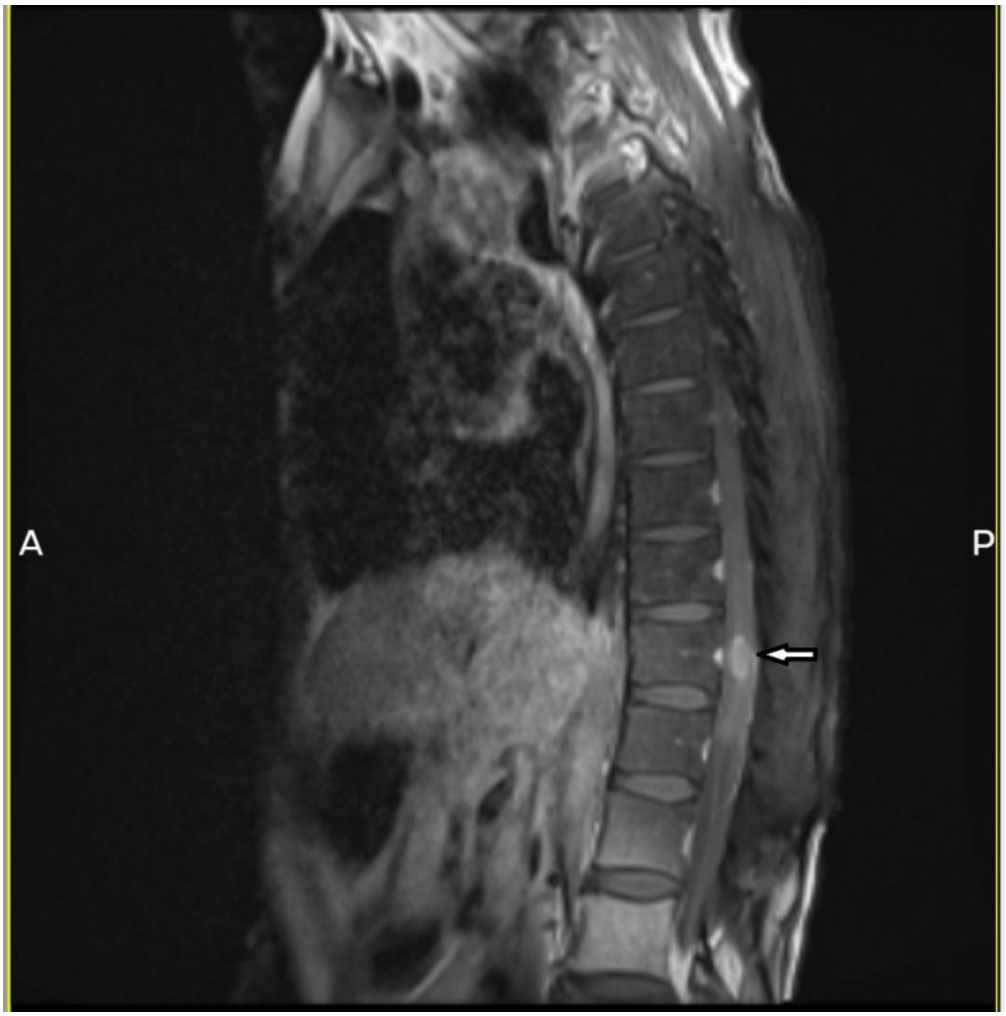
a



Description: Sagittal T2W - Ill-defined small hypointense lesion with proximal long segment and distal short segment cord syrinx. **Origin:** Shalby hospital, ahmedabad, India.

Figure 2

a



Description: Sagittal T1W - Enhancing cord lesion. **Origin:** Shalby Hospital, Ahmedabad, India.

Figure 3

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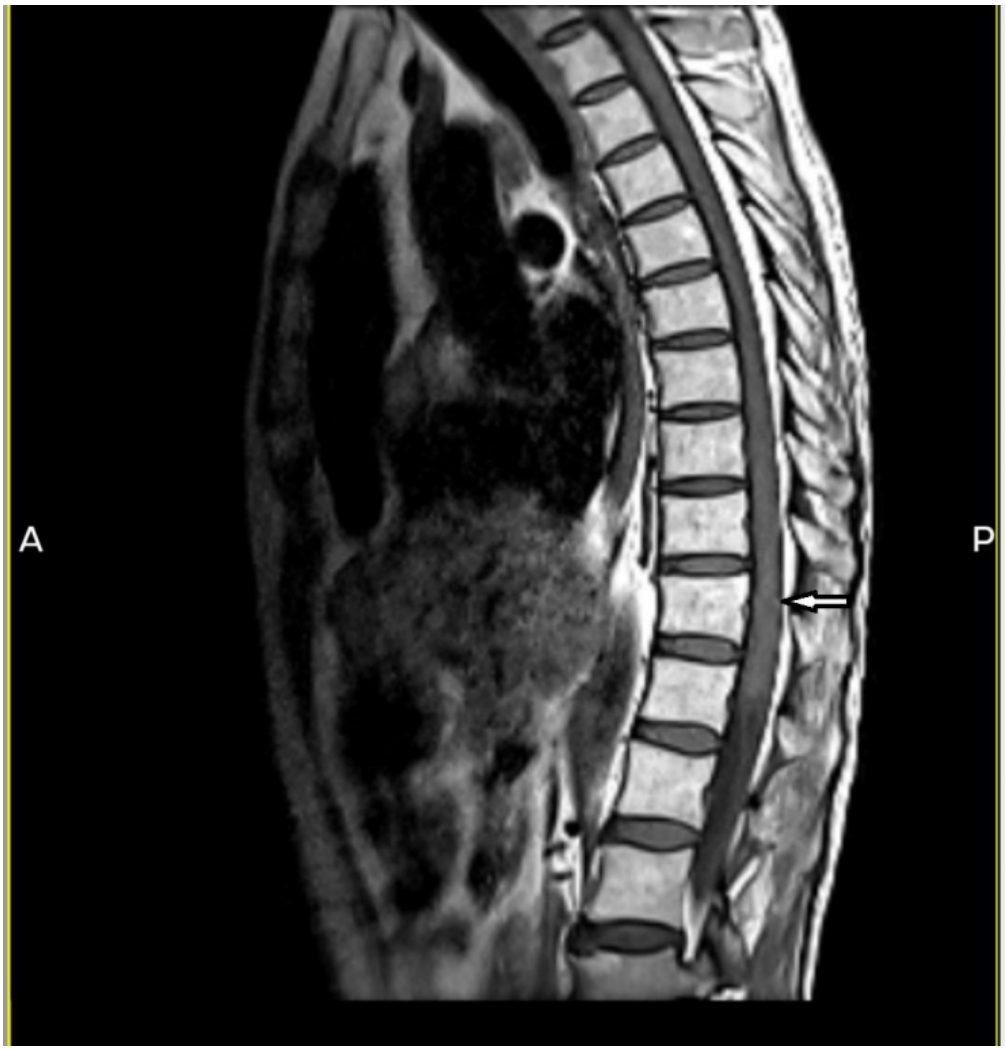

Description: Sagittal T1W image - Cord lesion is isointense in signal intensity (hardly visible). **Origin:** Shalby Hospital , Ahmedabad, India.

Figure 4

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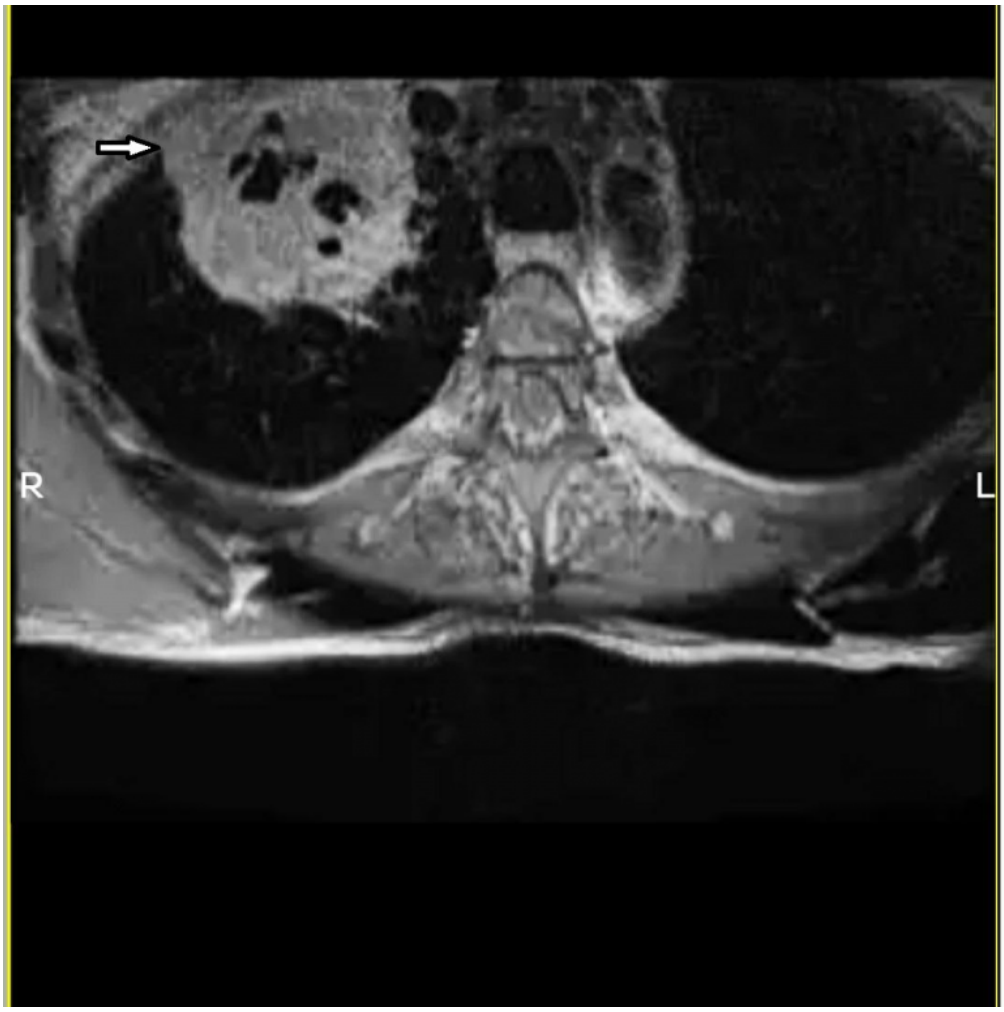

Description: Axial T2W of upper thorax - well-defined heterogeneous solid neoplastic mass lesion in right upper lobe of lung. **Origin:** Shalby Hospital , Ahmedabad, India.