



INTRAMEDULLARY TUMOUR MIMIC -TUBERCULOMA VALUE OF MR SPECTROSCOPY DTI WITH 3T MRI

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Abstract : ABSTRACT Long segment spinal intramedullary tuberculoma is rare, accounting for 2100,000 of cases of tuberculosis and only 2 of all cases of tuberculosis of the central nervous system. Diagnostic imaging is essential to improving diagnosis and management of this disease, , must be considered in the differential diagnosis of another spinal cord lesions to avoid unnecessary surgery. Because this lesion can be cured by medical management.We rept a Case of long segment intra medullary tuberculoma with the use of advanced MRI SpectroscopyDTI.

Keyword : Intramedullary,Tuberculoma,central nervous system,spectroscopy,DTI,MRI,T2Hyperintensity

INTRAMEDULLARY TUMOUR MIMIC—TUBERCULOMA VALUE OF MR SPECTROSCOPY & DTI WITH 3T MRI HISTORY:

A 30 years old male presented with complaints of bilateral lower limb weakness for a short duration of one month. No history of trauma or fever . On clinical examination , power was 4/5 in both lower limbs,Xray and CT whole spine done outside was normal.He was referred to the radiology department for MRI of whole spine.

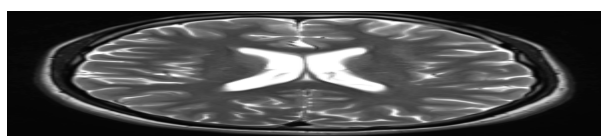
CONVENTIONAL MRI FINDINGS:

· Intramedullary T2 Hyperintensities with mild cord expansion was noted from C6 to D8 levels. · On contrast administration , Long segment homogenous enhancement noted from



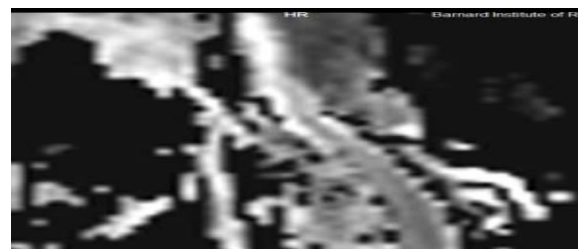
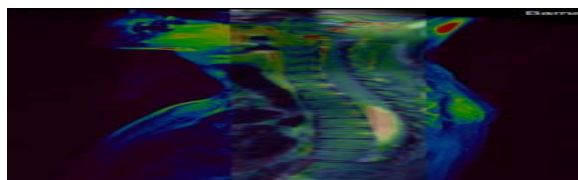
D4-D8 level. These regions showed restricted diffusion with corresponding low ADC value.

T1 WEIGHTED FAT SAT WITH CONTRAST-SHOWED INTENSE HOMOGENOUS ENHANCEMENT FROM D4-D8 LEVEL



MRI BRAIN -NORMAL

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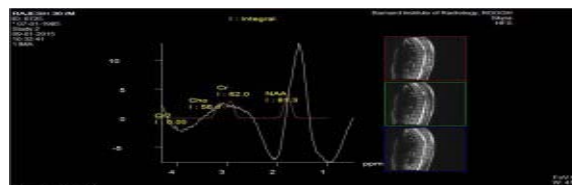
DIFFUSION WEIGHTED IMAGE WITH COLOUR CODING AND ADC MAP SHOWED RESTRICTED DIFFUSION WITH CORRESPONDING LOW ADC VALUE

With the above features possibility of long segment intramedullary tumour (Astrocytoma &ependymoma) was considered ,to support the diagnosis Advanced MR imaging like DTI,MR SPECTROSCOPY were done

MR SPECTROSCOPY & DTI

· Diffusion Tractography of the spinal cord revealed low Fractional anisotropy(FA) values with no evidence fiber displacement or disruption · Single voxel MR Spectroscopy revealed Lipid&Lactate peak at 1.3 ppm with Normal NAA and Choline integral values

TRACTOGRAPHY-NO FIBER TRACT DISPLACEMENT/ DISTRUPTION . MR SPECTROSCOPY-SINGLE VOXWL PLACEMENT NORMAL SPINAL CORD WM FIBER TRACT (SUPERIOR TO INFERIOR) IN BLUE COLOUR



SINGLE VOXEL MRSPECTROSCOPY REVEALED LIPID & LACTATE PEAK AT 1.3 PPM WITH NORMAL NAA AND CHOLINE INTEGRAL VALUES

Compared the spinal cord lesion and the edema, the expansion of the cord was not very significant as in a tumor. The absence of tract disruption/displacement also was not in favour of a Tumor. We came to a conclusion of Tuberculoma based on the contrast enhancement pattern, restricted diffusion and the lipid & Lactate peak in MR SPECTROSCOPY. The patient was taken up for surgery and a biopsy of the lesion was taken. It showed extensive areas of caseation necrosis with scattered epithelioid histiocytes, lymphocytes, plasma cells and few neutrophils suggestive of tuberculous etiology. The patient was started category II ATT, clinically improved after intensive phase of ATT.

DISCUSSION:

Tuberculosis is a chronic bacterial infection by *M. tuberculosis* characterized by the formation of granulomas and cell mediated hypersensitivity. Intramedullary spinal tuberculomas (IMTs) are rare, even in geographic areas where TB is endemic, seen in only 2 of 100,000 cases of TB and 2 of 1000 cases of CNS TB. • For spinal intramedullary tuberculosis, MRI is the optimal measure because it can accurately show location, size, and number of lesions, as well as whether there is degeneration and necrosis around the lesions. • The differential diagnoses include common spinal intramedullary tumors, such as astrocytic glioma, ependymoma, and hemangioblastoma. Intraspinal TB could be spinal meningitis, arachnoiditis, Intramedullary tuberculoma and abscess. Radiologically, intramedullary tuberculomas should be differentiated from other space occupying lesions (SOL) to avoid unnecessary surgery especially in those patients with tuberculosis of the other organs.

The incidence of intramedullary tuberculomas is likely to increase with a rise in the incidence of AIDS. Tuberculomas develop following hematogenous dissemination of bacilli from an infection elsewhere in the body, usually lung. Advent of MRI has made diagnosis of Intramedullary tuberculoma more accurate and earlier. In the early phase, the tuberculoma is characterized by severe inflammatory reaction which causes severe edema. At this stage, the gel capsule is not well formed. During this stage, the enhancement after contrast examination is uniform. T1WI and T2WI both show equal signal intensity. As the gel content in the tuberculoma increases, the peripheral edema begins to disappear. As a result, T1WI shows isointense lesions while T2WI shows low or isointense lesions. Contrast MRI shows central hypointensity with rim enhancement.

With the development of caseation, T2WI shows a typical “target sign,” which means that it exhibits a range from the low signal target to the high signal rim and also from the center of the low signal rim to the peripheral parts. The caseous substance appears hyperintense at the center, which gives the characteristic target sign. The low signal rim in the external region is composed of collagen fibers produced by fibroblasts.

The target sign is a valuable indicator that helps to differentiate spinal tuberculoma from other intramedullary lesions. Rim enhancement and presence of sharp margins also differentiates Intramedullary tuberculoma from intramedullary tumors.

CONCLUSION:

- Long segment intramedullary tuberculoma has been rarely reported in the literature, our case emphasized the value of advanced MR Imaging (DTI & MR SPECTROSCOPY) in the diagnosis of Intramedullary Tumour Mimic - Tuberculoma. Intramedullary tuberculoma, which is a rare entity, must be considered in the differential diagnosis of another spinal cord lesions to avoid unnecessary surgery. Because this lesion can be cured by medical management. If the lesion is known, medical therapy remains the mainstay of the treatment, but when confronted with a progressing neurological deficit and in the case of medical management's failure, the lesion may be removed by using microsurgical treatment.

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