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Original Research Paper

Pathology

SURGICAL MANAGEMENT OF INTRAMEDULLARY TUBERCULOMA: A CASE REPORT AND REVIEW OF LITERATURE

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ABSTRACT Tuberculosis (TB) is a common disease of developing countries especially in immunocompromised population. Most of the Central Nervous System (CNS) lesions in tuberculosis are intracranial with the ratio of cranial and spinal lesions averaging 42:1. Medical therapy with antitubercular drugs is the mainstay of the treatment modality for a confirmed lesion. We report a case of intramedullary spinal tuberculoma managed surgically, which did not respond to the medical management with radiological expansion and clinical deterioration. Surgical excision definitely has role in management of intramedullary tuberculoma. Early surgical intervention may provide better outcome if neurological symptoms appear or lesion size increases despite on antitubercular drug therapy.

KEYWORDS : Tuberculosis, Intramedullary, Tuberculoma, Surgical excision.

INTRODUCTION

Tuberculosis (TB) is a common disease of developing countries especially in immunocompromised population. Most of the Central nervous system (CNS) lesions in tuberculosis are intracranial with the ratio of cranial and spinal lesions averaging 42:1. [1] Spinal tuberculosis can present in different forms which include Pott's spine, arachnoiditis, intramedullary involvement and other forms, such as subdural and extra medullary lesions. In 1828, Abercrombie was the first to describe the intramedullary spinal tuberculosis. [2] In 1840, Serra reported the incidence of intramedullarry tubeculomas as 2 per 100,000 cases of TB and 2 per 1000 cases of CNS TB. [3] Medical therapy with antitubercular drugs is the mainstay of the treatment modality for a confirmed lesion. We report a case of intramedullary spinal tuberculoma managed surgically, which did not respond to the medical management with radiological expansion and clinical deterioration.

Case Report

A 42 year old male presented with complaints of weakness in all four limbs (LL>UL) which was gradually progressing from distal to proximal for 4 months with tingling numbness and bowel bladder involvement. Patient is a known case of Pulmonary TB with Tubercular menintigitis on ATT since 6 months. On examination, patient had quadriparesis (MRC Grade UL – 3/5, LL- 1/5) with sensory involvement up to T4 level & muscle wasting. Patient was managed for tuberculosis meningitis under Neurology Department. Patient undergone MRI Spine 4 months back which showed a intramedullary ring enhancing lesion (2.2 X 1.2cm size) in Cervical region (C5-6 level) which on follow up MRI has increased in size (4.9 X 1.1 cm size) with edema (C5-C7 level) despite on ATT. (Figure - 1, 2 & 3) Patient underwent C5C6C7 Lateral mass screw fixation C5C6C7 Laminectomy with excision of tuberculoma. Intraoperatively, Patient was made prone, midline incision given focusing C6 to T1 after localization with C arm and Muscles separated. C5C6C7 laminectomy performed and dura opened in midline. Tacking suture applied. Piamater incised in mid line at maximum buldge, longitudinal myelotomy performed, tacked with 8-0 suture, grayish pink, firm lesion identified. (Figure - 4) Frozen section was sent which was suggestive of necrotic tissue. Total excision of the spinal tuberculoma performed. Duroplasty performed. C5C6C7 Lateral mass screw fixation with rod performed under C arm guidance. Patient kept in NSICU on elective ventilation for 48 hours after which he was weaned off. Histopathology showed fibroconnective tissue with central necrotic defect lined by dense inflammatory granulation tissue and multiple epitheloid cell granuloma – Granulomatous infection. ZN stain for AFB – Negative. Patient gradually improved (MRC grade UL – 4/5, LL 3/5) on 6 month follow up.

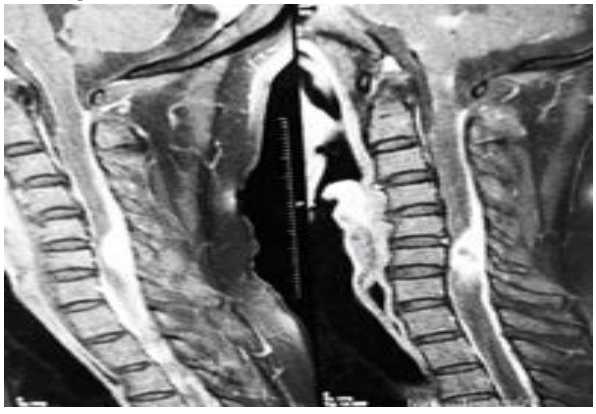

Figure- 1: MRI Spine sagittal view which showed an intramedullary ring enhancing lesion (2.2 X 1.2cm size) in cervical region (C5-6 level)

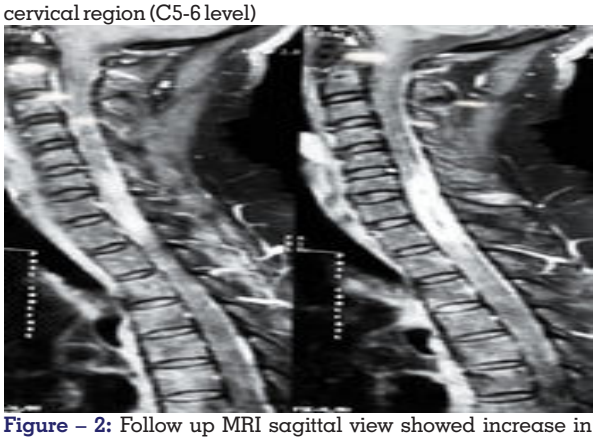

Figure – 2: Follow up MRI sagittal view showed increase in size (4.9 X 1.1 cm size) of the intramedullary ring enhancing lesion with edema (C5-C7 level) despite on ATT

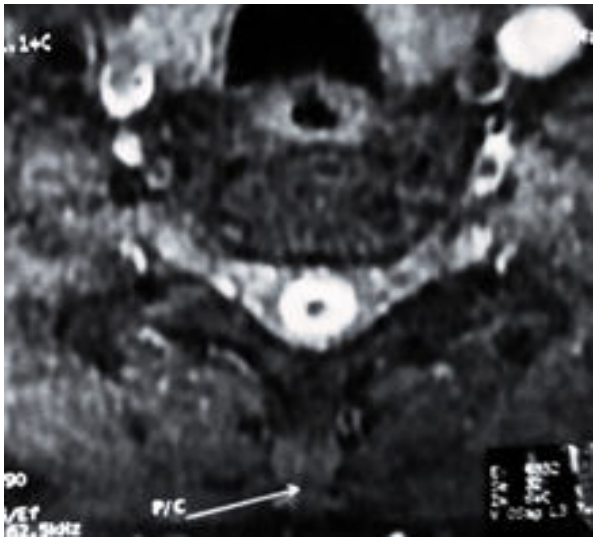

Figure -3: MRI Axial view showing intramedullary ring enhancing lesion

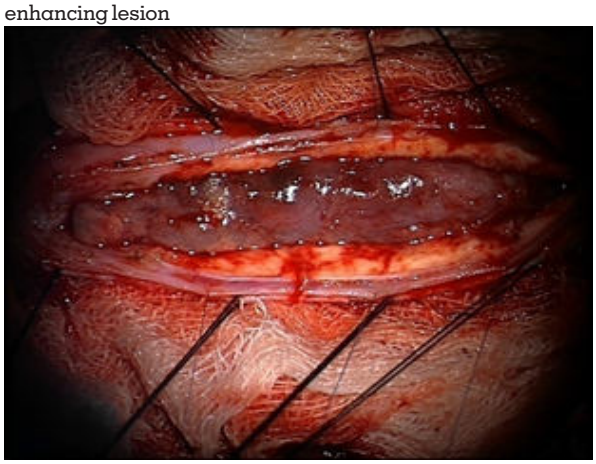

Figure 4: Intraoperative image showing intramedullary lesion which was grayish pink and firm.

DISCUSSION

Intramedullary tuberculous lesion can be of various types i.e. tuberculoma, spinal cord oedma, and cavitation. Intramedullary tuberculoma is a rare form of CNS TB. It is not a common cause of spinal cord compression. [4] When there is tuberculous foci elsewhere in the body, the common age group of presentation is 18-45 years otherwise it is 4-6 years. [5] It is induced by hematogenous dissemination, cerebrospinal fluid infection and local spread of spinal tuberculosis. [6]

Patients presents with signs and symptoms depending on the location of tuberculoma. [7] Most of the symptoms are because of subacute spinal cord compression; presenting with progressive lower limb parasthesia, bowel and bladder involvement where as major physical findings were paraplegia, either spastic or flaccid. Many patients also have thoracic sensory level. [8] In our case we have similar presentation.

Myelography used to be the investigation modality for intramedullary tuberculomas which has been replaced by more accurate modality of MRI. In 1988, Rhoton et al were the first to describe the MRI findings of tuberculoma. [9] Intramedullary tuberculomas are characterized by ring enhancement, with or without accompanying central hypointensity on T2- weighted MR images. [10] Contrast MRI shows central hypointensity with rim enhancement and with the development of caseation, T2 WI shows a typical 'target sign'. [11] Differential diagnosis on imaging for intra medullary tuberculomas includes neoplastic (astrocytoma, ependymoma, hemangioblastoma, metastasis, lymphoma), vascular (malformations, infractions), inflammatory, granulomatous (syphilis, pyogenic, mycotic, parasitic) and demyelinating lesions (multiple sclerosis).[12] If the patient has systemic tuberculosis and a lesion has typical appearance with MRI, the first thing to be thought must be tuberculoma. [13]

Surgical management of intramedullary tuberculomas extends to the diagnostic procedure, curative procedure and palliation. [8] In a series by Macdonnel et al. 65% of the patient had recovery after surgical resection. [3] Safe excision of intramedullary tuberculoma has been advised in following conditions; [14]

1. Neurological deficits are present.
2. Severe compression of cord parenchyma is evident.
3. Diagnosis is uncertain.
4. There is clinical deterioration inspite of adequate antitubercular drug therapy.

Antitubercular drug therapy should not be expected to obviate the need for surgical intervention. The review of literature presented showed that surgical management of intramedullary tuberculoma is an effective treatment and different surgeons in different settings can achieve good outcomes. (Table 1)

Table 1: Review Of Literature Presented Showed That Surgical Management Of Intramedullary Tuberculoma Is An Effective Treatment And Different Surgeons In Different Settings Can Achieve Good Outcomes

References	Year	Management	Outcome
MacDonnel et al [3]	1990	Surgical Management	Good
Jonathan et al [16]	1994	Surgical management	Good
Bhatoe HS [1]	1995	Laminectomy and excision	Good
Kayaoglu et al [17]	2000	Laminectomy and excision	Good
Noumura et al [18]	2001	Laminectomy and excision	Good
Devi et al [19]	2001	Laminectomy and excision	Good
Sharma et al [20]	2002	Laminectomy and excision	Good
Araslantas et al [21]	2002	Posterior longitudinal myelotomy	No deteriorati on
Miyamoto et al [22]	2003	Surgically extirpated	Good
Ramadurg et al [23]	2008	Laminectomy and excision	Good
Liu et al [24]	2009	Excision	Good
Arora et al [4]	2010	Excision	Good
Tyagi et al [5]	2010	Laminectomy and excision	Good
Guirado et al [25]	2011	Laminectomy and excision	Good
Li et al [26]	2012	Laminectomy and excision	Good
Prakash et al [27]	2013	Laminectomy and open biopsy	Good
Mishra et al [13]	2014	Laminectomy and excision	Good
Sonavane et al [28]	2015	Laminectomy and excision	Good

In 2012, Bashir et al. reported that patient with intramedullary tuberculoma presented with flaccid paralysis (MRC grade UL

4/5 and LL 5/5) without bowel bladder involvement; recovered fully with antitubercular drug therapy despite progressive nature of disease,and has not had any signs of paraparesis or relapse of disease. [29] These isolated reports should not delay the surgical management if the neurological symptoms appear and increase in size of tuberculoma despite on antitubercular drug therapy on follow up noted, intramedullary tuberculoma should be excised.

CONCLUSION

Surgical excision definitely has role in management of intramedullary tuberculoma. Early surgical intervention may provide better outcome if neurological symptoms appear or lesion size increases despite on antitubercular drug therapy. The results of surgical management together with antitubercular drug therapy have been excellent.

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