

CONTIGUOUS AND NON-CONTIGUOUS VERTEBRAL TUBERCULOSIS: ONE YEAR STUDY

Neurosurgery

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ABSTRACT

Generally, vertebral tuberculosis involves adjacent vertebrae, but infection at non-contiguous vertebrae do occur in some cases. MRI is very useful tool for diagnosis and Tissue diagnosis may be done by a CT guided needle aspiration. In both the cases supervised anti-tubercular chemotherapy is needed along with surgery in selected cases that present with neurological deficit. Physical therapy during conservative treatment and in post-surgical period is very essential. Diagnosis of infection of the non-contiguous segment may be missed if at least MR screening of the whole spine along with MRI of the clinically directed segment of vertebral column is not done.

KEYWORDS

Vertebral TB: contiguous and non-contiguous: surgery

INTRODUCTION

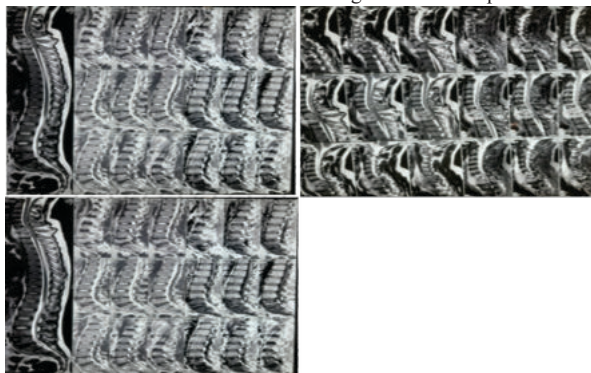
Spinal tuberculosis is the commonest form of skeletal tuberculosis. It can occur in all age groups, especially in a over populated country like India. It can be cured by simple supervised chemotherapy, but serious neurological deficits may occur in a significant number of patients. MRI is a useful tool of investigation for this disease. Generally, the disease involves adjacent vertebrae, but may occur in multiple different sites of the vertebral column (non contiguous). Surgery is needed in selected individualized cases.

MATERIAL AND METHODS:

We selected the vertebral tuberculosis patients attended in the out-patient department and collected data for one year since January 2018 to December 2018. Some of the patients were without any neurological deficit except localized back pain, fever, weight loss etc. and patients with definite neurological deficit were admitted and treated accordingly. Details data of the admitted patients were obtained. Patients, treated surgically, were followed up at six, twelve weeks and then on need basis. Simple decompression by debridement and biopsy in some cases and the same with pedicular fixation for others were our preferred surgical method.

AIMS AND OBJECTIVES

Our aim of this study was not to miss any non-contiguous vertebral tuberculosis infection though most of the symptoms and clinical examination may lead us to localize a particular segment of the vertebral column and involvement of a distant part of vertebra may remain un-noticed unless a MR screening of the whole spine is done.



MRI of a patient with non-contiguous vertebral tuberculosis

RESULT AND DISCUSSION:

Total number of Tuberculosis patients attended in the OPD was 48. There was male preponderance (M:F=3:1) and mean age was 32.5. Twenty-two patients (66.6%) were treated at their residence with supervised anti-tubercular chemotherapy from nearby RNTCP clinic. Out of twenty-two domiciliary treated patients, eight (36.36%) had minimal neurological deficits in the form of mild sensory deficits,

minimal (4 to 4+/5 motor power) weakness at selected muscle groups, which completely recovered by physical therapy with anti-tubercular chemotherapy. 26 (54.16%) patients were admitted for their significant neurological deficits and only four (8.33%) patients had radiologically proven non-contiguous vertebral infection. All the admitted patients had undergone decompression within six weeks of starting anti-tubercular therapy. Spinal fixation by means of pedicular screw-rod fixation was done in 16 patients. The age range of the patients those had undergone spinal fixation by instrumentation was remarkably wide; the youngest was 22 and the eldest was 62 years.

Among the admitted patients, 18 were male. Mean age was 45. All patients were thoroughly examined in respect of their motor power, sensory deficits and autonomic involvement. The overall estimation is as follows:

Patient	Power 3/5	Power 2/5	Power 1/5	Power 0/5	Sensory deficit	Sphincter involvement
Male	12	5	1	0	14	4
Female	6	1	1	0	3	0

Six male patients were previously diagnosed diabetic on oral hypoglycemic drugs and three patients were diagnosed as diabetic while pre-anesthetic investigation. In respect of the female counterpart, only two were diabetic beforehand. Regarding this impaired glucose metabolism, we found as much as 50% males and 25% of females had diabetes as their important co-morbidity. Essential hypertension, controlled on medication were present in 10 male and 2 female admitted patients.

After decompression with or without spinal pedicular screw rod fixation, all patients were discharged without any significant morbidity. Physical therapy was started during their post-operative hospital stay. Patients were followed up after six weeks, twelve weeks and then on need basis. During their follow up, they were treated with gabapentine or pregabalin, and baclofen in selected cases along with anti-tubercular chemotherapy as per RNTCP norm. The overall neurological recovery was excellent and most of the admitted patients were able to walk and returned to their previous occupation with some minor ailments like occasional pain, tingling at selected dermatomes and urinary hesitancy. The patients having motor power 1/5 in pre-operative period, remained assistance dependent.

Though once it was thought that tuberculosis of the spine is a disease of under privileged population of developing countries, it is now more or less, a global phenomenon due to huge global migration of people. Spinal tuberculosis is always secondary to pulmonary disease. Incidence of skeletal tuberculosis is approximately 10% of all extra-pulmonary disease, which comprises only 3% of pulmonary disease.¹ Spinal tuberculosis is the most common site for skeletal disease and thoracolumbar segment is the commonest part to be affected, followed by lumbar and cervical spine respectively.^{2,3} Infection reaches to the spine by bacillaemia or through Batson's venous plexus. Contiguous vertebral involvement is due to a common blood supply at paradiscal

region. Involvement of the spine in skeletal tuberculosis may be of i) Paradiscal type where two adjacent vertebrae is infected by a common supplying artery, ii) Central type, where one or more, adjacent or distant vertebrae are infected via Batson's plexus, iii) Anterior type with cortical bone destruction and iv) appendiceal type, where pedicle, lamina and articular process are infected primarily.⁴ Incidence of neurological deficits in spinal tuberculosis varies from 10 to 40 percent. Motor weakness in most cases is due to cord compression by abscess, granulation tissue, sequestrated bone or disc or by pathological dislocation and subluxation in active disease. Transverse ridge of bone anterior to the cord, stretching caused by spinal deformity and fibrosis of the dura may contribute to cord compression in healed cases of spinal tuberculosis.⁵ Back pain is the commonest presenting symptom and patients come with neurological deficits in advanced or neglected cases. MRI is very advantageous in early detection of spinal tuberculosis. Gadolinium enhancement provides diagnosis of early involvement of disc and vertebral body infection and also delineates abscesses clearly that helps percutaneous drainage more easily. Supervised chemotherapy with Antitubercular drugs, bed rest for initial 4 to 6 weeks and gradual encouragement for ambulation with braces are adequate for patients with spinal tuberculosis without neurological deficits. Surgical indications for spinal tuberculosis include i) paraparesis not improving or worsening even after conservative treatment with chemotherapy, ii) progressive neurological deficits while on anti-tubercular therapy, iii) recurrence of neurological signs after improvement, iv) rapid or late onset paraplegia v) correction of kyphosis, vi) difficulty in deglutition in cervical prevertebral abscess and vii) when diagnosis is uncertain.^{4,5,6} More or less similar functional outcome was found in a study performed by the Hongkong medical research Council on spinal tuberculosis patients in three groups treated conservatively, by simple debridement and radical debridement and fusion respectively.⁷ Based on this finding, regime of surgery in selected cases and chemotherapy being the mainstay of treatment is followed at present.⁸ Confirmation of the histological diagnosis, adequate removal of the disease focus, correction and prevention of the spinal deformity, prevention of recurrence, and neurological improvement are the main advantages of surgical therapy. As the tubercle bacilli, do not adhere to metallic implants, surgical instrumentation is safe even in active tubercular disease.⁹ Chemotherapy with anti-tubercular drugs resolves majority of the cold abscesses, and drainage is recommended only in certain cases. Occasionally, only debridement without fusion may lead to rapid deformity of the spine, especially in young patients.^{10,11,12} So, debridement and fusion with or without instrumentation is generally the preferred approach in surgically indicated cases.

To conclude, we like to emphasize to do a whole spine MR screening in suspected cases of vertebral tuberculosis, to avoid missing the diagnosis of non-contiguous vertebral involvement, as a take home message.

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