International Journal of Research in Medical Sciences
Gupta PK et al. Int J Res Med Sci. 2016 Jul;4(7):3077-3079
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20162012

Case Report

Meningioma mimicker: non-tubercular intradural abscess

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Received: 16 May 2016
Revised: 16 June 2016
Accepted: 17 June 2016

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ABSTRACT

Spinal subdural abscess (SSA) is a rare disease representing a loculated infection between the dura and the arachnoid. The infection may be due to haematogenous spread, iatrogenic contamination and local infection. Patient may present with varied symptoms ranging from backache to neurological deficit. Laboratory investigations will reveal increased white blood cell count (WBC) counts, raised erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), but these are non-specific. We present a case of a patient presenting as acute onset rapidly progressing paraplegia with initial Magnetic resonance imaging suggestive of meningioma or nerve sheath tumour. The patient was taken up for emergency surgery because of rapid progression of neurological deficit and intraoperatively found to have Spinal subdural abscess at D8-D9 level. There was no evidence of any tumour and the pus that was removed revealed Coagulase negative *Staph aureus.* The patient subsequently was given appropriate antibiotics for four weeks and showed clinical improvement on one month follow-up.

Keywords: Spinal subdural abscess, Tuberculoma, Meningioma

INTRODUCTION

Spinal subdural abscess (SSA) is a rare entity. The Spinal subdural abscess was first reported by Sitting in 19271.[1] Staphylococcus aureus is the most common organism implicated. Magnetic Resonance Imaging (MRI) is the investigation of choice. The Spinal cord abscesses are associated with high mortality and morbidity. Early diagnosis and emergent treatment is important to prevent progression of neurological deficit and death. In this report, we present a case report of a patient with thoracic spinal subdural abscess.

CASE REPORT

A 16 year old female patient residing in rural India admitted in medical unit in the hospital. Patient was having two week history of acute onset low backache with rapidly progressing paraplegia with urinary retention. There was no associated significant past medical history, fever, TB, HIV, surgery, trauma, epidural block, DM and any other chronic illness/drug history. On examination, patient was afebrile, without any lymphadenopathy or organomegaly. Neurological examination revealed complete cord syndrome with power 0/5 in lower limbs, are flexia and hypoesthesia below D8 and bilateral Babinski sign was positive. No sign of meningeal irritation, spinal deformity or tenderness.

Laboratory investigations were normal, ESR 4mm/hour (Normal <15mm/ hour), CRP 4mg/L (Normal 0.1-6.0mg/ L), TLC 8,650/ cumm (Normal 4,000-11,000/ cumm). MRI Brain with screening of whole spine was done and reported as well defined intradural-extramedullary mass at D8-D9 level measuring 2.5cm×1.2cm suggestive of meningioma or nerve sheath tumour (Figure 1). In spite of being treated with Inj Methylprednisolone 1gm/d for three days patient had rapidly progressing weakness with bladder involvement. Patient was then shifted to

neurosurgery unit and taken for emergency surgery. Intraoperatively, after D8-D9 laminectomy epidural space was cleared and dura was tense. After durotomy, there was localised anteriorly placed pocket of thick pus intradurally which was removed and copious irrigation done but no tumour encountered (Figure 2). Postoperative microbiological examination of pus revealed Coagulase Negative Staph aureus. Postoperatively antibiotics were given for 4 weeks. Patient was discharged after three weeks with Modified Ranking Scale (mRS) score of 3 and follow up at 3 month with mRS1.

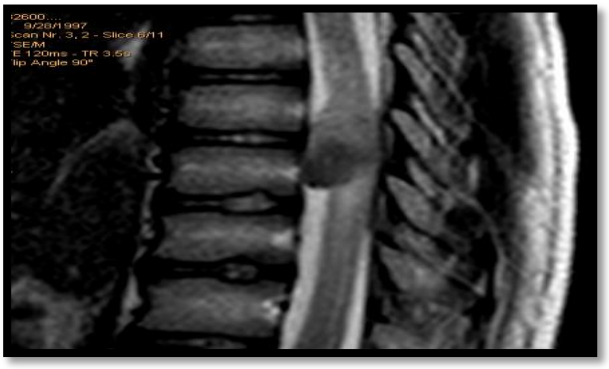

Figure 1: Single well defined intradural-extramedullary mass at D8-D9 level.

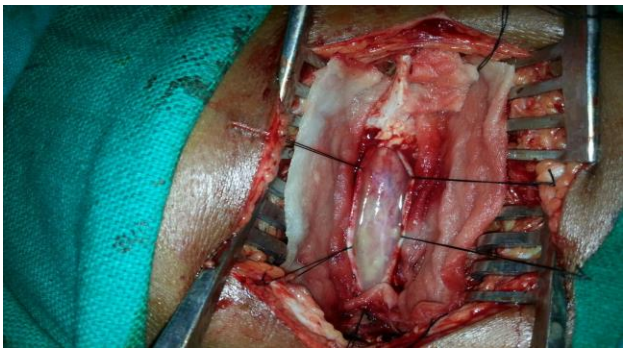

Figure 2: Intradural thick localized purulent material aderent to spinal cord.

DISCUSSION

Spinal subdural abscess (SSA) represents a loculated infection between the outermost layer of the meninges, the dura, and the arachnoid. SSA is rare, and its exact incidence is unknown. It very uncommonly localizes as a central nervous system infection that may occur secondary to a systemic infection or surgery.[2]

It has been observed that *Staphylococcus aureus* is the most frequent causative agent and the lumbar region the most frequent site of the SSA. The common age of presentation is between 60 and 70 years.[3] There are a few predisposing conditions that contribute to the development of SSA, such as an underlying disease that impairs immunity (diabetes mellitus, alcoholism, tumours, end stage renal disease, haemodialysis, Human Immunodeficiency Virus), anatomical abnormalities of the spinal cord or vertebral column due to degenerative joint disease, trauma, surgery, drug injection, or placement of catheters.[4,5] There was no such predisposing factor in the patient.

In reviewing the literature, there are three possible mechanisms for development of SSA. Firstly, direct seeding of the infection into the subdural space was reported in association with a thoracic laminectomy complicated by an inadvertent durotomy, or association with dermal sinus tracts and decubitus ulcers.[6-8] Secondly, direct extension from the epidural space where subdural empyema is associated with dura perforation.

This has been reported following epidural catheter insertion, discography, and lumbar puncture. The third likely mechanism for the spread of bacteria is haematogenous. Subdural empyema has been reported after cervical acupuncture and following meningitis. There are only two cases of SSA in the literature that are unrelated to such conditions and without well documented etiology.[9] In our patient the culture reports showed a Coagulase negative Staphylococcus aureus which make the haematogenous spread as the most likely cause.

The typical clinical presentation includes back pain, fever, and neurologic manifestations such as paraparesis/quadriparesis, bladder dysfunction, impaired rectal tone, and disturbances of consciousness. An established staging system for abscesses outlines the progression of symptoms and physical findings: stage 1, fever with or without spinal or nerve root pain; stage 2, mild neurological deficits are added to the clinical picture; stage 3, paralysis and complete sensory loss occur below the level of the lesion.[10] Our patient presented with sudden onset symptoms in stage three.

MRI, Computerized Tomography (CT) and CT myelogram are the most common diagnostic modalities. Contrast –enhanced MRI is the imaging method of choice because it is less invasive and due to its superiority in sensitivity in detecting the exact location and extension of the abscess which is essential for planning surgery.[11,12]

Although MRI is the most powerful diagnostic tool, SSA is a surgical diagnosis, because it may be difficult to correctly differentiate epidural from subdural infection. Based on a literature review, there are two case reports where radiographic findings lagged behind the clinical presentation. Leukocyte count, Erythrocyte Sedimentation Rate (ESR) and C- reactive protein, although usually are found elevated, are not sensitive indicators of spinal infections.

SSA may cause rapid compression of the spinal cord and represents an extreme medical and neurosurgical emergency. Prompt surgical drainage and antibiotic therapy are the treatments of choice. Because the rate of

progression of neurologic impairment is difficult to predict and some patients became paralyzed within hours after the onset of neurologic deficit, laminectomy followed by evacuation of the pus-like material and debridement of infected tissues should be done as soon as possible.[4]

Depending on the extension of the abscess, multilevel laminectomy could be necessary, which could cause spinal instability and is associated with poor outcome. Morbidity and mortality in SSA is high and correlates directly with the delay of the initiation of therapy.[8] Based on the literature review, there are only few patients with complete recovery after proper treatment of SSA. The majority of reported cases had a poor neurological outcome or death, even with appropriate therapy and surgical intervention.[9]

In present study patient the MRI picture was suggestive of a meningioma or nerve sheath tumour which intraoperatively was found to be localised anteriorly placed thick pus. D8-D9 laminectomy, durotomy and surgical evacuation of pus were performed. Appropriate antibiotics were started, the patient gradually improved and discharged in stable condition three weeks later.

CONCLUSION

Spinal subdural abscess is a rare entity and in previous literature only two cases have been reported without having a well-documented aetiology. Our patient did not have any predisposing factors on history so it was difficult to suspect SSA. Although the disease has high mortality and morbidity our patient improved significantly with treatment.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Gupta PK, Garg S, Thanvi S. Meningioma mimicker: non-tubercular intradural abscess. Int J Res Med Sci 2016;4:3077-9.