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BMH Med. J. 2019;6(3):86-90. **Case Report**

Late Postoperative Spondylodiscitis Due To Concurrent Infection Of Klebsiella Pneumonia And Mycobacterium Tuberculosis - A Case Report

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Abstract

The present paper reports the case of a middle aged male, having diabetes mellitus, hypertension and chronic liver disease, with postoperative infection in an instrumented posterior spinal fusion caused by concurrent infection of *Klebsiella pneumonia* and *Mycobacterium tuberculosis*. The patient developed swelling around the surgical site in the late postoperative period. The collection was drained and culture and sensitivity tests were made, which revealed it to be a case of concurrent infection by *Klebsiella pneumonia* and *Mycobacterium tuberculosis*. He showed signs of improvement on starting anti-tubercular therapy (ATT).

Key words: Post-operative infection, posterior spinal instrumented fusion, Klebsiella, Mycobacterium, tuberculosis, spondylodiscitis

Introduction

Post-operative spondylodiscitis following lumbar fusion is a rare phenomenon. Cases have been reported, although rarely, of both postoperative pyogenic spondylodiscitis and post-operative tuberculous spondylodiscitis. But reports on concurrent infection with *Klebsiella pneumonia* and *Mycobacterium tuberculosis* are scanty, if not nil. This assumes significance in the current scenario where the clinical conditions that predispose a patient to infections, like diabetes mellitus, liver disease, immunosuppression etc. are on a rise. Not to forget the importance of considering the possibility of infective spondylodiscitis as a cause of postoperative failed back syndrome, especially in areas where tuberculosis is considered endemic.

Case report

A middle aged male, with Diabetes Mellitus, Hypertension, Chronic liver disease, Chronic kidney

disease and peripheral neuropathy came to the OPD with complaints of low back ache and radiation to both lower limbs for the past three months. The symptoms became very severe for the past 1 month. He was experiencing weakness of both the lower limbs for the last two weeks. He gave history of night cries, weight loss and constipation.

On examination, he was found to have signs of radicular neuropathy, weakness of both lower limbs and sensory blunting of L4,L5 and S1 nerve roots. Saddle anesthesia was absent.

Blood investigations were done which showed a hemoglobin level of 10.7g/dL, Erythrocyte sedimentation rate (ESR) of 117, C- reactive protein level of 7.60 and HbA1C of 7.9. Liver function tests (LFT) and renal function tests (RFT) results were within normal limits. Blood culture was done which remained sterile even after 48 hours of incubation.

Ultrasound scan of the abdomen revealed hepatosplenomegaly and ascites, consistent with history of chronic liver disease. X-rays showed disc space narrowing L3/L4 (**Figures 1** and **2**) and MRI scanning was performed which showed infective/ inflammatory spondylodiscitis L3/L4 with narrowing of spinal canal and mass effect on traversing and exiting nerve roots.

Figure 1

Figure 2

He underwent L3, L4 discectomy and debridement + L3, L4, L5 wide laminectomy + posterior stabilization T12 –S1 (PLF) + iliac crest bone graft (**Figures 3 and 4**). The disc material and other tissue samples were sent for gram staining, AFB staining, culture and sensitivity, fungal staining and TB Gene Xpert.

Figure 3

Figure 4

All the staining tests reported negative, and the cultures remained sterile even after 48 hours. Post-operative period was uneventful. The patient showed significant improvement clinically. He was mobilized on a quadrangular walker as the power on his lower limbs gradually increased, and he was discharged with oral medications.

After 8 months, patient returned to OPD with pain and swelling around the surgical site. The back pain was radiating to both lower limbs and was associated with weakness. He was unable to walk by himself. Blood investigations were repeated which showed a hemoglobin level of 11.1 g/dL, Erythrocyte sedimentation rate of 105, C- reactive protein level of 97.29. Liver function tests showed marked elevation of enzyme levels but results of renal function tests were within normal limits.

Ultrasound examination revealed a collection measuring approximately 34x21x21mm subjacent to upper end of surgical scar. An incision and drainage of the collection was performed and the collected fluid and surrounding tissues were sent for staining and culture. The culture remained sterile. The patient developed a sinus which drained pus.

MRI evaluation revealed destruction of the D11-12 intervertebral disc; and a collection posteriorly causing thecal sac indentation. Lysis was noted around the screws. (**Figures 5** and **6**)

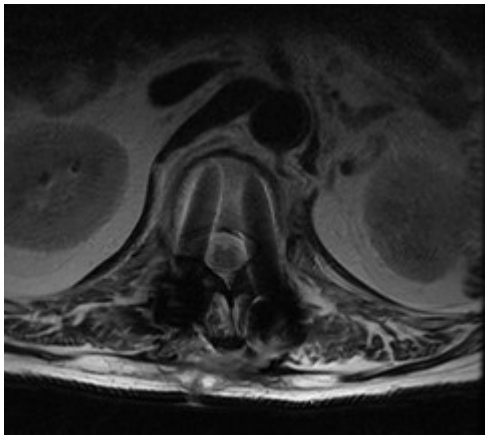

Figure 5

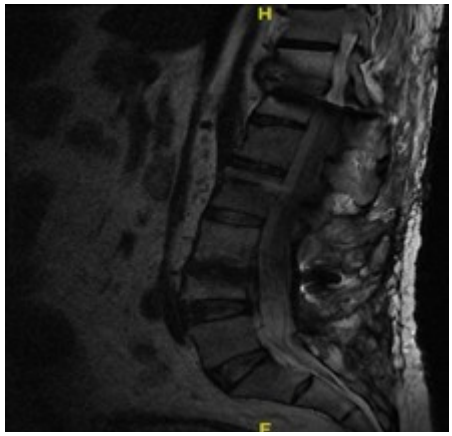

Figure 6

He underwent open debridement of the surgical site. Around 50 ml pus was drained and specimen was sent for tissue analysis, gram stain, AFB stain, bacterial culture and sensitivity, fungal culture, AFB culture, and GeneXpert. Drain fluid AFB stain (**Figure 7**), gram stain, and AFB culture were done. Pus culture and sensitivity report revealed heavy growth of *Klebsiella pneumonia*, and he was put on Piperacillin – Tazobactam (sensitive antibiotic as per culture reports). Tissue culture (MGIT) showed growth of *Mycobacterium tuberculosis* after 2 months. Drain fluid culture and truenat MTB from tissue specimen also revealed Mycobacterium tuberculosis infection.

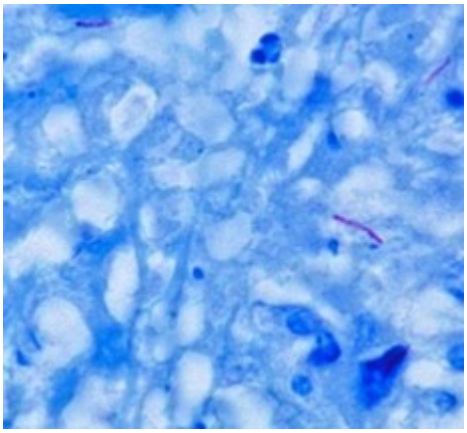

Figure 7

The patient was promptly started on antitubercular therapy (Dose adjusted in view of chronic liver disease). Patient showed signs of improvement and repeat MRI after 2 months showed signs of healing of the infection. MRI at 5 months after surgery showed almost complete healing of the lesion and resolution of the abscess (**Figure 8**).

Figure 8

Discussion

Spinal infections are serious life threatening diseases, though they rare. The diagnostic process involves careful elicitation of the clinical history, correlating the blood parameters with the symptoms, judicious use of radiological investigations, and confirmation by positive blood or bone cultures or by response to antibiotic therapy. In the absence of fever and positive blood cultures, bone or disc biopsy is mandatory for the diagnosis of infective spondylodiscitis [1].

Spondylodiscitis and spinal epidural abscess are the two most important manifestations of spinal infections. Spondylodiscitis involves two contiguous vertebrae and the intervening disc, because same branch of the posterior spinal artery provides the blood supply to the lower portion of the upper vertebra and the upper portion of the lower vertebra [1]. The number of cases has been on a steady rise for the past few years owing to increase in the number of patients with predisposing conditions (diabetes mellitus, alcoholism, immunodeficiency, intravenous drug use, neurosurgery and spinal instrumentations). The pathogen reaches the site of infection through hematogenous spread [2], direct inoculation or from neighbouring infected tissues. The sites most frequently involved are the lumbar, thoracic and cervical spine in that order, probably reflecting the relative proportions of blood flow through the vertebrae.

There is an increase in the incidence of spinal tuberculosis with increase in the number of immune-compromised patients, especially in countries like India where TB is endemic [3]. Spinal tuberculosis is extremely difficult to diagnose as the symptoms are grossly nonspecific. Mean interval between appearance of initial symptoms and establishment of correct diagnosis generally ranges from 3-6 months [3].

Post-operative spondylodiscitis is a rare phenomenon on its own, but has been reported in the past. Most of the spondylodiscitis cases are due to Staphylococcus species, a few by Propioni bacterium

acne and very rarely by Methicillin resistant Staphylococcus aureus [4]. Two cases of post-operative spondylodiscitis due to tuberculosis are reported [3,4]. Tubercular bacteria can involve an implant site by hematogenous spread from activation of a latent distant focus or local reactivation of dormant bacteria in a previously exposed individual. Major trauma such as fractures/ surgery can cause lowering of both humoral and cellular immunity [5]. Any factor that alters the tissue response can precipitate this cascade of events. Before immunity is re- established, bacilli from the primary infectious focus or from the nearest lymph node are transported and disseminated throughout the body by the lymph system and then via the bloodstream. Secondary foci containing a limited number of bacilli are thus constituted, particularly in the lymph nodes, serous membranes, meninges, bones, liver, kidneys and lungs. As soon as an immune response is mounted most of these foci spontaneously resolve. However, a number of bacilli may remain in the secondary foci for even months or years, resulting in subsequent seeding at the implant site [4].

The present paper reports a case of late post-operative spondylodiscitis caused by concurrent infection with *Klebsiella pneumonia* and *Mycobacterium tuberculosis*. A similar case is not reported elsewhere till now.

Diagnosing an infective condition of the spine demands a high level of clinical suspicion from the part of the treating surgeon, especially so in a post-operative case, usually the only symptoms being refractory back pain and neurological deficits. So when dealing with a case of failed back syndrome, one should always entertain a differential diagnosis of infective spondylodiscitis, and especially Tuberculous spondylodiscitis if he/she is working in a tuberculosis endemic area.

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