

Case Report

# Lumbosacral actinomycosis in an immunocompetent individual: An extremely rare case

Patil V. R., Joshi A. R., Joshi S. S., Patel D.

Department of Pathology, Shrimati Kashibai Navale Medical College, Pune, Maharashtra, India

Corresponding author: Dr. Vinod R. Patil, Department of Pathology, Shrimati Kashibai Navale Medical College, S. No. 49/1, Narhe, Off Pune-Mumbai Bypass, Pune - 411 041, Maharashtra, India. E-mail: [dr.vrp85@gmail.com](mailto:dr.vrp85@gmail.com)

Journal of Craniovertebral Junction and Spine 2014, 5:43

## Abstract

Actinomycosis is a gram positive commensal bacteria. In predisposed individuals like immunocompromised patients, it can cause myriad lesions involving virtually any organ of the body. Involvement of spinal cord with its compression is rare though. We are reporting here a case of 30-year-old immunocompetent male who presented with weakness of left lower limb. Radiologically differential diagnosis was tuberculosis or lymphoma of spinal cord. Histopathology showed actinomycotic colonies that were periodic Schiff (PAS) positive and revealed gram positive filamentous bacteria.

**Key words:** Actinomycosis, immunocompetent, lumbosacral spine

## INTRODUCTION

Actinomycoses are gram positive bacteria, usually present as commensal in oral cavity, gastrointestinal (GI) tract and urogenital tract. It rarely causes a suppurative granulomatous infection that can involve any organ of the body.<sup>[1]</sup> It is divided into cervicofacial (55%), abdominopelvic (20%), thoracic (15%), and other (10%). It commonly affects males as compared to females. Immunocompromised individuals are more at risk. Vertebral infection is uncommon and involvement of spinal cord by this organism is very rare phenomenon.<sup>[2]</sup> Till date only 25 such cases have been reported and most of which show involvement of cervical and thoracic cord. Actinomycosis of lumbosacral spine is a rare entity in literature.<sup>[2]</sup> Hence we are reporting this case of 30-year-old immunocompetent male who presented with lower back pain and sensory motor involvement

of left lower limb. Radiology and histopathology revealed actinomycotic infection of spine.

## CASE REPORT

A 30-year-old male patient came to orthopaedic out patient department (OPD) with complaints of lower backache since 1 year. Pain was radiating to left lower limb. He had recently started complaining of difficulty in walking associated with low grade fever. There was no history of trauma, weight loss or loss of appetite. His vital parameters were within normal limits. On examination, tenderness was noted in lumbosacral area of spine. Passive straight leg raising (SLR) was possible up to 60° in left lower limb. Power was also reduced to 3/5 in left knee and ankle while 2/5 in left hip. Sensory examination revealed decreased sensations in left lower limb. SLR, power and sensations were normal in right lower limb. Bilateral distal lower limb pulses were normal. Laboratory findings revealed hemoglobin levels of 9 gm/dl, total leucocyte count of 14800/cumm and platelet count of 688000/cumm. Erythrocyte sedimentation rate (ESR) was 42 mm at the end of one hour. C-reactive protein was negative. Patient was non reactive for HIV I and II on ELISA test.

On magnetic resonance imaging of lumbar spine, T2 hyperintense and T1 iso to hyperintense moderately enhancing

Access this article online	
Quick Response Code:	Website: <a href="http://www.jcvjs.com">www.jcvjs.com</a>
	DOI: 10.4103/0974-8237.147088

soft tissue was seen in spinal cord from D12 to S2 vertebrae along the dura and cauda equine nerve roots [Figure 1 T2 hyperintense soft tissue involving spinal cord from D12 to S2 vertebrae]. It also extended within neural foramina with obliteration of neural foraminal fat. Post contrast images showed abnormal enhancement in vertebral marrow with diffuse involvement of paravertebral soft tissue. Hence the impression of diffuse Kochs involvement of spine was given along with suspicion of neoplastic etiology like lymphoma.

The transpedicular vertebral bone biopsy from left L3 and L4 region was done and sent for histopathological examination.

Microscopic examination of this specimen revealed irregularly dispersed bony trabeculae enclosing predominantly fibrofatty marrow tissue. Most of the biopsy also showed inflammatory infiltrate comprised of neutrophils, lymphocytes and plenty of foamy macrophages. Within this were seen eosinophilic radial granular colonies with rounded masses of filaments [Figure 2 Actinomycotic colony with Splendore-Hoepli phenomenon). Peripheral part showed radially arranged club shaped thickenings. These were surrounded by plenty of neutrophils (Splendore-Hoepli phenomenon). The colonies

were PAS positive [Figure 3 PAS positive actinomycotic colony] and gram stain highlighted gram positive filamentous bacteria [Figure 4 Gram stain highlighting gram positive filamentous bacteria]. Based on these features, a diagnosis of actinomycosis of lumbosacral spine was given.

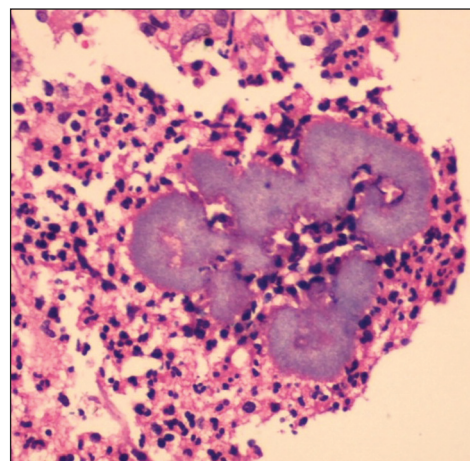
Patient was started with penicillin group antibiotics and he is tolerating the therapy well.

## DISCUSSION

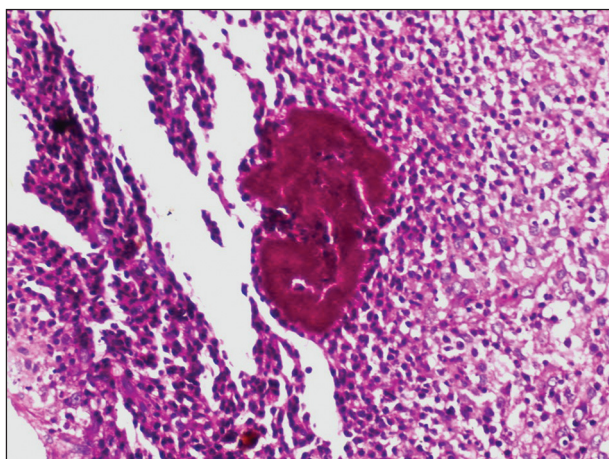
Actinomyces was originally discovered in 1877 in cattle. In 1891, *A. israelii* was first isolated from a lung abscess by Wolff and Israel. Since then, many other Actinomyces and related bacteria are isolated and are believed to be involved in infection of almost any organ of human body.<sup>[3]</sup> Spinal Actinomycosis has been described in more than hundred case reports but spinal cord compression is rare.<sup>[1]</sup> One of the study mentions around 25 cases of spinal cord compression due to actinomycosis. Out of them most of the cases showed involvement of cervical and thoracic spine. Only one case involved entire spinal cord. Very few cases have described isolated involvement of lumbosacral spinal cord.<sup>[2]</sup>



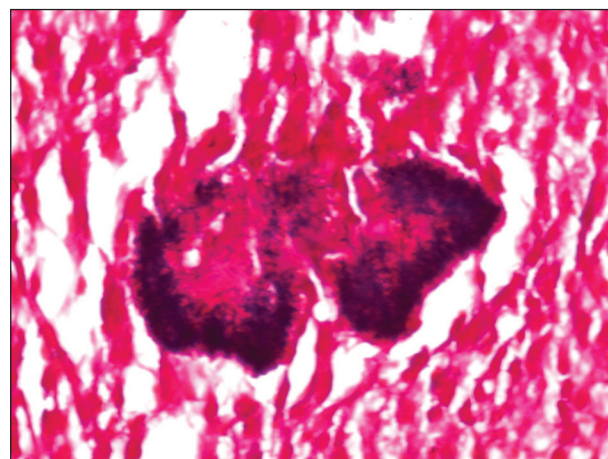
**Figure 1: MRI showing T2 hyperintense soft tissue involving spinal cord from D12 to S2 vertebrae**



**Figure 2: Actinomycotic colony with Splendore-Hoepli phenomenon**



**Figure 3: PAS positive actinomycotic colony**



**Figure 4: Gram stain highlighting gram positive filamentous bacteria**

Spinal actinomycosis is common in males (84.2%) and is also common between 20 and 50 years of age (78.9%).<sup>[2]</sup> Most of the cases are immunocompromised. Very few cases have been reported in immunocompetent individuals. Diagnosis of actinomycosis in immunocompetent patients is frequently elusive and such patients have much better prognosis as compared to immunocompromised patients. Breach in the mucosal membrane is required for the invasion of actinomycosis. After invasion, its course is slow and develops into an abscess after a long interval of time. Mostly actinomycosis occurs following trauma or surgical and dental procedures involving sites where these bacteria are commensals.<sup>[4]</sup> Although haematological spread has been described, it is very rare.<sup>[5]</sup> In our case, patient did not have any other lesion in the body, hence haematological route of spread was suspected.

The actinomycois-related spinal neurological deficits include myelopathy or myeloradiculopathy and are due to compression from epidural mass lesions.<sup>[6]</sup> Our case presented with myeloradiculopathy affecting exclusively left lower limb. Radiologically it can be mistaken for tuberculosis, septic osteomyelitis of spine or malignancy.<sup>[1]</sup> In our patient, differential diagnosis of spinal tuberculosis and lymphoma was offered by radiologist by considering the age of the patient.

The diagnosis of actinomycosis is obtained either by biopsy or by draining the abscess material and then doing the cultural examination. The material is generally gelatinous, dark with yellowish odorless sand like sulfur granules.<sup>[2]</sup> Culture is the gold standard for the diagnosis however it is difficult and less

sensitive because the bacteria are slow growing. Their growth is often affected by prior administration of antibiotics.<sup>[7]</sup>

Antimicrobial therapy with or without surgery is the treatment for actinomycosis. Penicillin is the drug of choice. In cases of penicillin allergy, other antimicrobial agents such as clindamycin, tetracycline and erythromycin can be used.<sup>[4]</sup>

## REFERENCES

1. Dewan A, Gupta A, Trivedi P, Agrawal G, Patel DD, Shah M. Lumbosacral actinomycosis with direct involvement and compression of conus medullaris and cauda equina nerve roots: An extremely rare case. *Neurol India* 2012;60:560-2.
2. Ramos MI, Carneiro JA, Poswar Fde O, Nassau DC, Colares FA. Actinomycosis affecting the spinal cord: A case report. *Rev Soc Bras Med Trop* 2012;45:535-7.
3. Apotheloz C, Regamey C. Disseminated infection due to *Actinomyces meyeri*: Case report and review. *Clin Infect Dis* 1996;22:621-5.
4. Honda H, Bankowski MJ, Kajioka EH, Chokrungravanon N, Kim W, Gallacher ST. Thoracic vertebral actinomycosis: *Actinomyces israelii* and *Fusobacterium nucleatum*. *J Clin Microbiol* 2008;46:2009-14.
5. Vernon V, Pranav G, Palande D. Actinomycosis of the neck causing cervical epidural cord compression. 'A case report and review of literature'. *Spinal Cord* 2007;45:787-9.
6. Dua RK, Bhat DI, Indira DB. Spinal actinomycosis: A rare disease. *Neurol India* 2010;58:298-9.
7. Cope VZ. Actinomycosis of bone with special reference to infection of vertebral column. *J Bone Joint Surg Br* 1951;33B:205-14.

**How to cite this article:** Patil VR, Joshi AR, Joshi SS, Patel D. Lumbosacral actinomycosis in an immunocompetent individual: An extremely rare case. *J Craniovert Jun Spine* 2014;5:173-5.

**Source of Support:** Nil, **Conflict of Interest:** None declared.

### Announcement

#### Android App



Download  
**Android**  
application

FREE

A free application to browse and search the journal's content is now available for Android based mobiles and devices. The application provides "Table of Contents" of the latest issues, which are stored on the device for future offline browsing. Internet connection is required to access the back issues and search facility. The application is compatible with all the versions of Android. The application can be downloaded from <https://market.android.com/details?id=comm.app.medknow>. For suggestions and comments do write back to us.