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Case Study

A Case Study on Koch's Spine

Harshil P Gadhiya[1], Divy H Bhimani[2], Kushal Parekh[3]

[1,2]5th Year Pharm D Student, [3]Assistant Professor, School of Pharmacy, RK University, Rajkot, Gujarat, India.
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I N F O

Corresponding Author:
Divy H Bhimani, Pharm D Student, School of Pharmacy, RK University, Rajkot, Gujarat, India.
E-mail Id:
divybhimani12@gmail.com
Orcid Id:
https://orcid.org/0009-0004-1917-3806
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A B S T R A C T

A majority of persistent spinal infections (88%) are caused by spinal tuberculosis, commonly known as Koch's spine and tuberculous vertebral osteomyelitis. It can happen at any level of the spine, despite the fact that the thoracolumbar junction is where it most frequently occurs. Avoiding neurological problems and spinal abnormalities requires early diagnosis and treatment. In this report, we have discussed the case of a 61-year-old man who had spinal tuberculosis and was given anti-tuberculosis treatment.

Keywords: Skeletal Tuberculosis, Koch's Spine, Tuberculous Vertebral Osteomyelitis, Antituberculosis Drug (ACT)

Introduction

The most prevalent type of skeletal tuberculosis (TB) and the cause of 88% of chronic vertebral infections is tuberculosis of the spine, also referred to as Koch's spine and tuberculous vertebral osteomyelitis. About 30% of Koch's spine develops before the age of ten years.

Infections with tuberculosis constitute about a total of 30 million cases worldwide. There are 6 million tuberculosis cases in India, according to sputum testing. Skeletal TB is seen in about 1%–3% of cases.[1]

A common extrapulmonary manifestation of the disease is spinal TB. A majority of spinal TB cases in industrialised countries are mostly associated with immigration from endemic areas. There is a need for greater awareness of spinal TB because the HIV epidemic has led to a rise in all types of the disease. Although spinal tuberculosis occurs frequently and has a high rate of long-term morbidity, there are no clear-cut guidelines for its diagnosis or treatment. To avoid long-term neurological impairment and to reduce spinal deformity, early diagnosis and fast treatment are essential.[2]

Atypical spinal TB is still difficult to diagnose due to inadequate emphasis on the subject and descriptions in the literature. This could make it difficult to make a proper diagnosis and initiate treatment on time, particularly when it comes to the selection of surgical options. The atypical characteristics of spinal TB may manifest as lesions affecting the sacrum or the posterior elements of the neural arch (with the intervertebral disc and vertebral body intact). Composite lesions or pan vertebral involvement are terms used to describe when posterior spinal TB coexists with anterior spinal TB at the same level.[3]

Case Report

A 61-year-old man from Rajkot, Gujarat presented with a month-long fever with chills, 3 days of diarrhoea and vomiting, lower back pain, and abdominal pain. He suffered from anorexia after 4 days of administration as well as cough and expectoration after 5 days of administration. He was on a mixed diet and had no significant family or personal history. He has a social history of alcohol consumption (10 years) and smoking (40 years). On examination, he was found to be conscious and well-oriented. He had mild hepatomegaly and mild oedematous

thickening of the wall of the terminal ileum. The Brucella microagglutination test (BMAT) was negative. His complete blood count showed anaemia (Hb: 9.8 gm% and RBC: 3.65 million/mm^3).

On examination, the left paravertebral areas, as well as the D12 and L1 areas, were all tender. There was a bump formed on the spinous processes of D12 and L1. D10 was abundant in the left paravertebral area all the way up to the sacrum. The neurological examinations showed that the patient had an injury related to the motor/ sensory functions, which was confirmed by the C grade of Frankel grade test. Following blood testing, it was discovered that the erythrocyte sedimentation rate (ESR), lymphocytes, and overall quantity of white blood cells had all increased.

A narrow intervertebral disc space, wedge-shaped L1 vertebral body and kyphosis were suggestive of deformity. A distinct collection of floating internal debris approximately 13.5 cm by 4 cm was found in the left lumbar paravertebral region during an ultrasound (USG) of the abdomen and pelvis.

Oblique X-ray and axial computed tomography showed early erosive changes in the anterolateral corner of the vertebral body. This indicated tuberculosis of the spinal cord. Axial CT scan showed a bone fragment pattern and extensive paraspinal soft tissue abscess with initial wall calcification. Tab. AKT 4 (rifampicin, isoniazid, pyrazinamide and ethambutol hydrochloride), inj. Vizolid (linezolid), inj. cefotaxime, inj. Febrinil (paracetamol) and inj. ondansetron comprised the treatment plan for curing the patient.

Discussion

One of the most ancient illnesses to affect people is spinal tuberculosis. Egyptian mummies from 3400 BC have been found to contain signs of spinal TB. In developing nations, it is still a significant public health issue and is a prominent factor in non-traumatic paraplegia; this condition is linked to high morbidity and has economic consequences.[4]

An ideal strategy would be one that could easily allow for the complete removal of the diseased tissue, wouldn't exacerbate instability, would help with deformity correction along with stabilisation and fusion, and would result in the least amount of morbidity (blood loss and iatrogenic complications). To accomplish the aforementioned objectives, the anterior approach has historically been favoured because it provides easy access to the damaged vertebral bodies for debridement and instrumentation. The disadvantage of the anterior approach, though, is that it is technically very challenging and there's a chance that viscera, vascular, and neural structures could get hurt.[5]

It may be challenging to distinguish spinal TB from pyogenic and fungal vertebral osteomyelitis, as well as primary and metastatic spinal tumours, when only clinical and radiographic findings are taken into account. When determining whether someone has spinal TB, tuberculosis history, a positive skin test (whose value decreases in endemic areas), and an elevated ESR may be helpful. A spinal TB infection can be accurately diagnosed with the help of a biopsy.[6]

In these situations, MRI or CT imaging should also be a part of the diagnostic work-up. Imaging tests can check fluid cisterns, other vertebrae, diameter of the spinal canal, and whether there is a chance of developing paralysis or paresis. They can also help determine whether the fracture is accompanied by aberrant masses.[7]

There has long been disagreement on the amount of drugs that should be used to treat spinal TB and the length of the recommended therapy regimen. This is due to the lack of a suitable definition for "healed status" and the criteria on which this definition ought to be founded. The best evidence of a cure is repeated histological samples at the end of a specific therapeutic duration. However, spinal TB makes this impractical. The World Health Organization's (WHO) recommendations for treating TB call for categorical treatment. Since spinal TB falls under category I, it requires two phases of treatment: the intensive phase and the maintenance phase. Four first-line antitubercular medications — isoniazid (INH), rifampicin, pyrazinamide, and streptomycin — are given during the intensive phase, which lasts for two months. Two medications (INH and rifampicin) are administered for 4 months during the continuation phase. The WHO advises continuing the therapy for a total of 9 months for bone/ joint TB, nevertheless. This is because it can be challenging to gauge a patient's response under these circumstances and complications can be quite catastrophic.[8]

The need for extra surgical intervention in addition to spinal TB therapies is debatable in the literature. No statistically significant difference was found for any of the outcome measures in a Cochrane review of randomised controlled trials[9] comparing chemotherapy plus surgery with chemotherapy alone for the treatment of active TB of the spine. The meta-analysis included just two studies, and there weren't enough data points to determine which of the two treatment strategies is preferable. Further trials evaluating routine surgery should also take sub-groups of patients with spinal tuberculosis into account in order to assess the value of surgery for specific outcomes. Patients had both chemotherapy and surgical treatment in 75% of the analysed studies, and in more than half of the studies, more than 56% of patients underwent surgery. Across trials, there were a variety of surgical intervention indications.[10]

Conclusion

Spinal TB has a better prognosis with early detection and immediate treatment. Even in the absence of symptoms and

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neurological indications, patients with chronic low back pain should be examined with a high level of clinical suspicion. Typically, drug treatment is successful in these cases. In severe situations with considerable bone involvement, or the development of an abscess, or paraplegia, surgery is necessary. Adolescents are primarily affected by spinal tuberculosis; hence effective prevention measures must be emphasised. The only approach to prevent spinal TB is to stop the spread of the disease.

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