Case report

A Case of Tuberculous Leptomeningitis and Myelitis

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Abstract

A 22-year-old female patient was admitted with the complaints of abdominal pain, high fever and confusion. Physical examination revealed nuchal rigidity and Kernig-Brudzinsky sign. High pressure, xanthochromic appearance, 42 cells/mm³ (%90 lymphocytes), high protein level and normal glucose level were detected in cerebrospinal fluid analysis. She was diagnosed as suppressed purulent meningitis due to prior empirical antibiotherapy and was given intravenous ceftriaxon. Despite the therapy, the number of cells increased and glucose level decreased in the cerebrospinal fluid. Tuberculous meningitis was considered and therefore anti-tuberculotic and corticosteroid therapies were started. On the tenth day of therapies loss of strength in lower extremities, flask bladder and back pain were added to the clinical picture. A granulomatous inflammatory tissue, which completely filled epidural sack and surrounded the radices at the level of T8-11, was seen in spinal MRI. Löwenstein-Jensen medium culture assay was positive for Mycobacterium tuberculosis.

Keywords: Tuberculous meningitis, tuberculous myelitis, tuberculous leptomeningitis, Mycobacterium tuberculosis

Tüberküloz Leptomenenjit ve Miyelit: Olgu Sunumu

Özet


Anahtar Kelimeler: Tüberküloz menenjit, tuberküloz myelit, tuberküloz leptomenenjit, Mycobacterium tuberculosis
Introduction
Tuberculosis remains a major health problem in many areas of the world. Central nervous system (CNS) involvement is relatively rare compared to the involvement of other systems. Tuberculous meningitis is usually due to rupture of a subependymal tubercules into the subarachnoid space rather than direct hematogenous seeding of the meninges. The meningeal involvement is most marked at the base of the brain. Intramedullary spinal tuberculoma, which is rare form of CNS tuberculosis, is also a rare cause of spinal cord compression.

Although it is benign and curable, a delay in the diagnosis and treatment may lead to significant morbidity. Intramedullary tuberculomas normally respond well to conventional anti-tuberculous medications and require surgery only rarely.

We report a case of spinal tuberculosis with leptomeningitis and secondary myelitis.

Case Presentation
22-year-old female patient was admitted to our hospital with abdominal pain, high fever and confusion. Physical examination revealed nuchal rigidity and Kernig-Brudzinsky sign. The following data were found in cerebrospinal fluid (CSF) analysis: High pressure, xantocromic appearance, 42 cells/mm³ (90% lymphocytes), protein 312mg/dl and glucose 69 mg/dl. As the patient was given a prior antibiotherapy, of which the modality was not known, she was diagnosed as “mistreated purulent meningitis” and ceftriaxon treatment, 4 g. per day, was started.

As there was an increase in the number of cells and a decrease in the level of glucose in control lumbar puncture (LP), she was considered to have tuberculosis meningitis. Therefore anti-tuberculosis therapy, consisting of streptomycin, pyrazinamid, isoniazid, rifampin, and corticosteroid (dexamethasone, 8 mg q.i.d.) was started. Soon after, fever was under control and unconsciousness was ameliorated. But on the tenth day of the therapy symptoms like bilateral loss of strength in lower extremities, flask bladder and back pain were added to the clinical picture.

Although no pathology was observed in her cranial computed tomography (CT) scan, repeated LP’s showed a decrease in the number of the cells and glucose level, and increase in protein level. Gram and acid-fast stains, and Rose-Bengal test were performed and no pathologic data were found. Neurological examination revealed a possible lesion in the lower thoracic and upper lumbar areas, and a granulomatous inflammatory tissue (possibly leptomeningitis), which completely filled epidural sack and surrounded the radices at the level of T8-11, was seen in spinal magnetic resonance imaging (MRI) (Figure 1). Meanwhile Mycobacterium tuberculosis was grown in her CSF culture assay (Löwenstein-Jensen Medium). Therefore a high dose of corticosteroid therapy (prednisolone, 100 mg per day) was started. Ten days later, the therapy was tapered.

Clinical recovery was seen after the second month of the therapy and the case was discharged without a necessity of a urinary catheter and was capable of walking with help.

Discussion
Tuberculosis is a chronic bacterial infection caused by M. tuberculosis and usually characterized by the formation of granulomas or less frequently of abscesses in infected tissues. CNS tuberculosis is a rare entity, affecting 0.5 - 2% of patients with systemic tuberculosis. The spinal cord
is much less commonly involved than the brain at a ratio of approximately 1:42. Spinal tuberculous leptomenigitis and myelitis are extremely rare, seen at a rate of two per 1000 cases of tuberculous of the central nervous system.

Spinal tuberculomas tend to occur mainly in developing countries and are associated with systemic diseases, usually pulmonary in 69% of the cases. It is a common opportunistic infection primarily in relatively young individuals in the developed countries who are positive for human immunodeficiency virus (HIV). Our patient was also young but she hasn’t any other systemic disease.

Clinical symptomatology and presentation of spinal tuberculoma are usually indistinguishable from other spinal tumors or abscesses. The commonest symptom is subacute spinal cord compression with motor and sensory findings, depending on the localization of the lesion (mean duration 2 to 3 mounts). Also nerve root compression with pain, lower motor neuron type of paralysis, bladder or rectal sphincter symptoms, hypoesthesia or anesthesia in the distribution of a nerve root, or paresthesias may be seen.

Modern neurodiagnostic studies can help the localization of the tuberculous process, towards the extradural, intradural extramedullary or intramedullary compartments. Myelography or CT may also assist in localizing anatomic details that cannot be ascertained. MRI is of particular value. In our case, spinal MRI scan was appropriate to demonstrate the localization of lesion. Examination of the CSF is the cornerstone of the diagnosis. Sixty-five percent of the cases demonstrated a cell number between 100-500/mm³; lymphocytes are to be the preponderant cells. CSF glucose content, said to be characteristically low and the protein level is between 100-500 mg/100 ml in general. The acid-fast bacilli can be visible on the stained CSF (37-87%) and nearly half of the cases have positive cultures as in our patient.

Spinal tuberculosis normally responds well to conventional antituberculous medications. In recent years, total recoveries of intramedullary tuberculoma with medical therapy alone have been reported. Steroid treatment will often reduce edema and decrease symptoms. When diagnosis is definite, the effects of antimicrobial therapy should be assessed before any surgical procedure. Because a good resolution is often associated with and residual neurological defects are less often seen with effective medical therapy.

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Figure: Granulomatose inflammatory tissue which completely fills epidural sack and surrounds the radices.
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