



CASE REPORT

A Comprehensive Case Report on Tuberculosis Meningitis: A Nurse's Perspective on Diagnosis, Management, and Patient Care

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Abstract

The organism that causes tuberculosis is called Mycobacterium TB. The germs can spread to other organs and tissues through the circulation if the illness is not treated immediately. Tubercular meningitis will result from the infection's progression to the meninges, where it will inflame the membranes. A 42-year-old male patient with tuberculous meningitis is the subject of this investigation. The patient's chief complaints are a low-grade fever and chills that have persisted for a month, a five- to six-day-old frontal headache, altered sensorium, breathing issues, diminished speech, and a one-day-old left-side weakness. He had a battery of testing upon admission to the ward, including blood work, lumbar punctures, electrocardiograms, and brain MRIs. Eventually, tuberculous meningitis was the diagnosis. After being admitted to the intensive care unit at Hospital, the patient was placed on nasogastric tube support, a Foley catheter, and NIV support after undergoing examinations. The catheter was removed when the patient's condition improved, and they were moved to a ward. Injections of C-tri 2 gm, levoflox 500 mg, thiamine 100 mg, injections of dexamethasone 10 mg, tabs of Pan 40 mg, tabs of Akt4 3, injections of mannitol, and tabs of lorazepam were the methods of patient medical therapy in the ward. Following the completion of all therapies and improvements in the patient's condition, a nursing care plan, physical examination, neurological evaluation, and obtaining a patient's history were finished.

Keywords: Scrofula brain fever, *Tubercle bacillus*, Treatment, Nursing management, tuberculous meningitis.

Introduction:

Meningitis brought on by tuberculosis (TBM) can manifest as the sole symptom of tuberculosis (TB) or it can coexist with extrapulmonary or pulmonary infection. Significant rates of mortality and morbidity are associated with TBM, particularly in people who are also HIV-positive. Delays in seeking medical attention, making diagnoses, and initiating treatment, especially in locations with limited resources, contribute to the high rate of death and morbidity. When detected early, TBM can be treated with closely controlled medication therapy and supportive care. Meningeal symptoms may not be evident in the early stages of meningitis, although headaches, fever, and stiff neck are common in TBM patients. Before then, it might take a few days to many months for symptoms to appear. Glasgow Coma Scale values of 10 or below may be seen in clinically severe cases of TBM, especially in environments with little resources. These symptoms, which are common and suggest that MTB may be the origin of meningitis, include cerebral nerve palsies, hemiparesis, paraparesis, and seizures. Patients with numerous CN palsies are most commonly seen to have CN III, VI, and VII palsies. A chest X-ray indicates current or previous pulmonary TB in about 50% of patients.

Case Presentation:

42-year-old man was admitted to the intensive care unit of hospital. His main complaints were of low-grade fever and chills that had been present for a month, a frontal headache that had been present for five to six days, altered sensorium, difficulty breathing, reduced speech, and left-side weakness that had been present for a day. He was diagnosed with tuberculous meningitis after undergoing all necessary procedures, including an ECG, lumbar puncture, MRI, and blood work, after being admitted to the ward.

After RT-PCR testing came back negative, the patient was brought to the AVBRH hospital's critical care unit. There, several tests were conducted, the patient was placed on a nasogastric tube and started receiving NIV support on December 24, 2022, and a Foley catheterization was completed. As the patient's health improved, the nasogastric tube and NIV assistance were withdrawn on December 25, 2023, and on December 27, 2023, he was moved to the ward.

Diagnostic Evaluation:

The patient's complete blood count revealed hemoglobin of 14.1 gm%, MCV of 88.2 cubic microns, MCH of 32.4 picograms, total RBC count of 4.66 million/cu.mm, total WBC count of 13,600/cu.mm, total platelet count of 2.42 lacs/cu.mm, and monocytes at 4%. These findings were within normal limits, except for the total WBC count, which was increased, indicating a possible ongoing infection or inflammatory process. Kidney function tests showed urea at 22 mg% and creatinine at 0.8 mg%, both within normal ranges; however, serum sodium was decreased at 124 meq/l compared to the normal range of 136–145 meq/l, suggesting hyponatremia that requires monitoring and correction. Liver function tests revealed total protein at 7.2 gm%, albumin at 3.4 gm%, and total bilirubin at 0.9 mg/dl—all within normal ranges. Conjugated bilirubin was slightly decreased at 0.3 mg/dl, while unconjugated bilirubin was 0.6 mg/dl, which was normal. The erythrocyte sedimentation rate (ESR) was 28 mm/hr, which falls within the normal range of 0–29 mm/hr. Overall, the laboratory investigations indicate a generally stable condition with evidence of leukocytosis and hyponatremia, warranting clinical correlation and supportive management.

The cerebrospinal fluid (CSF) analysis of the patient showed a glucose level of 25 mg/dl, which is decreased compared to the normal range

of 50–80 mg/dl, suggesting impaired glucose transport or increased utilization by infectious organisms. The LDH level was elevated at 79 units, higher than the normal value of less than 70 units, which may indicate tissue breakdown or central nervous system inflammation. The CSF protein level was markedly increased at 158 mg/dl, well above the normal range of 15–60 mg/dl, indicating increased permeability of the blood–brain barrier or an ongoing infectious/inflammatory process. Overall, these findings are suggestive of a pathological condition such as meningitis or another CNS infection requiring further clinical correlation.

MRI brain findings further supported the diagnosis of tuberculous meningitis. Taken together, the combination of abnormal CSF parameters, positive CB-NAAT, and MRI findings established the diagnosis of tuberculous meningitis.

Therapeutic Intervention:

The medications administered to the patients in the ward included injections of C-tri (2 gm), levoflox 500 mg, thiamine 100 mg, dexamethasone 10 mg, tab Pan 40 mg, tab Akt4 3, injections of mannitol, and tabs of lorazepam.

Follow-Up and Outcome:

Patient progress was good despite receiving all the attention. Monitoring of blood pressure in the aftermath. He was instructed to throw away used tissues in a tight bag and to cover his lips and nose when speaking. Sneeze or cough into your elbow or upper sleeve rather than your hands if you don't have a tissue. Hands should be often cleaned for 20 seconds using warm water and soap.

Discussion:

Tuberculosis is an infectious disease that mostly affects the lungs and is spread through the air.

The bacteria that cause tuberculosis is known as mycobacterium tuberculosis. The germs can spread to other organs and tissues through the circulation if the illness is not treated immediately. The virus will occasionally make its way to the meninges. Damage to this membrane, which surrounds the brain and spinal cord, can lead to tubercular meningitis, a very dangerous and occasionally deadly condition. According to World Health Organization (WHO) estimates, out of 10.4 million new cases of tuberculosis (TB) infections yearly, of which one million are in children, at least 100,000 persons may develop tuberculous meningitis annually. An estimated 1.5 deaths per 100,000 people in India are attributed to tuberculous meningitis each year. Tuberculous meningitis is the most serious Mycobacterium TB symptom. In order to evaluate treatment results for patients with TB meningitis, Ming-Gui Wang conducted relevant literature searches in the Ovid MEDLINE and EMBASE Web of Science databases. She found that tuberculous meningitis had very bad prognoses, even with antituberculosis therapy. For those with stage III HIV co-infection, the mortality rate increased significantly after treatment.

One of the most challenging causes of meningitis to diagnose is tuberculosis (TB), as it may not always be easy to identify MTB in CSF samples. TBM should be carefully addressed when a patient presents with meningitis symptoms and signs in a region where tuberculosis is very prevalent, or in a location where tuberculosis is less frequent but still a public health risk. Clinical, microbiologic, and radiologic evidence must be integrated in order to validate a TBM diagnosis. Empirical treatment with anti-TB drugs is advised when CSF exhibits negative ZN staining for acid-fast bacilli. Using the Xpert MTB/RIF test, MTB infection may be rapidly identified.

Strength:

The 42-year-old male patient was admitted to the hospital with symptoms of altered sensorium, left-side weakness of the body, fever, and headache. He was discharged after undergoing therapy for a month. Since then, the patient has recovered and taken all of the recommended medications.

Conclusion:

Tuberculous meningitis is a very dangerous and disabling form of tuberculosis. It is associated with several challenges for both researchers and doctors. The anti-TB treatment shows that death rates are still rather high. The length of time that therapy is postponed is the predictive factor that influences survival and disability. At the time of admission, the severity is assessed based on the existence of concomitant HIV infection, multidrug resistance, stroke, involvement of the cranial nerve, and seizures. One important component of the therapy for tuberculous meningitis is a pulmonary regimen.

Informed Consent: Written informed consent was obtained from the patient family for the publication of this case report.

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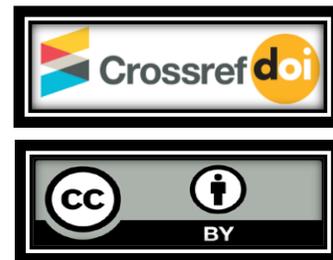
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