

## CASE REPORT

# Tuberculous Meningitis With Right Pontine Infarction: A Case Report

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## ABSTRACT

**Introduction:** Tuberculous meningitis has very high rate of morbidity and mortality and is the most common form of central nervous system tuberculosis. Tuberculous meningitis, also called as TB meningitis or tubercular meningitis. It is Mycobacterium tuberculosis infection of the meninges. Meninges are the the system of membranes which envelop the central nervous system.

**Case report:** We describe a case of 28 year female having fever low grade off and on with repeated vomiting for 2 weeks, headache and neck stiffness 1 week, with diplopia for 2 days. She had taken treatment for the same for 10 days but had no improvement and hence she was admitted at KIIMS Hospital for further management .During her stay she developed weakness in her left half of her body, plantar extensor (left), unable to walk properly on 4th day of admission. Her investigation showed all within normal limits including CT Brain, except ESR145 mm1st hr ,ADA (TB PCR+) and MRI showing Right Pontine Infarction. She was diagnosed as a case of Tuberculous Meningitis with Right Pontine Infarction (tubercular arteritis) and improved with antitubercular Treatment.

**Conclusion:** The treatment of TB meningitis is isoniazid, rifampicin, pyrazinamide and ethambutol for two months, followed by isoniazid and rifampicin alone for a further ten months. Treatment adjuncted with corticosteroids has been studied to decrease mortality with tuberculous meningitis.

**Keywords:** Diplopia, Teberculous Meningitis, Antitubercular Treatment.

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## INTRODUCTION

Mycobacterium Tuberculosis is the causative agent for pulmonary tuberculosis and also the causative agent for Tuberculous Meningitis.<sup>1,2</sup> Tuberculous infection of the central nervous system is a serious type of extra pulmonary proliferation of this disease and is a most devastating form of the disease often complicated by arteritis resulting in brain infarction .In developing countries it predominantly affect young children.

Central nervous system (CNS) disease caused by Mycobacterium tuberculosis is an uncommon yet highly devastating manifestation of tuberculosis, which was universally fatal in the era before antituberculosis therapy. CNS tuberculosis accounts for approximately 1% of all cases of tuberculosis, carries a high mortality and a distressing level of neurological morbidity, and disproportionately afflicts children and human immunodeficiency virus (HIV)-infected individuals. Due to its relative rarity and the protean nature of the symptoms, tuberculosis of the CNS remains a formidable diagnostic challenge. Because the burden of CNS tuberculosis lies largely in resource-starved regions of the world, additional challenges in implementing practical and usable methods to diagnose and treat this disease remain largely unmet.<sup>3,4</sup>

The pathological process with its clinical manifestation occur most commonly as tuberculous meningitis, followed by tuberculoma, tuberculous abscess, cerebral milliary tubercul-

osis tuberculous encephalopathy, tuberculous encephalitis and tuberculous arteritis.<sup>3,4</sup>

While other clinical manifestations of tuberculosis have received considerable research attention, fundamental questions regarding the pathogenesis, diagnosis, treatment, and management of CNS tuberculosis remain unanswered. What is the best way to diagnose CNS tuberculosis? What is the optimal treatment for this disease? How can we mitigate the significant neurological morbidity among survivors? How can we more rapidly diagnose CNS tuberculosis? These questions remain open. Tuberculous arteritis leading to strokes usually affect the tubercular zone of brain comprising caudate, anterior thalamus, anterior limb and genu of internal capsule. Rapid diagnosis and early specific therapeutic intervention is key to the successful management of this life threatening processes.<sup>6-8</sup>

### Case Report

A 28 year old female presented to us with history of low grade fever with repeated vomiting for 2 weeks, diplopia for 2 days with no marked improvement, was admitted to KIIMS Hospital. On examination she was found to have average body built, pulse 88/bpm, BP -110/70, Respiratory rate 18/minute, Temperature 100 degree Fahrenheit. There was no pallor, no cyanosis, no clubbing, no icterous, no lymphadenopathy, no koilonychias, with marked neck stiffness.

On examination, nervous system found to have, Power grade 4 fair B/L, superficial and deep tendon reflexes normal, coordination normal with no associated involuntary movement in the form of tremor, clonus & chorea. Coordination was normal. Sensory System –All primary modalities of sensation and posterior column sensation were intact. Cranial nerve examination revealed 3<sup>rd</sup> and 6<sup>th</sup> CN on Right side deficit all other Cranial Nerves were intact. There was no cerebellar deficit. In the due course of treatment patient developed left plantar extension and left hemiparesis (after 4 days of treatment). Examination of other systems revealed no abnormalities.

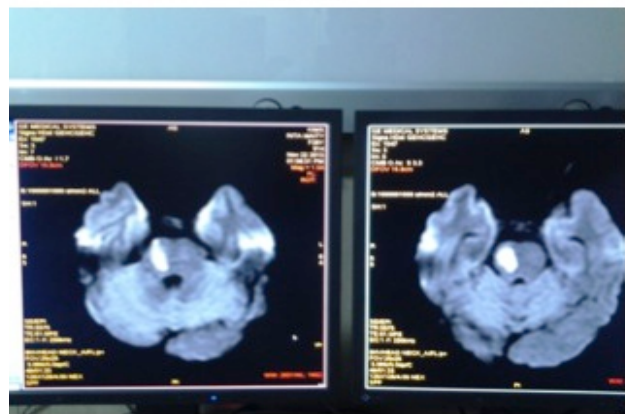
### Investigations

To reach the proper diagnosis and for applying

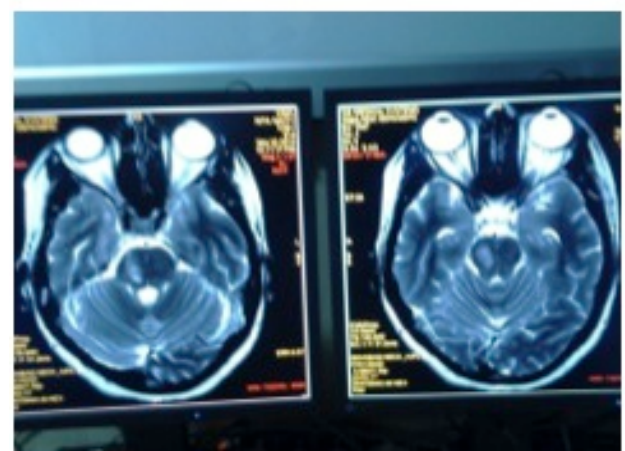
proper treatment various tests were undertaken. The results of these tests are as follows:

Haemoglobin -12 gm %, Erythrocyte Sedimentation Rate-145, Differential Count:- Neutrophil-54%, Lymphocyte-42%, Erythrocyte-3%, Monocyte-0%, Mantoux. test – Negative, Xray Chest – No Abnormality Detected, Fasting Blood Sugar -104%, Post Prandial Blood Sugar -138%, Blood Urea - 27, Creatinine - 0.42, Urine –Normal, Cerebro Spinal Fluid - Clear Lymphocyte-75% Neutrophil-25% Glucose-40mg%, Protein - 40mg%, Tuberculous Poly Chromatic Chain Reaction + Adenosine Deaminase + Computerised Tomography Scan Brain – Normal, Magnetic Resonance imaging Brain –Right pontine lesion (ischemic) suggestive of minute arteritis (Figure1,2).

### MRI



### MRI



**Figure-1,2:** Magnetic Resonance imaging Brain –Right pontine lesion (ischemic) suggestive of minute arteritis

## DISCUSSION

Patient presented with diplopia, neck stiffness, repeated vomiting and headache initially treated in the line of pyogenic meningitis showed initial improvement with empiric antibiotics, but on 4<sup>th</sup> day of her hospitalization she developed left hemiparesis and though CT Scan Brain didn't revealed any abnormality on further investigation CSF ADA +, TB PCR + and MRI Brain revealed Pontine lesion (right). ATT was started and pt showed marked clinical improvement & was discharged on 12<sup>th</sup> day with an advice to attain for regular follow up. In developing country where incidence of Tuberculosis prevalence is high a rapid diagnosis and treatment is essential for better clinical outcome for this dreaded disease.

### Treatment

Patient was treated with WHO recommended regimen of four drug (Isoniazide, Rifampicin, ethambutol, and Pyrazinamide) in the intensive phase lasting for 2 months, followed by 6 months continuation phase of INH & RCIN, with an advice for regular follow up.

## CONCLUSION

Tuberculous Meningitis is an example of extra pulmonary Tuberculosis. Though Tuberculous Meningitis is the most common form of presentation in central nervous system Tuberculosis, Clinical picture like Hemiparesis or frank stroke can develop in Tuberculosis of central nervous system, due to Tubercular arteritis. MRI Brain is most sensitive in detecting the lesions (DWI weighted in acute lesions). Rapid diagnosis and treatment is essential for better clinical outcome for this dreaded.

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