

## TUBERCULOMA OF THE BRAIN: 3 CASE REPORTS

Kazi Ashrafur Islam<sup>1</sup> Md Mizanur Rahman<sup>2</sup> Shaheen Akhter<sup>3</sup> Syeda Tabassume Alam<sup>4</sup>  
Khondoker Asaduzzaman<sup>5</sup> Md Ridwanul Islam<sup>6</sup>

### Summary

*Tubercular granulomatous lesion in the brain accounts for 34 per cent of all intracranial space occupying lesion<sup>1</sup>. Though incidence of tuberculosis declining in developed world, it is still significant in developing countries like Bangladesh; it is estimated by the World Health Organization that world wide there are eight million new cases of tuberculosis each year, among the tuberculosis cases 0.3% involve central nervous system<sup>2</sup>. Central nervous system tuberculosis occurs as a result of hematogenous spread of primary focus mostly pulmonary tuberculosis<sup>3, 4</sup>. Clinical presentations of tuberculoma are nonspecific like low grade fever, anorexia, weight loss or vomiting. Common neurological features are headache, focal seizure and weakness of one or more limbs, speech or visual problem. When detected earlier intracranial tuberculoma is potentially curable; so we are reporting these cases to familiarize the problem.*

**Key words :** Tuberculoma; children; case report

**Case 1:** A fifteen years old girl was admitted in our hospital with the complaints of high grade and continued fever for 20 days, which was associated with headache but not associated with vomiting, convulsion or unconsciousness. Fever was subsided by antipyretic with profuse sweating. She also complained of loss of vision for last 7 days which was presided by diplopia. For the above complaints initially she was treated with 3<sup>rd</sup> generation cephalosporin but condition was not improved. She had a history of low grade evening rise of temperature for last two years but no history of cough, hemoptysis or weight loss. She was immunized as per EPI schedule and no history of contact with any tubercular patient. On examination she was found toxic, febrile; temperature was recorded 105<sup>0</sup>F, vital signs were stable, there was no lymphadenopathy and a good BCG scar mark was present. Signs of meningeal irritation like neck rigidity and kernig sign were present.

- 1 Consultant of Paediatrics  
Bangabandhu Sheikh Mujib Medical University, Dhaka
- 2 Professor of Paediatrics Neurology  
Bangabandhu Sheikh Mujib Medical University, Dhaka
- 3 Associate Professor of Paediatrics Neurology  
Bangabandhu Sheikh Mujib Medical University, Dhaka
- 4 Assistant Professor of Paediatrics  
Bangabandhu Sheikh Mujib Medical University, Dhaka
- 5 Registrar of Cardiology  
Sir Salimullah Medical College & Mitford Hospital, Dhaka
- 6 Medical Officer of Paediatrics  
Bangabandhu Sheikh Mujib Medical University, Dhaka

**Correspondence:** Dr Kazi Ashrafur Islam  
e-mail: ashrafurmc@gmail.com

Ophthalmological examination was revealed left sided 6<sup>th</sup> cranial nerve palsy, retrobulbar neuritis of right eye and papillitis in the left eye. Important laboratory investigations revealed ESR 30 mm in 1<sup>st</sup> hour, normal CSF study and findings of MRI of brain was consistent with tuberculoma, causing compression in the optic chiasma and optic tract. After getting those supportive investigations report, anti-tubercular chemotherapy was started with streptomycin, isoniazide, rifampicin and pyrazinamide along with steroid for initial 2 months and isoniazide and rifampicin for another 10 months. Response of treatment was found after two weeks of treatment, and all her features were improved except vision.

**Case 2:** A 6 years old boy attended in our out patient department with history of occasional headache associated with vomiting for one year. The headache was dull in nature. He also developed convulsion several times within last two weeks which was focal in nature associated with unconsciousness on two occasions lasting for few seconds on each occasion. He had no history of fever, cough, weight loss or visual problem and he had no history of contact with any tubercular patient. There was no history of gait disturbances. His perinatal period was uneventful and his development was age appropriate. The child was immunized as per EPI schedule. On examination he was conscious, oriented and afebrile, BCG mark was present and there was no lymphadenopathy. Examination of all systems revealed normal findings. His investigations reports were ESR 40, tuberculin test 19 mm, EEG feature consistent with localized seizure, MRI showed multiple tuberculoma of varying size involving both hemispheres. His treatment started with isoniazid, rifampicin, pyrazinamide and ethambutal & prednisolone for two months then isoniazid and rifampicin for 10 months. After starting treatment his condition gradually improved without any residual impairment. He also received carbamazepine for seizure.

**Case 3:** A 10 years old girl attended paediatric neurology out patient department with the complaints of fever for one and half months, fever was high grade with evening rise of temperature, subsided by antipyretic with profuse sweating, for this complaint she was treated with parenteral antibiotic but there was no improvement. She developed weakness of left lower limb and difficulty in walking for last 10 days. On systemic enquiry she had occasional headache for last 5 months but no

history of vomiting, convulsion, unconsciousness or visual problem. She had no history of contact with any tubercular patient and she was vaccinated against tuberculosis. On examination she was anxious, febrile, there was no lymphadenopathy and BCG mark was present. Examination of nervous system revealed deep tendon reflexes (DTRs) were exaggerated in left lower limb with extensor planter reflex. And gait was limping. Other examination findings were normal. Her investigations report showed ESR 85 mm, MT 10 mm and MRI of brain showed multiple tuberculoma. And she was treated with anti-tubercular chemotherapy with four drugs along with prednisolone. After starting anti-tubercular therapy her paresis improved within week and fever subsided within three weeks.

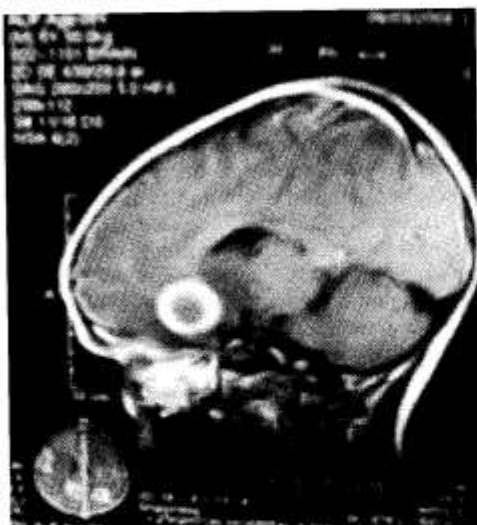


Fig 1 : Contrast MRI showing ring enhancement lesion

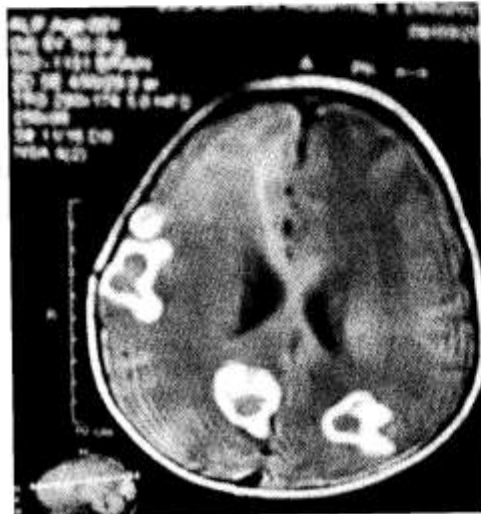


Fig 2 : Multiple tuberculoma involves both hemisphere

### Discussion

In developing countries, CNS tuberculosis is the most lethal complication of tuberculosis. Younger children are at more risk of developing CNS tuberculosis; in a study of 214 central nervous system tuberculosis mean age at presentation was 4.1 years and tuberculoma was 2% of cases<sup>5</sup>. Definitive diagnosis of tuberculosis in children is difficult<sup>6</sup>. All our patients were immunized against tuberculosis with good scar mark and any of our patients had no definite contact history with tubercular patient. The cerebral tuberculomas clinically present with rapid onset of headache, sometimes followed by dizziness, seizures, impairment of consciousness and signs of focal neurological involvement<sup>7</sup>. Headache was found in all three of our cases and seizure was present only in case 2 and the 1st case presented with blindness, 3<sup>rd</sup> case presented with hemiparesis. In case - 1 there was retrobulbar neuritis in one eye, this feature was regarded as patient could not see and ophthalmologist also found normal on examination. Clinical suspicion still very important in the management of tuberculosis. Neuroimaging along with contrast should be performed as a part of initial evaluation of any patient suspected of having CNS tuberculosis<sup>7</sup>. Tuberculomas appear on brain CT scan as iso, hypo or hyper dense lesions with a peripheral enhancement after injection of contrast medium and peripheral edema. Ranjan et al (2003) have reported the frequency of tuberculoma on admission as 41.9% and paradoxical development of tuberculomas as 6.4%. This paradoxical development indicate that the organism persist in a granulomatous lesion for many years<sup>8</sup>. According to the hypothesis proposed by Rich, small tuberculous lesion may develop in central nervous system during the phase of hematogenous dissemination. After years of quiescence, the bacilli contained in this lesion may multiply and invade the cerebrospinal fluid. And the cerebral involvement results from the rupture of subependymal tuberculous foci into the subarachnoid space<sup>9</sup>. In developing countries intracranial tuberculomas are observed in 10-20% of TBM cases, and it has been reported that only 10% of patient with tuberculoma have TBM<sup>10</sup>. Anti-tubercular drugs having bactericidal property and can easily cross blood brain barrier should be selected for treating tuberculoma along with steroid and treatment should be continued for 12 to 18 months<sup>5, 11</sup>. In case - 1 initially methylprednisolone was given for five days as there was associated neuritis then oral prednisolone for two months. All three patients were followed up upto completion of anti-tubercular therapy and the case 2 was followed up upto two seizure free years.

### Conclusion

Cerebral tuberculosis (tuberculoma) may have various presentations; any child with recent onset CNS symptoms like headache, convulsion, and visual problem with focal neurological sign should be suspected and investigated for tuberculosis.

### Disclosure

All the authors declared no competing interests.

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