

# A 2 ½ YEARS OLD BOY WITH SQUINT AND SPEECH LOSS

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## ABSTRACT

Tuberculosis of central nervous system is not uncommon in children of developing countries. Tuberculomas were initially misdiagnosed due to lack of radiological expertise, unavailability of CT scans and MRI. For early diagnosis and treatment, they should be kept in differential of space occupying lesions. We had a 2 ½ years old patient had fever, squint, aphasia and loss of motor milestones. On examination he was a malnourished child with right sided hypertonia and involvement of 9th and 10th cranial nerves with hepatosplenomegaly. His CRP was raised and CXR showed B/L millitary shadowing which helped us to find out the primary focus leading to tuberculoma. His PCR test of blood was positive for Mycobacterium tuberculosis while CSF examination was normal. His work up led us to the diagnosis of a space occupying lesion i.e. tuberculoma, fungal infection of brain or metastasis. He was managed conservatively as he responded well to antituberculous therapy along with steroids. This concludes that early and prompt treatment of this deadliest disease is the key for favorable outcome.

**Key Words:** Tuberculomas, space occupying lesion, primary Focus, Antituberculomastherapy.

## INTRODUCTION

Tuberculosis is one of the world's deadliest diseases. It affects 1/3rd of world's population. The world health organization estimates that every year; childhood TB accounts for 6% to 10% of the TB cases worldwide<sup>(1)</sup>. Pakistan stands fifteen among countries with highest prevalence rate of TB. CNS tuberculosis accounts for only 10% of all cases of TB. Children younger than 4 years of age are prone to most severe form of TB including extrapulmonary TB e.g. CNS Tuberculomas<sup>(2)</sup>. It develops either due to hematogenous dissemination from a primary foci or spinal infection. Tuberculomas are firm, vascular, spherical masses, with size varying from 2cm to 10 cm. They have tubercle bacilli in them. They may be unilateral or multiple.

### On CT Scan brain:

Typical imaging findings of tuberculomas include solitary or multiple, round "nodules" showing ring enhancement after contrast. It has a target sign with ring enhancing lesion having an additional central area of enhancement as calcification<sup>(3)</sup>

### On MRI

The initial tuberculomas consisting of non-caseating

granulomas are usually hypo-intense on T1 W1, hyper-intense on T2 W1 and appear nodular or ring enhancement on post-contrast studies. These findings are non-specific and they have to be differentiated from other cases of space-occupying lesions such as high grade gliomas, pyogenic abscess, metastases, toxoplasmosis, cysticercosis and lymphoma<sup>(4)</sup>.

## CASE REPORT

A 2 ½ years old boy presented with history of recurrent fever, squint of right eye and speech loss for last 2 months. His fever was high grade, intermittent associated with rigors, chills and vomiting. Vomiting was non-bilious, non-projectile, containing food particles. It was associated with squint of right eye and slurring of speech. There was also history of difficulty in walking, which increased with time and within 2 months period and on presentation he was unable to walk, stand and sit. He could only hold his neck partially. There was no history of fits, altered state of consciousness, nasal regurgitations, cough, respiratory distress, urinary or bowel complaints. He was diagnosed to have megaloblastic anemia 4 months back and was discharged on injectable Vit B12 + Folic acid therapy. His birth history was uneventful. He was vaccinated according to EPI schedule. He achieved all developmental milestones at appropriate age. He belonged to a low socioeconomic status. His

general physical examination showed that he had stable vital signs with pallor. BCG scar was present on his right upper arm. His anthropometric measures were low for his age and sex. His weight was 10 kg (5th centile) and height was 90 cm (50th centile) and OFC : 48.5 cm (50th centile) His neurological examination revealed Glasgow coma scale of 12/15, normal fundus examination and a right sided 6th cranial nerve palsy, signs of meningeal irritation were also +ve, while sensory and cerebellar systems were intact. He was unable to walk and stand but could sit with support and holds neck partially for short time.

**On motor examination**

He had generalized reduced muscle bulk with right sided hypertonia, power of 3/5 and hyper-reflexia in all limbs and right sided upgoing planters. There was involvement 9th & 10th cranial nerve in the form of drooling of saliva and weak gag reflex

**On Systemic examination:**

There was hepatosplenomegaly with liver of 6cm palpable below right costal margin having total span of 10cm, firm in consistency, regular margins and non-tender, spleen was 4 cm palpable below left costal margin. For publication of pictures consent was taken from the parents.



Picture 1: child with weak gag reflex and nasogastric tube in place

Investigation	Results
<b>CBC</b>	
Hb	10 mg/dl
MCV	65
WBC	2.9
ESR	05
CRP	12
<b>Immunoglobulin</b>	
IgA Antibodies	Normal
IgM Antibodies	
IgG Antibodies	
<b>Torch</b>	
Profile	Normal
Blood C/S	Negative
<b>CSF</b>	
WBC	10
Sugar	60
Protein	40
C/S	Negative
S/Ceruloplasma	Normal
Abd. USG	Hepatosplenomegaly
Echo Cardiography	Normal
Bone Marrow	Myeloid hyperplasia, Megaloblastic Anemia
PCR of Blood for mycobacterium TB	Positive

**Picture # 2**

**Patients chest X-ray:**

Showed B/L milliary

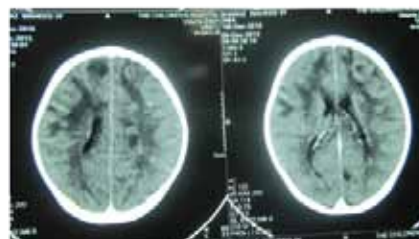
Patients CT scan brain reveals:

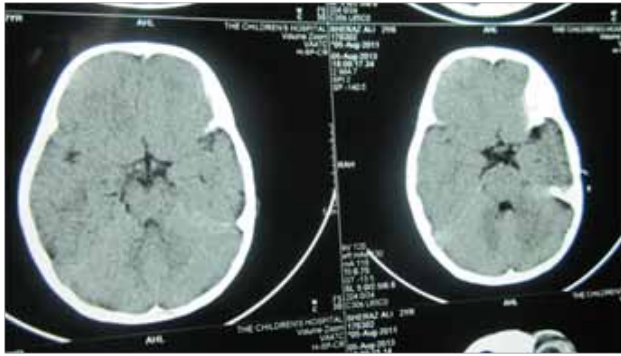
Picture 3 A:



Picture 3 A: CT scan done on 09-12-2013 showing cerebral hypodensities

**Picture 3 B:**





Picture 3 B: CT scan done on 09-12-2013 showing cerebellar hypodensities

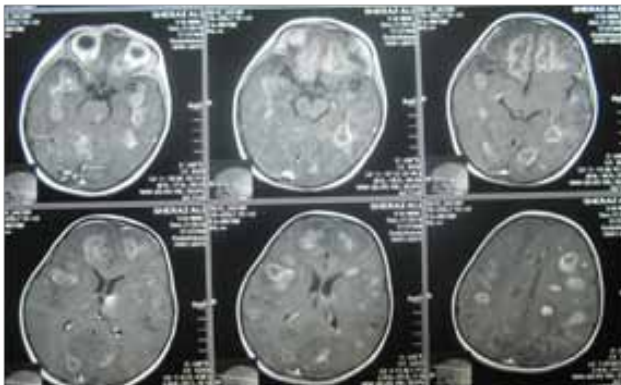
**CT brain with contrast**

Non-enhancing patchy hypodensities in both cerebral and cerebellar hemispheres  
Suggestive of encephalitis

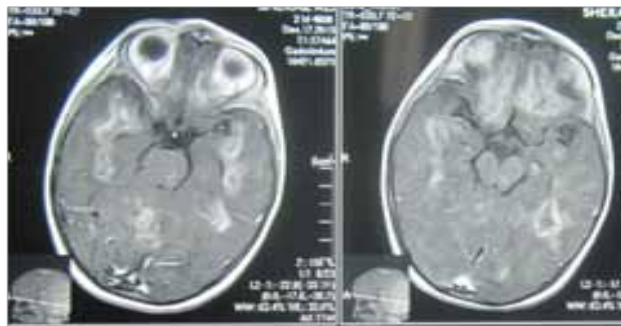
**Patients MRI Brain Reveals:**

Picture 4: (17-12-2013)

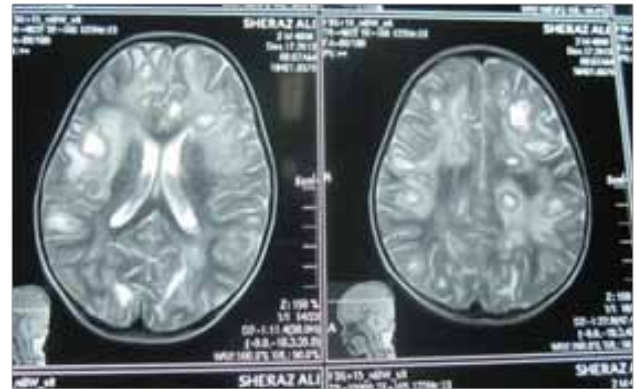
MRI brain with contrast:



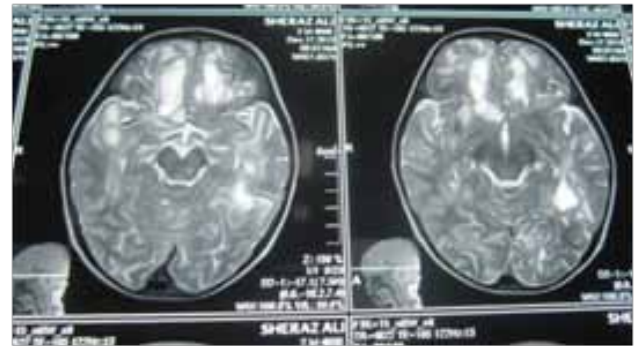
Picture # 5



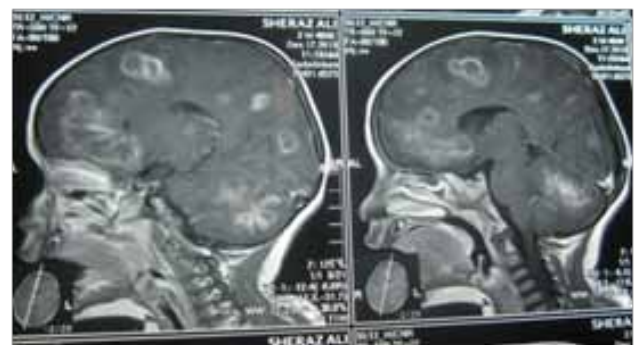
Picture # 6



Picture # 7



Picture # 8



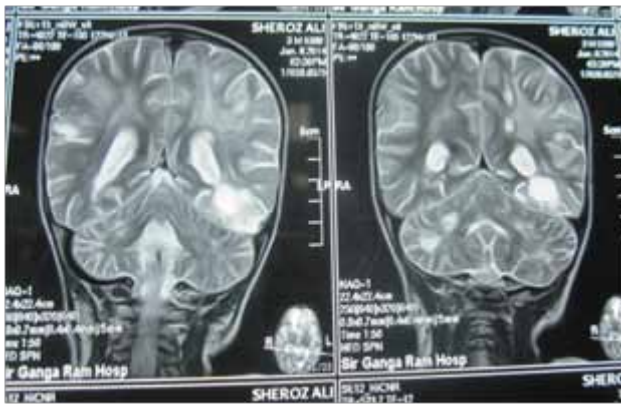
**Picture 4, 5 & 8 shows:**

Innumerable ,marginally enhancing round to oval lesions involving cerebral and cerebellar hemispheres

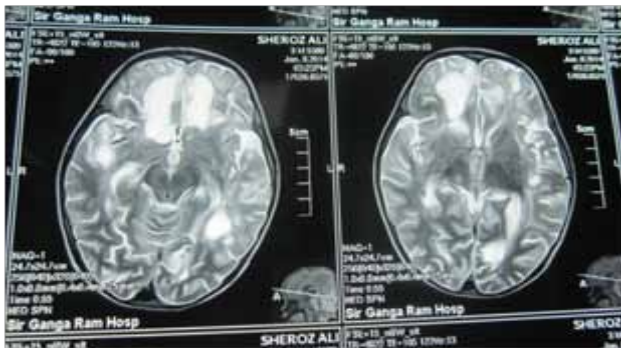
**Picture 6 & 7 shows:** Predominant involvement of deep and juxtacortical white matter

**Impression:** acute disseminated encephalomyelitis or infective process

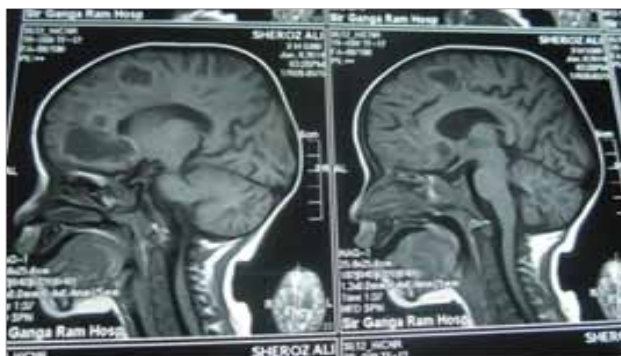
**Picture: 9** (08-01-2014)



**Picture # 10**



**Picture # 11**



**Picture 9 & 10 shows:**

MR features of multiple variable nodular and ring enhancing lesions along both cerebral and cerebellar hemispheres with involvement of brainstem and thalamus suggest Tuberculomas.

**Picture 11 shows:**

MR features of multiple variable nodular and ring

enhancing lesions along cerebral hemispheres. In our index case the differential diagnosis includes ---- disseminated tuberculosis, Tuberculoma, Fungal infections of brain and metastasis. Our patient remained sick initially for 3-4 weeks and was kept in neurocritical care in high dependency unit. He was treated with antipyretics, antibiotics, antifungal therapy (initially for 3 days). He was also given treatment of raised intracranial pressure. In between when he deteriorated, during his stay he developed fits which were controlled by anticonvulsants. He was given four drugs ATT along with steroids i.e. isoniazid, Rifampicin, Pyrazinamide, streptomycin and vit B6.

## DISCUSSION

Intracranial tuberculomas are least common type of CNS TB. Due to its rarity and varied radiological findings they remain a clinical challenge. However, they must always be included in differential diagnosis of space occupying lesions. Our patient was difficult to diagnose as he had history of CNS symptoms, viseromegaly and regression of motor milestones. He was vaccinated against TB (BCG scar was present). He had no contact with any tuberculous patient. His ESR was 5 and Mantoux test was negative, while his CT scan and MRI opened several differential diagnosis among physicians, surgeons and radiologists. Most of them had highest suspicion of fungoma or tuberculoma. His CXR was done showing B/L millitary shadows and his PCR was done which was +ve for mycobacterium, tuberculosis, mean while antifungal treatment was stopped after 3 days and ATT continued after detailed discussion with radiologists and neurosurgeons. In children differential diagnosis of tuberculoma includes neurocysticercosis, brain abscess, fungal infection of brain, Brain tumors and metastasis. In a study in India carried out by Patel NH et al, out of 50 patients of space – occupying lesion in children 13 had tuberculomas<sup>(5)</sup>. Therefore, it is essential to look for primary focus of TB infection whenever you are suspecting tuberculoma, as it is a treatable disease and if early diagnosed, leads to favourable outcome. Studies showed that usually the primary focus lies in lungs<sup>(6)</sup> but sometimes rare organs and locations can also have primary focus. A 10 year old child from Reunion Island had mesenteric adenopathy, only picked up due to thorough and vigilant systemic examination and paying attention to CNS as well as to other presenting complaints<sup>(7)</sup>. Anti-tuberculosis therapy with steroids shows favorable outcome regarding mortality although a distressing level of neurological morbidity is still present<sup>(8)</sup>. On CT scan brain and MRI brain variety of findings can be seen in addition to tuberculomas. These include hydrocephalus, basal

meningeal enhancement <sup>(9)</sup> and multiple ring enhancing lesions <sup>(10)</sup>. Tuberculomas can be present in frontal, parietal, temporal and occipital lobes as well as cerebellum, pituitary areas <sup>(9)</sup>, sellar and suprasellar areas <sup>(11)</sup>. Our patient showed improvement after 3 weeks of antituberculosis therapy along with steroids. His fever subsided; he was off NG feed and started taking orally. His motor milestones improved, he was able to hold neck and started sitting with support. He remained fit free after 2 weeks of ATT treatment.

**Picture # 12**



After 3 months of treatment

**Picture # 13**



After 6 months of treatment

**Picture # 14**



**Picture 12:**

After 3 months of treatment child improved. He was able to hold his neck and he could eat and drink independently.

**Picture 13 & 14:**

After 6 months of treatment child started sitting with support.

## CONCLUSION

Pakistan is a developing country with limited health resources. There is lack of adequate knowledge regarding severity of tuberculosis among general population. According to WHO more than 74,000 people die from TB each year <sup>(1)</sup>. It can only be eliminated by educating our people regarding, nutrition, proper vaccination, early consultation with local general practitioner, diagnosis and proper dosage and duration of treatment. This case shows that tuberculomas are difficult to diagnose but if kept in differential diagnosis of space occupying lesion, then can be early picked up and managed conservatively.

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**Author's Contribution:**

**Dr. Shaila Ali:** Study concept and design, protocol writing, data collection, data analysis, manuscript writing, manuscript review

**Dr. Zia Ur Rehman:** Data collection, data analysis, manuscript writing, manuscript review

**Dr. Tipu Sultan:** Study concept and design, protocol writing, data collection, data analysis, manuscript writing, manuscript review