Concurrent Intramedullary and Intracranial Tuberculomas

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Abstract

Tuberculosis of the central nervous system (CNS) is well known. CNS involvement can occur in the form of tubercular meningitis (TBM), tuberculous vasculitis, tuberculoma and rarely brain abscess. Tubercular granulomas generally solitary and occur in the brain but they may be multiple and involve other areas such as spinal cord, epidural space and subdural space also. Tuberculoma in the spinal cord is rare. Co-occurrence of intracerebral and intramedullary spinal tuberculoma is extremely rare in children with only few cases reported till date. We are reporting one such case in children and review of literature.

Introduction

Tubercular involvement of the central nervous system (CNS) is seen in approximately 0.5-2% of all patients with systemic tuberculosis.[1] The most frequent manifestations of CNS tuberculosis are tuberculous meningitis and intra-cranial tuberculomas. Tuberculomas are tumour like masses resulting from enlargement or coalescence of caseated tubercles. CNS tuberculomas most commonly affect the intracranial compartment; spinal intramedullary tuberculomas (SITs) are very rare and constitute only 0.2 to 5% of all CNS tuberculomas.[2] Co-occurrence of intracerebral and intramedullary tuberculoma is exceedingly rare with only few paediatric case reports.[3-6] We are reporting one such case in children with review of literature.

Case Report

A 14-year-old boy presented with increasing asymmetric spastic quadriparesis for 15 days. He had past history of TBM with obstructive hydrocephalus (Figure 1a) for which right sided ventriculoperitoneal shunting was done 4 months back. He was on Anti Tubercular Therapy (ATT) (isoniazid, rifampicin, pyrazinamide, and ethambutol). On examination, he was conscious and oriented. He had hypertonia involving all the four limbs and deep tendon reflexes were diminished in bilateral upper limbs and exaggerated in both the lower limbs. Muscle strength was 2/5 in right upper and lower limbs while it was 4/5 in left upper and lower limbs. Bilateral Babinski sign was positive and graded sensory loss was present below C6 level. Routine investigations were normal. Contrast enhanced MRI of cervical spine revealed multiple tuberculomas from C3 to D1 vertebral level (Figure 2).Two were intradural extramedullary and one at C5 C6 level was intramedullary in location.Conrast enhanced MRI brain revealed enhancing basal exudates and tuberculoma at left cerebellopontine angle (Figure 1-c,d). Computed tomography(CT) scan of brain revealed normally placed right sided VP shunt with no hydrocephalus (Figure 1b). Steroids were added with ATT and patient was managed conservatively because of multiple cervical leisions.Patient was admitted for two weeks and showed improvement in motor power. He was discharged on ATT and steroids in tapering dose. After completing one year of ATT his power increased to 4/5 in right upper and lower limb and 5/5 in left upper and

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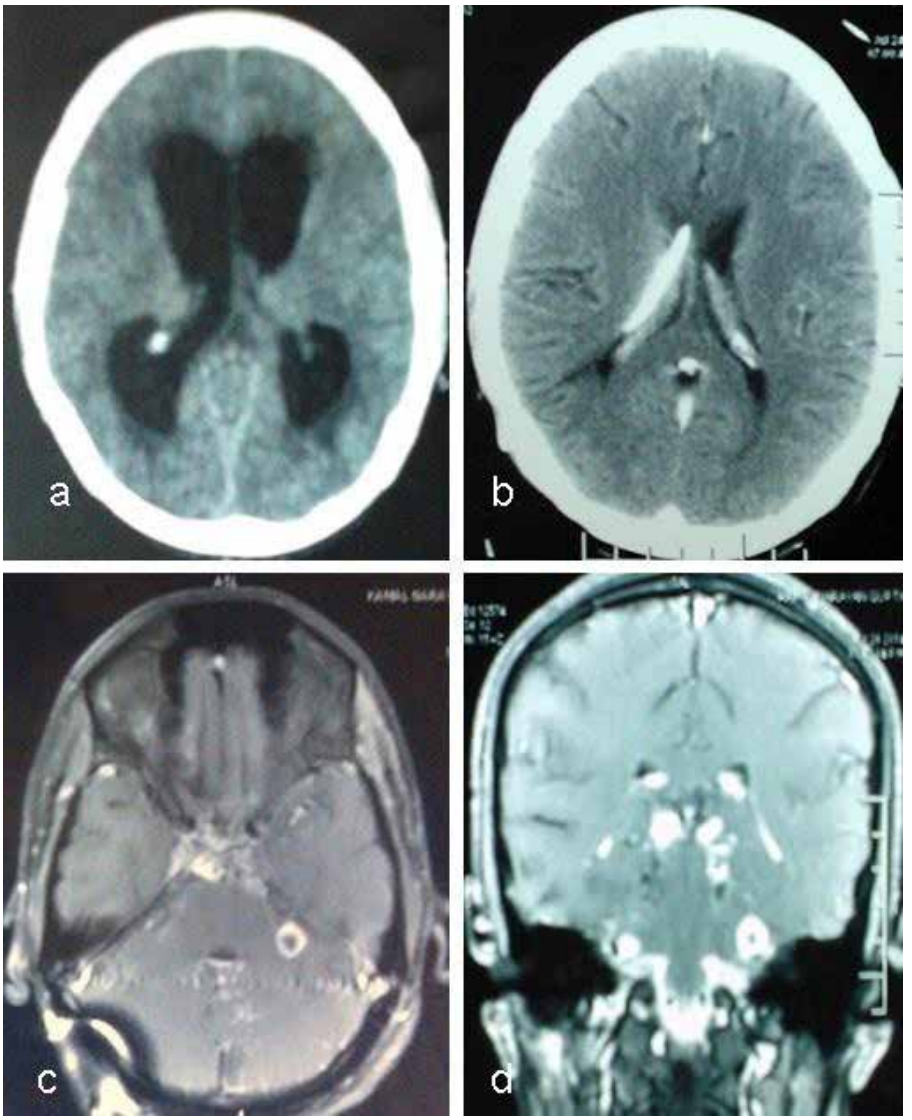

Fig. 1: (a) CT head plain showing obstructive hydrocephalus and brain edema, (b) CT head showing ventricular end of VP shunt in right lateral ventricle with resolution of hydrocephalus and brain edema, (c and d) contrast enhanced MRI brain showing ring enhancing lesion in left cerebellar hemisphere and CP angle.

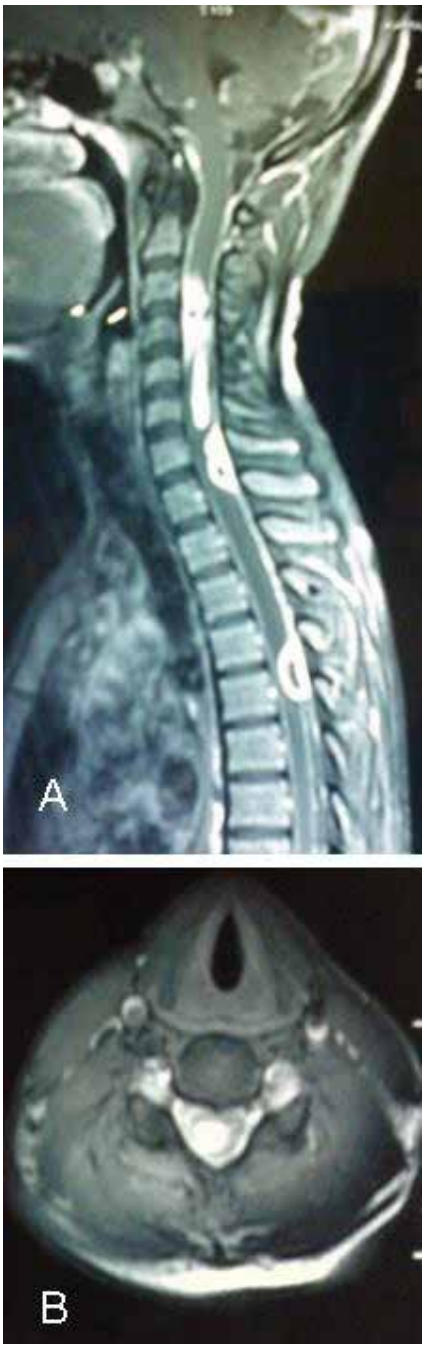

Fig. 2: (a) Contrast enhanced MRI of cervico dorsal spine sagital cut showing multiple ring enhancing intramedullary as well as extra medullary lesions in cervical cord. (b) Same in axial cut

lower limb. Repeat MRI cervical spine and brain revealed resolution of cranial and spinal tuberculoma (Figure 3A, 3B).

Discussion

Tuberculosis can involve almost any organ of the body. CNS tuberculosis is a serious form of extra-pulmonary tuberculosis and is associated with significant mortality and morbidity. TBM is the most frequent form of CNS tuberculosis and constitutes approximately 1% of all forms of tuberculosis.[6] Intracranial tuberculoma can occur at any age.

Spinal intramedullary tuberculomas are rare and constitute only 0.2 to 5% of all CNS tuberculomas.[2] The most common site of IT is the thoracic spinal cord. IT occurs by haematogenous spread from a pulmonary focus, although occasionally an extra pulmonary focus may be found.[7] The clinical symptoms may be variable with subacute spinal cord compression, focal neurological deficits or totally asymptomatic.

Co-occurrence of intracranial and intramedullary spinal tuberculoma is very rare in paediatric population with only four cases reported till date. Thacker and Puri[6] reported a 6-year-old girl who presented with progressive paraparesis in whom imaging revealed intramedullary tuberculoma with incidentally discovered multiple intracranial tuberculoma.Chitre et al[3] reported a case of concurrent intracranial and lumbar intramedullary tuberculomas in a 6-year-old girl who developed the intracranial and intramedullary tuberculomas while on antituberculous therapy for previously diagnosed tuberculous meningitis. Kulkarni et al[5] reported a 4-year-old boy who presented with fever, headache

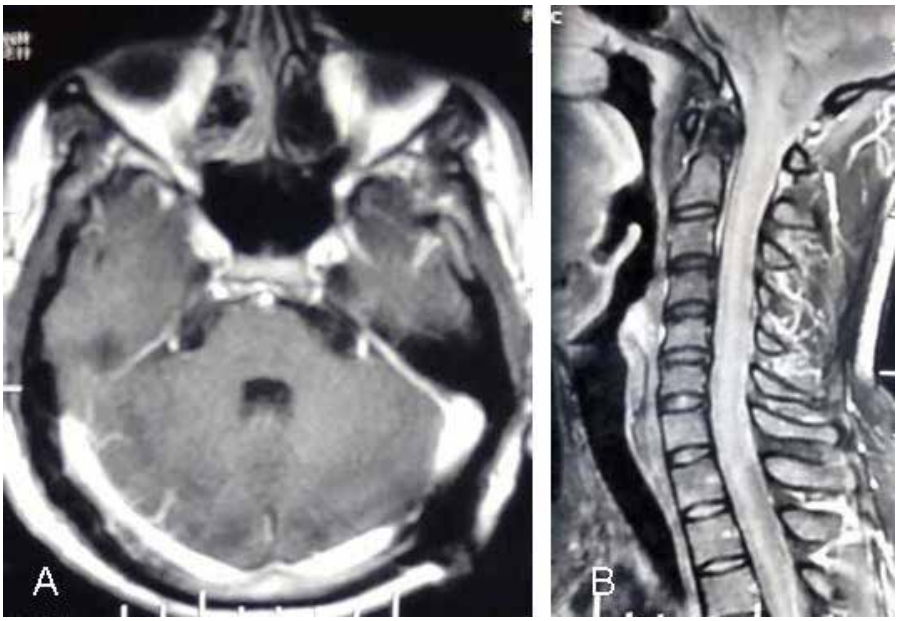

Fig. 3: MRI images showing resolution of cranial (a) and cervical (b) intramedullary tuberculomas after 1 year of chemotherapy

and vomiting in whom imaging revealed multiple intracranial and cervical intramedullary tuberculomas. Recently Goel et al[4] reported concurrent intracranial and conus intramedullary tuberculoma in a 18 months old female child.

The MRI is the diagnostic tool of choice in the evaluation of intramedullary tuberculosis.[2,8] The tuberculous lesion appears isointense on T1-weighted MRI images (T1WI) with slight or no expansion of the cord. On T2-weighted MRI images (T2WI) it appears isointense to hyperintense, sometimes with central high signals.[9] The MRI picture varies with the stage of the tuberculoma formation.[8,9]

The ideal treatment of intramedullary tuberculoma remains controversial.[8,10] Both surgery and chemotherapy had shown good results in different series.[10] Many authors have recommended medical treatment of intramedullary tuberculomas with good results rather than surgical treatment.[7,9] Surgery is generally indicated when a) there is no response to chemotherapy, b) the diagnosis is in doubt, and c) there are large lesions with rapid deterioration in neurological function.[11,12]

Conclusion

Concomitant cranial and spinal intramedullary tuberculoma is a very rare occurrence in children. Clinicians and neurosurgeons should keep index of suspicion while treating cranial or spinal tuberculomas.MRI is the modality of choice in diagnosis as well as in evaluating the response of treatment modality. Medical therapy is primarily used. Early surgery has definite role in patients of intramedullary spinal tuberculomas with profound neurological deficit.

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