Case Report

Aggressive intracerebral tuberculoma in a 1-year-old child: A case report with literature review

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Abstract

The incidence of central nervous system tuberculosis is a rare entity that accounts about 1% of all tuberculosis and remains a major health problem in developing countries. We report a case of 1-year-old baby boy who presented with a three-week history of vomiting, seizure and progressive right-sided weakness. Brain magnetic resonance imaging performed on the admission day revealed a large lesion measuring (4.3’3.5cm) involving the left thalamus with extensive perilesional edema producing enfacement of third ventricle, midline shifting and obstructive hydrocephalus.

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Introduction

The prevalence of Central nervous system tuberculosis is a rare entity that accounts about 1% of all tuberculosis (TB) and remains a serious global public health problem in world especially in the developing countries. It is a severe form of Intracranial granulomatous caused by the hematogenous spread of Mycobacterium tuberculosis infection from the primary site to the brain parenchyma, ventricle, and meninges [1,2], and carries significant mortality and morbidity [3]. Cerebral TB can arise anywhere in the brain, but usually areas with abundant blood supply. In recent years, the incidence rate of intracranial tuberculoma has increased gradually due to the increase of extra-cranial tuberculoma patients. However, due to its atypical clinical manifestations, it is easy to be misdiagnosed before surgery; therefore it has received the attention of neurosurgeons [4]. However early detection of central nervous system tuberculosis is very important which can allow for conservative therapeutic interventions and management strategies.

Case report

A one-year-old baby boy with a three-week history of vomiting, seizure and progressive right-sided weakness was admitted to our hospital, cranial nerves, sensory and motor-systems were normal with no signs of meningeal irritation.

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The child had no previous history or symptoms of lung TB but his father had past history of lung TB. On the admission day the child’s parents presented a recent normal chest x-ray film done by another local hospital, so we performed magnetic resonance imaging (MRI) of brain which showed a space occupying lesion measuring 4.3×3.5cm and involving the left thalamus, the mass presented iso signal on T1WI, hypointense signal on T2WI/FLAIR with smooth peripheral enhancing wall surrounded by vasogenic edema producing enfacement of third ventricle, midline shifting and obstructive hydrocephalus (Figs. 1A and D). The imaging study also revealed smaller similar ring-enhancing lesion in the right parietal and right cerebellar hemisphere with perilesional edema (Figs. 2A and B). A histopathological examination confirmed the diagnosis mature type of cerebral tuberculoma and hence the patient’s condition gradually improved after anti-tuberculous treatment and we used Isoniazid + rifampicin tablets 75 mg + 150 mg for the first treatment plan.

**Discussion**

Central nervous system TB remains a public health problem and one of the leading causes of death among the infectious diseases. About 130,000 people die of TB every year, with the increase of TB incidence, the formation rate of intracranial tuberculoma has an obvious trend of escalation. Most of cerebral tuberculomas are secondary to haematogenous transformation from distant primary infection, especially in pulmonary TB and often has a serious complications and high mortality. Intracranial tuberculoma is composed of many tuberculous nodules with a diameter of several millimeters to 3-4 cm, single or multiple lesions, mainly in the cerebral hemisphere and cerebellum sub-cortical, it can also be seen in the epidural, subdural and anywhere in sub-arachnoid space. In China, intracranial tuberculomas account about 0.65%-14.0% of intracranial space occupying lesions. Although intracranial tuberculoma (IC-TB) can develop at any age, but it has been reported that it is mainly seen in children and adolescents in China. The clinical manifestations of intracranial tuberculoma are complex and diverse, with headache, vomiting and high intracranial pressure.

MRI plays very important role for characterization of cerebral tuberculomas, which can provide to reach an early diagnosis and treatment. According to the course of the disease, intracranial tuberculomas are divided into immature type and mature type: (1) immature type, mainly granulomatous stage, on MRI scan shows isointense or slightly low signal on pre-contrast T1WI and iso intense or slightly high signal on T2WI, most lesions show homogeneous nodular enhancement, obvious perilesional edema and space occu-
Fig. 2 – A Sagittal T1-weighted image (A) demonstrating a ring-enhancing lesion in the right cerebeller hemisphere and the right parietal lobe (B) with moderate perilesional edema.

pying effect on post-contrast MRI scan. (2) Mature type, mainly caseous degeneration stage, the lesion appears low, iso or mixed signal on pre-contrast T1WI and high signal on T2WI and ring like enhancement on post-contrast images. The clinical manifestation of intracranial tuberculomas are often lack of characteristics and are easy to be missed diagnosis or misdiagnosed as other intracranial space occupying lesions such as gliomas, brain abscess, metastasis, and brain parasitic diseases due to their similar radiographic features. However MRI sequences are extremely helpful for the detection and differentiation of intracranial space occupying lesions.

Conclusion

Central nervous system tuberculoma remain a clinical challenge due to its rarity, nonspecific symptoms and radiological findings, and often has a serious complications and high mortality. MRI is essential tool for patients with suspected cerebral tuberculomas in order to avoid a misdiagnosis and delayed treatment which can result in significant mortality and morbidity. However, early detection and anti-TB treatment is very important for the prognosis of patients with cerebral tuberculoma.

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