Case Report

Negative indirect hemagglutination (IHA) test neurocysticercosis in a buddhist's cerebellar hemisphere

Li-Bo Sun[1], Nai-Jie Liu[2], Xiao-Xuan Fang[3], Cong-Hai Zhao[4]

ABSTRACT

Neurocysticercosis (NCC) is expected to be the most common parasitic disease of humans' central nervous system, immunological tests and epidermiological data as well as clinical manifestations and neuroimagings are helpful to make the diagnosis. We report a case of NCC in a buddust's cerebellar hemisphere, the indirect hemagglutination tests were negative, craniotomy was done and two transparent cysts with scolexes were removed, the patient was discharged with good outcome. Histological findings confirmed the diagnosis of NCC. NCC in cerebellar hemisphere is rare, it is more difficult to diagnose when immunological tests are negative, therefore, multiple tools are expected to develop diagnosis and evaluate the efficacy of treatment.

KEY WORDS: Neurocysticercosis, Indirect hemagglutination test, Cerebellum, Diagnosis.

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INTRODUCTION

Neurocysticercosis (NCC) is a parasitic infection of the central nervous system caused by the larval stage of the tapeworm *Taenia solium*, it is the most common parasitic disease worldwide especially in developing countries.[1]

The manifestations of NCC are due to mass effect, inflammatory response, or obstruction of brain foramina and ventricular system. Seizures and headaches are the most common presenting features of parenchymal cysts.[2] The diagnosis is sometimes difficult although multiple tools as immunological tests and epidemiological data as well as clinical manifestations and neuroimagings are helpful to make the diagnosis. We present a case of NCC in a buddust's cerebellar hemisphere, who underwent a craniectomy treatment under the suspected diagnosis with negative indirect hemagglutination test.

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CASE REPORT

A 41 years old buddhist presented with vertigo and imbalance for two months, on neurological examination, he showed ataxic gaint. He had undergone ventriculoperitoneal shunt for hydrocephalus 8 years ago. The CT scan showed two cysts mass in the left cerebellar hemisphere (Fig.1.A), magnetic resonance imaging (MRI) showed two hypodensity cysts mass on T1-Flair images (Fig.1.B), hyperdense on T2-weighted images (Fig.1.C), and without enhancement after gadolinium injection (Fig.1.D). The indirect hemagglutination tests was negative, he underwent surgical resection through Suboccipital-retrosigmoid approach, intraoperative views showing two cystic masses with white cystic content, the cysts' broken and the cysts'

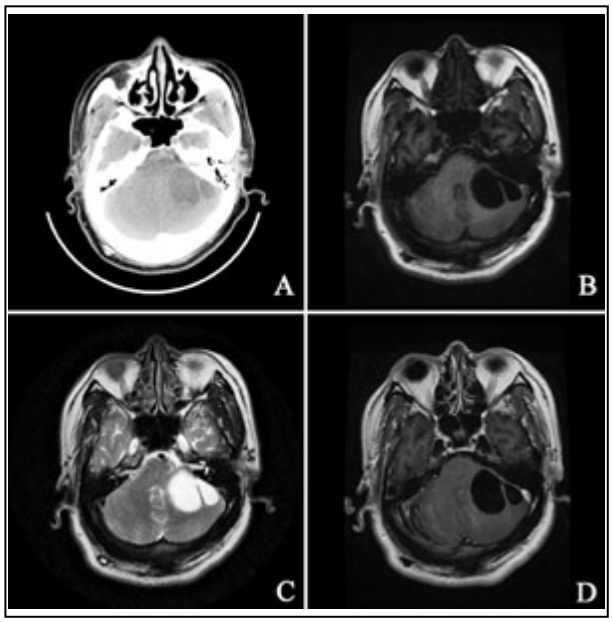

Fig.1: CT scan showing two hypodensity cysts mass with a small, hyperdense, eccentric mural nodule in the left cerebellar hemisphere (A). MRI showing two hypodensity cysts mass on T1-Flair images (B), hyperdense on T2-weighted images (C), and without enhancement after gadolinium injection (D).

membrane with scolex were removed smoothly which were not adherent to cerebellar parenchyma very much. Histological findings confirmed the diagnosis of NCC. The patient was treated with mannitol and corticosteroids in an attempt to control the inflammation and intracranial hypertension, and he was discharged in an excellent condition without any neurologic deficit after three weeks of hospital stay.

DISCUSSION

NCC is a neurologic infection caused by the larval stage of the tapeworm Taenia solium. The adult tapeworm develops in human hosts after they ingest live cysticercus in undercook pork. The oncospheres hatch in the intestine, penetrate the intestinal wall and disseminate to almost anywhere in the body. In CNS, it frequently involves the cerebral hemispheres, ventricles and basal cisterns, subarachnoid space and spine, whereas the most frequent location is in the cerebral hemispheres, areas with a rich blood supply.[3,4]

However, cysticercosis in cerebellar hemisphere has been rarely reported.[5,6] Diagnosis of NCC is often based on the clinical presentation, neuroimaging abnormalities and serology.[7] The manifestations of NCC are nonspecific and varied.

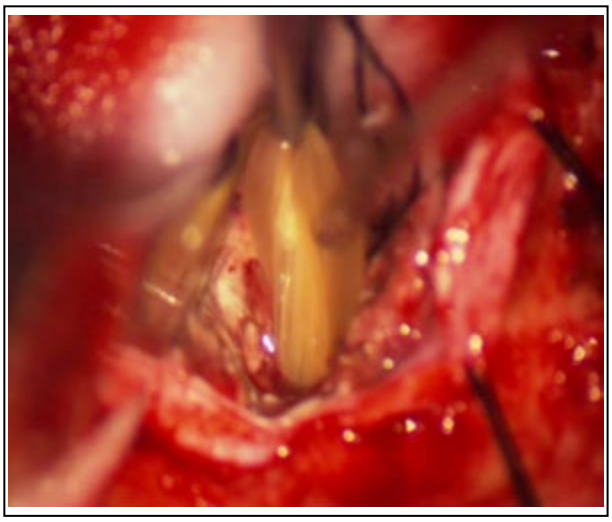

Fig.2: Intraoperative views showing cystic membrane with scolex, grasped with forceps.

Neuroimaging of parenchymal NCC depends on the stage of the development of the parasites. Serodiagnosis is another available tool for detection of cysticercal antibodies, indirect hemagglutination (IHA) test is regularly done in China as it has advantage of relatively quicker, easier and economical availability. It is positive in 60% to 80% of all patients, with fewer false-negatives in the meningitic or acute parenchymal forms and almost no false-positives except in other parasitic infections.[8,9]

The case we report is a vegetarian who do not eat pork, the clinical manifestations were not specific though he had undergone ventriculoperitoneal shunt for hydrocephalus 8 years ago and neuro

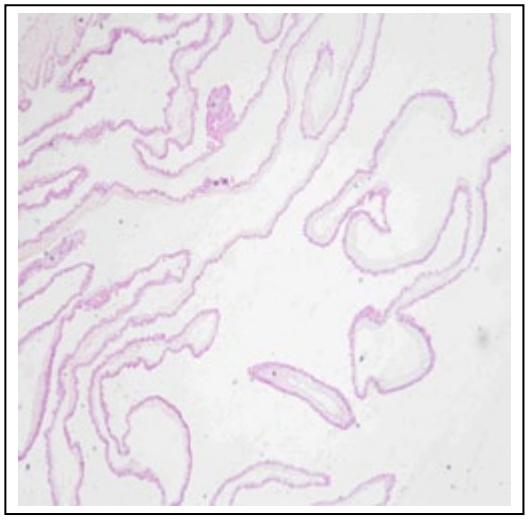

Fig.3: Biopsy detection showed typical eosinophilic lamina cyst wall of cysticercus cellusosae (HE,×40).

imaging findings were not pathognomic. The indirect hemagglutination tests was negative, and it's more difficult to distinguish between cysticercosis and other diseases including metastasis, glioma, abscess and tuberculosis, therefore, multiple tools including highly specific and reliable antigens are expected to develop diagnosis when it's difficult to differentiate between NCC and suspected malignant tumors, and improve the efficacy of treatment.

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Authors Contribution:

Li-Bo Sun and ***Nai-Jie Liu*** made their contribution to the conception and analysis of the case. ***Li-Bo Sun, Xiao-Xuan Fang*** and ***Cong-Hai Zhao*** made their contribution to the acquisition, analysis and drafting.