Clinics in Surgery

Clinical Image
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Pediatric Epilepsy Induced by a Living Parasite Etiologically Diagnosed as Cerebral Sparganosis

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Abstract

We investigated an easy-to-be-confused cerebral lesion finally diagnosed as sparganosis. A 14 year-old-girl was described, who presented repeated focal movement seizures involving her left upper limb (Jackson's epilepsy) with secondary general epilepsy followed by mild paralysis of this extremity for several minutes (Todd Paralysis). Head CT showed higher density foci under the cortex of the right parietal lobe and MRI showed an irregular enhanced multi-cystic nodular lesion with extensive perilesional edema. Right parietal craniotomy was performed with aid of neuronavigation to remove the lesion. Within the lesion a living parasite was observed, white, flat, banded, 8.5 cm long, wriggling from one end to the opposite. Etiological examination confirmed a pleroceroid (spirometra mansoni). The postoperative follow-up for half a year demonstrated that the patient did not present epileptic seizures and the cerebral lesion disappeared in image examination. Cerebral sparganosis is a rare parasitic disease caused by sparganum. Lacking specific manifestations, differentiation of cerebral sparganosis from inflammatory or neo-plastic lesion within the brain is difficult. Its clinical manifestations include chronic headache, and specific symptoms such as epilepsy, hemiplegia, and aphasia. Immunological test of serum indicates positive antibodies to sparganum mansoni. Final diagnosis depends mainly on pathogen test that requires surgical procedures to perform a biopsy. Surgical resection of the sparganum contributes much more than only use of medicine to effective treatment. Furthermore, removal of the parasite and its surrounding inflammatory granuloma is the most preferred method to control epilepsy due to the cerebral sparganosis.

Keywords: Sparganosis; Cerebral Lesion; Seizures; Parasite; Surgery

Introduction

We described a 14 year-old-girl who presented repeated focal movement seizures involving her left upper limb (Jackson's epilepsy) with secondary general epilepsy followed by mild paralysis of this extremity for several minutes (Todd Paralysis). Physical examination revealed she had normal mental status, cranial nerve function, and muscle power. Head CT showed higher density foci under the cortex of the right parietal lobe (Figure 1) and MRI showed an irregular enhanced multi-cystic nodular lesion with extensive perilesional edema (Figure 2). Right parietal craniotomy was performed with aid of neuronavigation to remove the lesion which was a firm, dark-red granuloma, 5 mm underneath the cortex at central sulcus and anterior central gyrus. Inside the lesion a living parasite was observed, white, flat, banded, 8.5cm long, wriggling from one end to the opposite

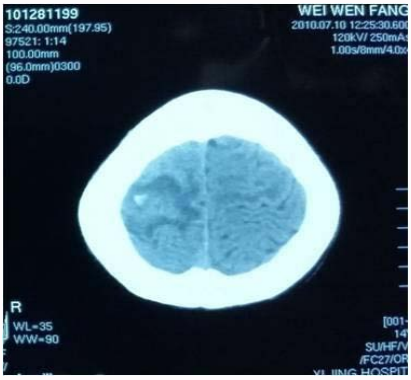

Figure 1: CT shows a small high density lesion at right-sided central gyri that lack normal structure and are surrounded by an edema band.

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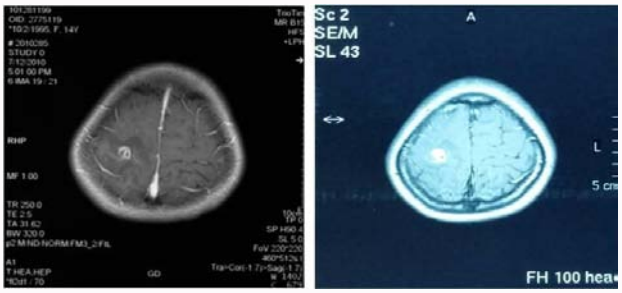

Figure 2: MRI shows an uneven enhanced lesion with a low intensity edema signal around it.

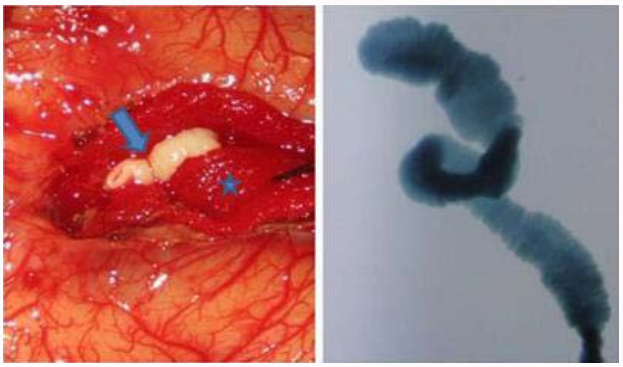

Figure 3: Intraoperative view (left) and postoperative etiological examination (right).
Left: A white, flat, banded, wriggling parasite (arrow) surrounded by surgical cotton patch (star) is exposed 5 mm underneath the central sulcus.
Right: Ink stain indicates a pleroceroid.

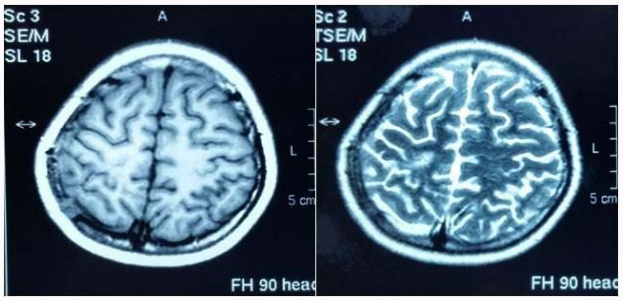

Figure 4: Postoperative MRI at 6 months' follow-up.
MRI images show the pleroceroid lesion is removed with an abnormal signal remained underneath the right-sided central gyri: respectively long T1 signal (left) and long T2 signal (right).

(Figure 3). No postsurgical complications occurred and etiological examination confirmed a pleroceroid (or spirometra mansoni) (Figure 3). The postoperative follow-up for half a year demonstrated that the patient did not present epileptic seizures and the cerebral lesion disappeared in MRI examination (Figure 4).

Sparganosis mansoni is caused by spirometra mansoni which is a zoonotic parasite and parasitic with its imago mainly in feline rather than human being [1]. It's larva, spaganum, live but does not grow mature in human body. The imago movement is much more harmful than imago itself to human [2]. Investigation revealed that human were infected with spaganum mainly through several ways including: drinking un-boiled water with procercoid-parasitic cyclops, applying fresh frog muscle as poultice on the wounds to relieved sore, or eating raw paratenic hosts (birds or mammals) or second intermediate hosts (frogs or snakes) of spaganum [3]. This disease is mainly found in China (its southeastern and southern areas), Korea, Japan and other South-east Asian countries [1]. The present case was confirmed etiologically a living cerebral pleroceroid that led to focal movement epilepsy in a young girl who did not have a history living in the infected area. Further inquiries after surgery demonstrated that she had eaten roasted frogs bought in local markets 6 months earlier before she suffered a seizure. Modern convenient logistics makes it possible that the parasite-contaminated foods be transported from the infected area to other safer areas. It is clear that there is still a possibility that sparganosis mansoni spread in new area if an individual case is not recognized and effectively controlled.

Lacking specific manifestations, differentiation of cerebral sparganosis from inflammatory or neo-plastic lesion within the brain is difficult [4]. Its clinical manifestations include chronic headache due to increased intracranial pressure, and some specific symptoms such as epilepsy, hemiplegia, and aphasia. Immunological test of serum indicates the patients are full of antibodies to sparganum mansoni. Final diagnosis mainly depends on pathogen test that requires surgical procedures to perform a biopsy.

Surgical resection of the sparganum contributes much more than only use of medicine in effectively treating cerebral sparganosis because drugs such as praziquantel repel the plerocercoid rather than kill it [5]. Furthermore, removal of the parasite and its surrounding inflammatory granuloma is the most preferred method to control epilepsy due to the cerebral sparganosis.

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