Sparganosis of the brain

Case report

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A patient is reported with sparganosis of the brain involving Sparganum mansoni. This 33-year-old Korean woman had complained of generalized tonic-clonic convulsions during the 5 years before operation. Right frontotemporal craniotomy was performed, and a live Sparganum mansoni was removed from the subdural space. To date, this tapeworm has been reported in only two autopsied human brains. This is the first case in which a live Sparganum mansoni was successfully removed from the intracranial region.

KEY WORDS □9 Sparganum mansoni □9 sparganosis □9 parasite □9 granulation tissue

The number of reported cases of human infection with Sparganum, which is the larval stage of Diphyllobothrium mansoni, may exceed 300 in the world literature. In most cases, subcutaneous tissue and superficial muscle fascia have been invaded, and sparganosis of the brain is very rare. Only two autopsy cases have been reported; our case is the first instance in which a Sparganum mansoni was successfully extirpated from the intracranial region.

Case Report

This 33-year-old Korean woman had come to Japan from Cholla Nam Do in Korea, 23 years before admission. She had enjoyed good health, and her medical history was not remarkable. She was unaware of any contact with contaminated water. Since her marriage at the age of 24 years, she had frequently eaten raw beef, as her husband is a butcher. She had kept a dog for 3 years after her marriage. For 5 years before admission, she experienced generalized tonic-clonic convulsions, usually starting on the left side of the face and arm, and extending to the entire body. The initial symptoms were numbness and paresthesia, such as a crawling sensation in the left upper extremity. The attacks occurred approximately once every 3 days in the spring, decreasing in the summer. The episodes persisted despite anticonvulsant therapy.

In May, 1976, she was first admitted to the Division of Neurosurgery at Sendai National Hospital for further study.

First Admission. On examination, she had very mild motor weakness of the left extremities, hyperactive left deep tendon reflexes, and positive left Hoffman's sign. Brain scan and bilateral carotid angiography revealed no abnormal findings. Pneumoencephalogram showed dilatation of the lateral ventricles, greater on the right than the left, and of the third ventricle due to cerebral atrophy (Fig. 1).

Radionuclide scan repeated in February, 1978, showed increased uptake at the right frontal region (Fig. 2). Plain computerized tomography (CT) revealed a low-density area in the area of ventricular enlargement. Enhanced CT revealed a high-density area with an irregular margin at the right frontal lobe (Fig. 3).

Second Admission. The patient was admitted to the hospital. Neurological examination revealed no abnormalities. Laboratory studies of blood disclosed normal values. Results of urinalysis were normal. The stool was found to be free of ova or parasites.

Operation. Right frontotemporal osteoplastic craniotomy was performed on March 31, 1978. In the subdural space, a milky-white worm was discovered under a cloudy brownish membranous structure, which measured 5 mm in thickness and which was
Sparganosis of the brain

FIG. 1. Pneumoencephalogram, anteroposterior view, on first admission showing dilatation of the lateral ventricles (greater on the right than the left), and the third ventricle.

histologically verified as inflammatory granulation tissue. The tapeworm, identified as *Sparganum mansoni*, measured approximately 70 mm in length and 1 to 2 mm in width. It had a club-shaped head and a flat body. It moved with an undulating motion and had peristaltic-like activity. A hard nodular structure was palpated near the location of the parasite and was removed from the cortex. Microscopically, this proved to be inflammatory granulation tissue. The cortical surface of this nodule was partially torn, apparently having served as an entrance for the tapeworm (Fig. 4).

The patient made an uneventful recovery and was discharged without neurological deficits on May 10, 1978. She has experienced only one seizure in nearly 8 months since discharge.

**Discussion**

Since human infection with *Sparganum mansoni* was first discovered by Patrick Manson in 1882, 213 cases have been summarized in Japan by Igarashi,2 63 cases in Korea by Cho, et al.,1 and 41 cases in the United States by Rywlin, et al.9 Additional cases have been reported from China, Malaysia, India, and the Philippines. Ordinarily, sparganosis involves subcutaneous soft tissue and superficial muscle fascia of the human body.

Only two patients with *Sparganum* at an intracranial location have been reported previously in the literature, and both were found at autopsy in Japan (Table 1).3 One was a 33-year-old man who had suffered convulsions and left hemiparesis over a period of 5 years. Autopsy revealed the parasite in the right frontal lobe. The other patient was a 45-year-old man, who had experienced occasional apoplectic
TABLE 1

Clinical summary of three cases with Sparganum mansoni of the brain

<table>
<thead>
<tr>
<th>Authors, Year</th>
<th>Sex, Age (yrs)</th>
<th>Location</th>
<th>Symptoms &amp; Signs</th>
<th>Duration of Symptoms (yrs)</th>
<th>Cause of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takeuchi, 1918</td>
<td>M, 33</td>
<td>intracerebral, right frontotemporal</td>
<td>convulsions, sensory disturbance, hemiparesis, headache</td>
<td>5½</td>
<td>cerebral infarction</td>
</tr>
<tr>
<td>Kuroiwa, 1951</td>
<td>M, 45</td>
<td>intracerebral, right temporal</td>
<td>“apoplectic” symptoms, consciousness disturbance, fever</td>
<td>1</td>
<td>gastric ulcer</td>
</tr>
<tr>
<td>Mineura &amp; Mori, 1980</td>
<td>F, 33</td>
<td>intracerebral &amp; subdural, right frontal</td>
<td>convulsions</td>
<td>5</td>
<td>—</td>
</tr>
</tbody>
</table>

Symptoms over a period of 1 year. He entered the hospital complaining of shivering and consciousness disturbance. His disorder was diagnosed as encephalitis japonica, and he died of gastric ulcer. *Sparganum mansoni* was discovered in the right temporal lobe at postmortem examination. Involvement of the central nervous system was found in two Korean patients with infection in the extradural space of the vertebral canal and granuloma formation.4,5

It is known that adult tapeworms of Diphyllolobothrium mansoni are found in the final host, such as dogs and cats. Water fleas (Cyclops) serve as the first intermediate host for the procercoid, and frogs, snakes, birds, or several species of mammals constitute the reservoir for the plerocercoid larva or Sparganum as the second intermediate host. Humans can become infected with the larval worms by accidentally ingesting the first intermediate host or by eating the uncooked second intermediate host. Moreover, poultices of fresh split frogs applied to the eye or skin are also a means of infection. In the present case, the avenue of infection is not known.

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References


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