Cases of the Month: January to March 2004

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JANUARY 2004: ELDERLY FILIPINO MAN WITH FRONTAL LOBE TUMOR

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CLINICAL HISTORY AND RADIOLOGY

A 74-year old Filipino man with a past history of gastric carcinoma presented with new-onset partial-complex seizures. Eight months prior to this presentation he was diagnosed with gastric cancer and subsequently underwent a subtotal gastrectomy. The malignancy was classified as $T_1N_0M_0$ stage IA and treated by radiation to within 2 mm of the resection margin. Two months after completing his radiation treatment, he developed confusion and rhythmic, seizure-like movements of the extremities. A head CT revealed a 2-cm right frontal lobe mass and he was admitted and placed on fosphenytoin and dexamethasone with no further recurrence of seizure activity. The patient reported no headache or weakness. There were no reports of constitutional symptoms. CT of the chest and abdomen revealed no evidence of metastatic spread or other abnormalities.

MRI revealed an irregular $2.0 \times 2.5 \times 3.0$ cm right frontal lobe ring enhancing mass with edema (Figure 1). The lesion was believed to represent a primary or secondary tumor. A resection of the right frontal lobe lesion revealed a gliotic solid and cystic mass. The resected lesion consisted of irregular tan to pink fragments of tissue measuring $3.5 \times 1.2 \times 0.5$ cm.

MICROSCOPIC FINDINGS

Crush prep and frozen sections were performed for intraoperative consultation. The brain tissue showed acute and chronic inflammation, gliosis, fibrosis, and many foreign body giant cells. Intact and necrotic larval parts were identified (Figure 2). These larval fragments have an integument covered by eosinophilic structureless microvilli (Figure 3). A layer of tegmental cells separated the integument from the loose spindle tissue cells in the core. The larval parts are surrounded by gliotic brain tissue containing prominent foreign body giant cells, macrophages, and lymphocytes. Eosinophils were not seen. A refractile fragment resembling a hooklet was also found in the crush preparation (Figure 4). The fragmented scolex and hooklets were identified on subsequent hematoxylin and eosin stained sections.

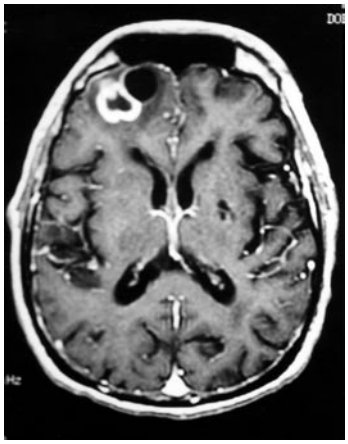

Figure 1.

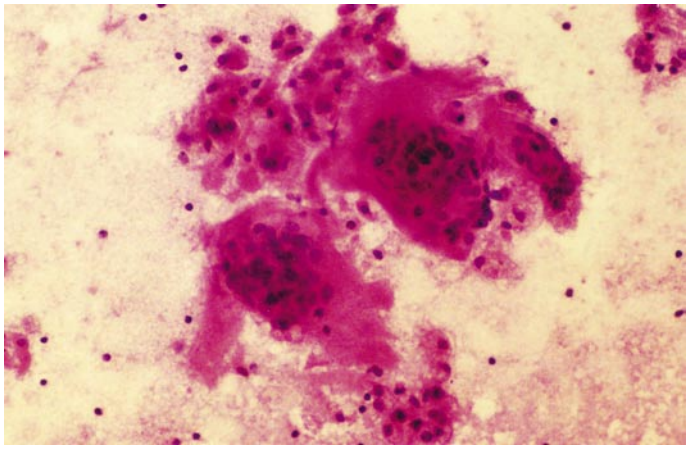

Figure 2.

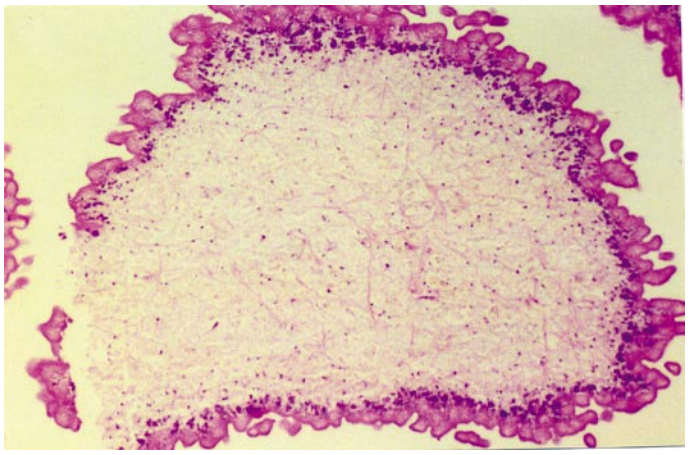

Figure 3.

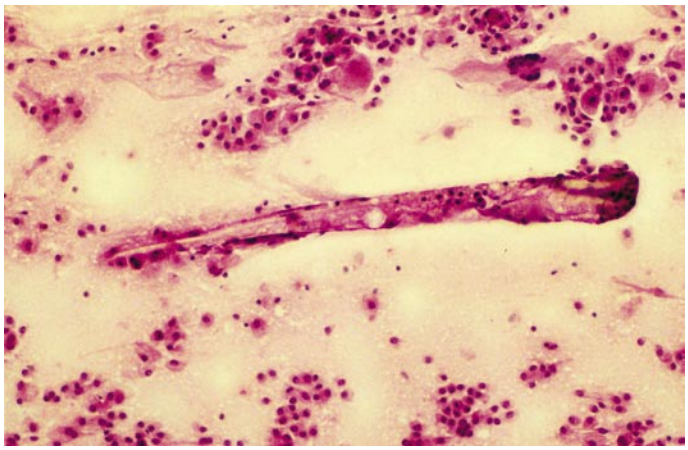

Figure 4.

DIAGNOSIS

Neurocysticercosis.

DISCUSSION

Crush preps for intraoperative consultation of suspected parenchymal brain neoplasms has been recommended. This is to facilitate accurate interpretation of the cellular components of the lesion as well as the underlying tissue architecture (4). Crush preparation has been reported to improve the sensitivity and specificity of diagnosing cystic brain lesions in revealing malignant cells has also been reported (5). The crush smear in this case revealed a prominent inflammatory tissue reaction in the absence of malignant cells. The abundance of foreign body giant cells in conjunction with parasitic tissue elements prompted the search for scolex and hooklets that verified the diagnosis of neurocysticercosis.

The solitary parenchymal lesion seen in this case is one in a spectrum of pathologic features found in neurocysticercosis. Neurocysticercosis rarely causes death. Patients are often asymptomatic (7). However, when this disorder causes neurologic symptoms, the infestation may present as a ring-enhancing lesion or be a cystic lesion on CT and/or MRI imaging. This case has features of both. Such lesions lead to surgical excision for establishing the diagnosis and planning further care.

Neurocysticercosis presenting as a single ring enhancing lesion-prompting surgery for suspected malignancy has been documented (6). In this case a solitary lesion demonstrated both cystic and solid components. The solid component containing the degenerative parasite was likely responsible for symptomatology. The parasite typically dies 2 to 6 years after infection leading to leakage of parasite antigens into surrounding tissue, stimulating a vigorous inflammatory response (8). A viable cysticercus tends to be asymptomatic (2).

Neurocysticercosis is the most common parasitic infection of the central nervous system worldwide (2). This pleomorphic clinical entity is also a leading cause of acquired symptomatic epilepsy in the world (8). The disease is caused by Taenia solium, the pork tapeworm, which is endemic in Mexico, Central and South America, Eastern Europe, and various parts of Asia (2). An increase in travel and immigration of people from endemic areas has lead to a recent increase in the incidence of the disease in the United States (3).

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