Short Report: Cysticercosis of the Breast, a Rare Imaging Finding

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Abstract. Parasitic infection of the breast is rare, especially in cases of cysticercosis. This disease is acquired by ingestion of tapeworm eggs in contaminated food and water supplies or from hands improperly washed after a bowel movement. Diagnosis is usually made incidentally. We report a patient with cysticercosis of the breast. The patient was a 63-year-old woman who had no clinical manifestations, but cysticercus was observed to cause calcifications detected by mammography. Computed tomography demonstrated brain lesions. A definitive diagnosis of cysticercosis was made by demonstration of characteristic calcified larvae. The definitive diagnosis was confirmed by excisional surgery.

INTRODUCTION

In areas where parasitic infestation is common, soft tissue involvement may include the breast. Numerous cases of filariasis with soft tissue involvement have been reported from Nepal and northern Italy, and schistosomiasis has been reported to cause calcifications detected by mammography.1 However, soft issue involvement (solitary tumor) of the breast is rare in cysticercosis, a disease caused by encysted larvae of the tapeworm Taenia solium that is endemic in eastern Europe, Africa, Asia, and Latin America.2

In the normal life cycle of T. solium, humans are definitive hosts and pigs are intermediate hosts. Humans are usually infected by eating raw or undercooked pork that has been infected with larvae (cysticerci). Pigs ingest eggs in human feces, and the eggs are then lysed in the gut by gastric juice. Oncospheres hatch, invade the intestinal wall, and reach the bloodstream. The oncospheres then spread to the central nervous system, skeletal muscle, subcutaneous tissue, eyes, breast, and heart, where they develop into cysticerci.3 When persons ingest raw or undercooked infected meat, stomach enzymes lyse the outer shell of the parasite, leaving the scolex behind. The scolex has suckers and hooks that aid in attachment to the intestinal wall. Once the parasite has attached itself to the intestinal wall, the scolex proliferates and becomes an adult tapeworm over two months and can survive for years within the human intestines. Adult tapeworms produce eggs (proglottidis) that mature, become gravid, detach from tapeworm, and migrate to the anus or are passed in the stool. When pigs ingest the eggs from infected soil, the cycle begins again.4

Although central nervous system involvement constitutes the primary site of infection, other organs, including the breast, can be involved. Because these parasites are seen as lumps in the breast, they are cause for concern because they are often clinically suspected to be malignant. We report a patient with cysticercosis of the breast.

CASE REPORT

A 63-year-old woman was hospitalized for routine examinations. She had no complaints and denied eating undercooked meat. However, she had lived in the country and had eaten undercooked meat in this region before migrating to the city. Results of a physical examination of the breasts were negative. Computed tomography findings demonstrated two well-defined lesions in the brain similar to T. solium larvae that degenerated into granulomas that became calcified scars (size = 5 mm). The first lesion showed a tubular, worm-like structure suggestive of calcified larvae, and the second lesion showed a round structure suggestive of a calcified cyst. Mammographic imaging (Figure 1) of the left breast showed a tubular, worm-like structure suggestive of calcified larvae in the intermuscular area of the pectoral major.

A definitive diagnosis of breast cysticercosis was made by excisional surgery. Pieces of degenerating parasite were associated with a dense acute inflammatory cell reaction, and numerous polymorphonuclear cells could be seen infiltrating the degenerating fragments. The parasite had a characteristic

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scolex, with four suckers and a double row of hooks. Histologic analysis (Figure 2) showed a round structure suggestive of a calcified parasite in the breast.

After diagnosis by computed tomography, the patient underwent surgery. Albendazol was given as a treatment, and the definitive diagnosis was confirmed by histologic examination of tissue.

**DISCUSSION**

The diagnostic of cysticercus is well established, although parasitic infection of the breast is rare. Most of the estimated 50 million cases of cysticercosis originate in poor communities of Latin America, Asia, and Africa. Breast cysticercosis is difficult to diagnose because the clinical manifestations are nonspecific. A history of residence or travel in a parasite-endemic area or the presence of infected animals in a patient’s environment is sometimes helpful.

Magnetic resonance imaging and computed tomography are useful in detecting and evaluating specific stages of cysticercosis. Initially, when the parasite is viable, a cyst without peripheral enhancement is seen. Peripherally enhancing cystic lesions are subsequently observed, which indicates the inflammatory response that occurs after the death of the parasite.

The host tissue response to the parasites is extremely variable. This response ranges from an insignificant response to marked inflammatory cell infiltration with histiocytes and formation of epithelioid cell granulomas.

The cytomorphology of cysticercosis in the breast is well characterized and can be easily recognized. Cytomorphology is associated with a prominent cellular reaction. It is not possible to correlate the host immune response with the duration or size of the breast lump. However, the presence of palisading histiocytes and eosinophils are features seen consistently with cysticercosis. The factors responsible for the initiation of the immune response and death of the parasite are not well known. However, initiation of the immune response likely causes local symptoms and draws attention to the parasite.

Definitive diagnosis of soft tissue cysticercosis can be confirmed by excisional surgery or by needle or open biopsy. Demonstration of the characteristic scolex, with four suckers and a double row of hooks, is important for definitive diagnosis, but a scolex may not always be in the plane of section.

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