

## A Case of Intramuscular Sparganosis in the Sartorius Muscle

Intramuscular sparganosis is not common, and its rarity makes it difficult to be distinguished from soft tissue tumors. A case of rare intramuscular sparganosis is reported. A 44-year-old man presented with a painful mass in the left thigh for 8 months, which was initially diagnosed as a soft tissue tumor. Ultrasonography and MRI revealed a multilobulated mass in the sartorius muscle. After the needle biopsy under the guidance of ultrasonography, sparganum was discovered under microscopic examination of the excised tissue. Surgical excision was performed, and a live larva of sparganum was removed. Sparganosis should be considered in the differential diagnosis of soft tissue tumors, especially among Koreans who have frequently ingested mountain water and consumed raw snakes or frogs.

**Key Words:** Sparganosis; Sartorius; Soft Tissue Neoplasms

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### INTRODUCTION

Sparganosis is a rare parasitic disease caused by the migrating plerocercoid tapeworm larva of the genus *Spirometra* (1, 2). The human is an accidental transport host. Man may acquire sparganosis by ingesting infected cyclops with proceroid through drinking water, by consuming frogs, snakes, or rodents harboring the plerocercoid, by from poultice made of infected flesh of frogs or snakes (3, 4). The sparganum is a wrinkled, whitish, ribbon-shaped organism that is a few millimeters in width and up to scores of centimeters in length. Early migratory stages in the development of the sparganum are asymptomatic, sometimes triggers painful inflammatory reaction in the surrounding tissues. Clinically and radiographically the process may mimic a neoplasm (5, 6). It is quite difficult to differentiate sparganosis from soft tissue tumors on radiographic and laboratory data preoperatively. In this report, we describe a case of intramuscular sparganosis involving sartorius muscle, which was confused with soft tissue tumor.

### CASE REPORT

A 44-year old man had suffered from painful mass in left thigh for 8 months. He was referred to our hospital

with suspected soft tissue tumor from the private clinic in November, 1999. Physical examination revealed swelling and tenderness, but local heatness was not found in the medial aspect of left thigh. Laboratory studies revealed normal white blood-cell count of  $8.2 \times 10^9/L$ , with 67.4% neutrophils, 21.9% lymphocytes, 6.1% monocytes, and 4.3% eosinophils. The erythrocyte sedimentation rate was 5 mm/hr. Plain radiographs of the left femur showed no soft tissue calcification. Ultrasonogram

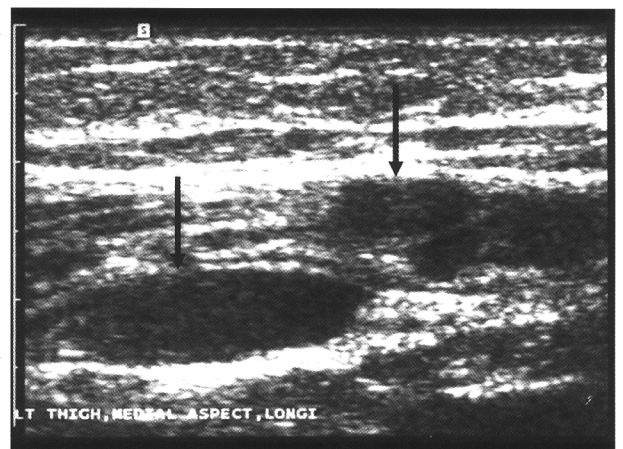


Fig. 1. Ultrasonogram shows heterogeneous, hyperechoic mass with hypoechoic tubular lesion (arrows) in the sartorius muscle.

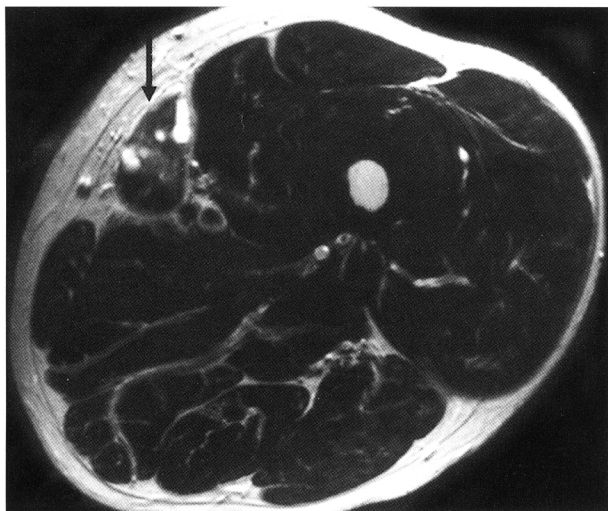


Fig. 2. MRI findings show multiple elongated tubular tract of heterogeneous high signal intensity on T2-weighted images (arrow) in the sartorius muscle on T2-weighted axial image.

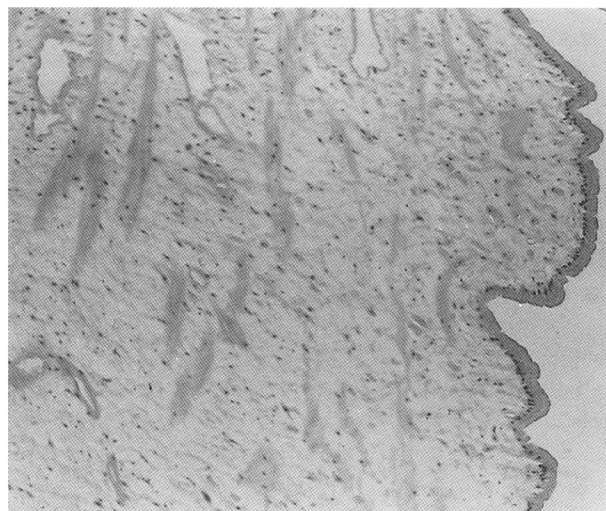


Fig. 3. Characteristic tegumental structure of sparganum with underlying stout muscle bundles after needle biopsy (H&E,  $\times 40$ ).

revealed heterogeneous, hyperechoic mass with hypoechoic tubular lesion in the sartorius muscle (Fig. 1). Magnetic resonance imaging revealed multiple elongated tubular tract in the sartorius muscle. Lesions showed low signal intensity on T1-weighted images, and heterogeneous high signal intensity on T2-weighted images (Fig. 2). Under the clinical impression of soft tissue tumor, ultrasonography-guided needle biopsy was done, and the cross-section of worms with features of sparganum were found (Fig. 3). The patient recalled that he had frequently taken mountain water. Serodiagnosis of human sparganosis by a monoclonal antibody-based competition enzyme-linked immunosorbent assay (ELISA) was positive, and surgical excision was done. At the time of the excision, the sparganum, 40 cm in length was found in the sartorius muscle (Fig. 4).

## DISCUSSION

The most frequent clinical manifestation of human sparganosis is a subcutaneous nodule resembling neoplastic disease (7). Diagnosis can often be established at surgery with identification of the larval worm in the excised tissue without preoperative radiological examination (8).

Presently, the diagnosis of sparganosis can be made by serology. Peripheral eosinophilia were common in human sparganosis, even though this case was not showed definite eosinophilia. Although the activity of eosinophils is not entirely clear, they are known to destroy parasitic organisms (9). The diagnosis of parasitic zoonoses, especially larva migrans, is difficult; although some unique

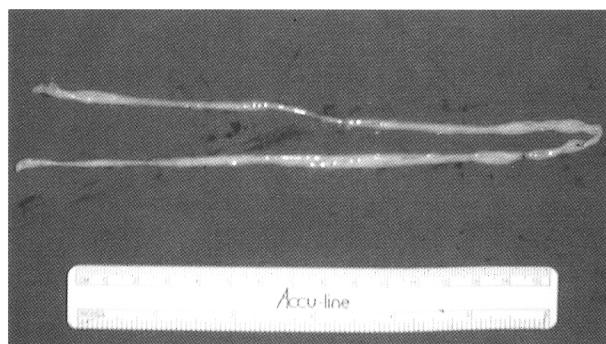


Fig. 4. Removed sparganum worm.

clinical symptoms and the presence of eosinophilia and/or increased level of serum IgE antibody are frequently seen in larva migrans, the application of various immunodiagnostic methods is usually required (10). Competition ELISA test using sparganum specific monoclonal antibodies was investigated to improve the diagnostic specificity of sparganosis (11).

Radiologic evaluation is also helpful. Sonographic finding of this case showed heterogeneous, hyperechoic mass with hypoechoic tubular lesion. Magnetic resonance imaging revealed multiple elongated tubular tract of heterogeneous high signal intensity on T2-weighted images. When we think of it, hypoechoic tubular lesion in the ultrasonogram are as like as multiple elongated tubular tract in the MR imaging from point of view; size, location and internal signal. Chung et al. revealed that sonographic findings in breast sparganosis showed amorphous, heterogeneous, hyperechoic mass with internal tunnel-like hypoechoic tracts. The heterogeneous, hyper-

choic mass was proven to be a granuloma containing the living worm itself on pathologic examination. The internal hypochoic, tubular lesion was proven to be the empty tract pathologically, and it was suggested as the migrating tract of the larva worm (8). Radiologic findings of this case are inflammatory lesion rather than soft tissue tumor, although those findings should be differentiated from soft tissue tumor such as plexiform neurofibroma or hemangioma.

Human sparganosis is a surgical disease because its diagnosis depends almost entirely on the demonstration of larva from lesion. In endemic areas of sparganosis the presumptive diagnosis may be preoperatively made by experienced surgeon if the patient's history of eating raw snakes or frogs is considered together with the size and migration of mass and crepitation of the subcutaneous mass. However, these information have not always been helpful for correct diagnosis, because human sparganosis show great variations in the manifestation (12). It is quite difficult to differentiate sparganosis from soft tissue tumors on radiographic and laboratory data preoperatively. The diagnosis is usually confirmed by postoperative histological examination. Furthermore, because the incidence of the disease is relatively low even in the endemic area, it is hardly expected in surgeons to place the possibility of sparganosis in the diagnostic priority list. Serological tests for diagnosis were not carried out in this case before needle biopsy, since parasitic infection was not suspected. Immunodiagnosis for sparganosis should be recommended in preoperative diagnosis when soft tissue tumor was suspected in endemic areas.

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