

Hydatid Disease with Water Lily Sign Manifesting as a Soft-Tissue Mass in The Soleus Muscle of an Adult Woman- Case Report

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ABSTRACT

Due to the high lactic acid levels and the contractility of the muscle soft-tissue hydatid disease is unusual even in endemic areas, and skeletal muscle involvement is extremely rare. Here we discuss an extremely unusual and rare case of hydatid disease found in the medial aspect of the soleus muscle in 46 years old female.

MRI imaging is essential for identification and differential diagnosis.

Keywords: Hydatid cyst, skeletal muscle hydatosis, Water Lily Sign, echinococcosis.

INTRODUCTION

Hydatid disease is a parasitic disease of tapeworm of the echinococcus type. The most common forms found in humans are cystic and alveolar echinococcosis caused by echinococcus granulosus and multilocularis respectively ⁽¹⁾. It is most prevalent in sheep and cattle breeding areas, where the first step in the chain of transmission of this infestation occurs. The causative agent is introduced to the sheep dog through the feces of livestock. Similarly, in humans, *E. granulosus* is contracted by ingestion of eggs contained in the feces of the dog after ingestion ⁽²⁾.

Hydatid cysts can appear anywhere in the body; however, the liver and lungs are the primary sites of involvement because of their role as a capillary filter station. Other regions where hydatid cysts might occur include the bones, kidney, spleen, pancreas, peritoneum, heart and brain ⁽²⁾.

Soft-tissue hydatid disease is unusual even in endemic areas, and skeletal muscle involvement is extremely rare, with a reported prevalence of 0.5%–4.7% ⁽³⁾.

Skeletal muscle is an unfavorable site for the growth of infection because the hydatid cyst needs oxygen but the muscles usually contain high lactic acid levels. It is also hard for the cyst to grow within skeletal muscles because of their contractility ⁽⁴⁾.

In this report, we present a very rare case of muscular hydatid disease in an adult Saudi woman. It is critical to suspicious clinical diagnosis for preoperative diagnosis of this disease.

CASE REPORT

A 46 years old woman was presented to the medical imaging department at King Fahad Medical City with the complaint of swelling of the right leg with a slowly growing mass.

Her history was not relevant with trauma or septic disease. She did not have pain that localized on the abdomen and chest.

First off, we started with Physical examination which revealed a 5 x 3 x 11 cm fixed, firm and tender mass in anterolateral and distal parts of the right thigh. There was no ecchymosis, erythema, increased warmth or lymphadenopathy.

Secondly, Conventional radiography of the knee was then performed and it revealed soft tissue swelling at the posterior aspect of the proximal right leg (**Figure 1**).

Lastly, Magnetic resonance imaging (MRI) was performed for further imaging. MRI showed an oval cystic mass interposed between the far medial fibers of the medial gastrocnemius muscle and the soleus (4.6 x 2.8 x 10.9 cm). The lesion iso/mildly bright signal intensity on T1 with serpiginous linear low-signal-intensity membrane (**Figure 2**).

On the fluid-sensitive sequences revealed the lesion had a high-signal-intensity matrix associated with the serpiginous linear low-signal-intensity septations (**Figure 3,4**).

Axial view of the right leg after contrast administration images there is mainly peripheral thick enhancement (**Figure 5,6**).

Image finding



Figure 1: Conventional radiography of the knee (Figure 1) revealed soft tissue swelling at the posterior aspect of the proximal right leg.

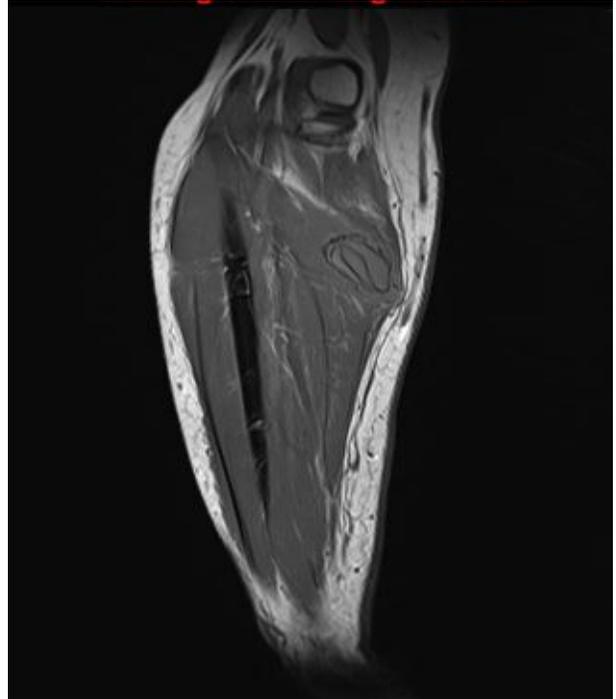


Figure 2: MR imaging revealed a soft-tissue mass interposed between the far medial fibers of the medial gastrocnemius muscle and the soleus (4.6 x 2.8 x 10.9 cm). The lesion iso/mildly bright signal intensity on T1 with serpiginous linear low-signal-intensity membrane (Figure 2).

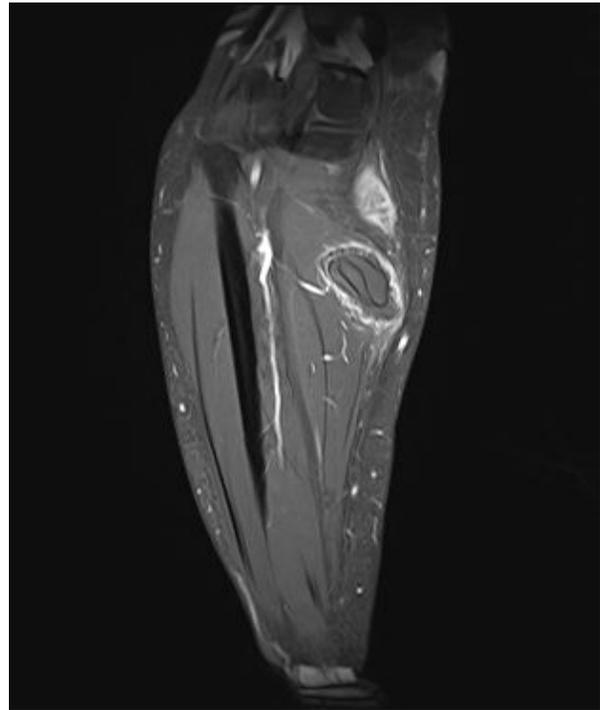
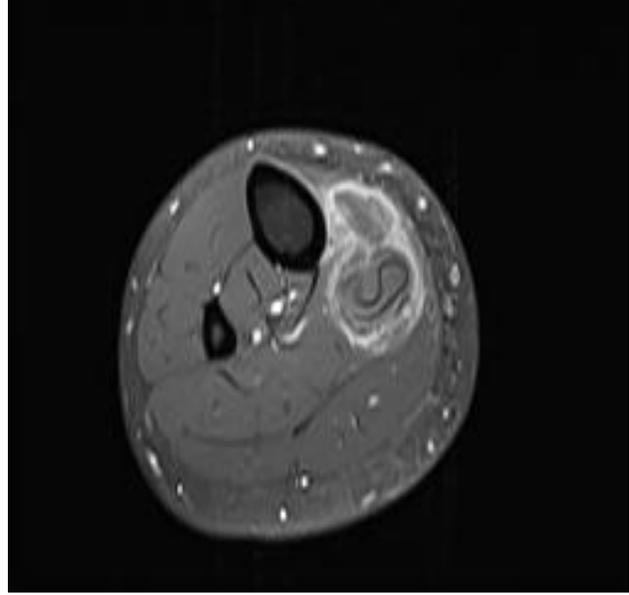
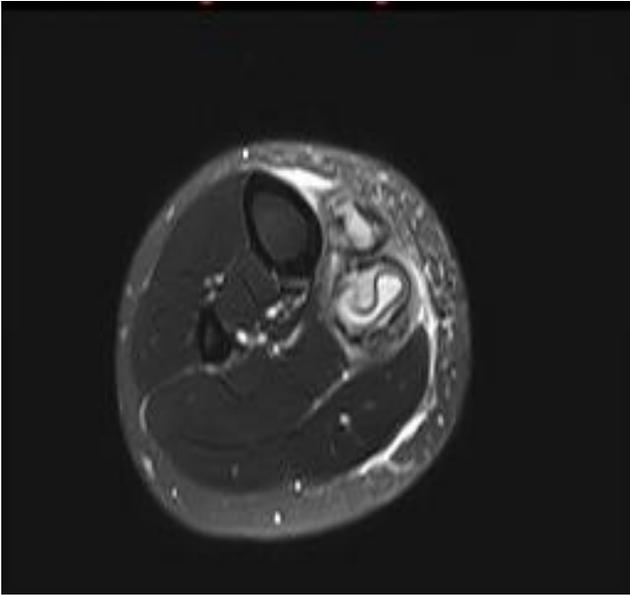


Figure 3,4: revealed the lesion had a high-signal-intensity matrix associated with the serpiginous linear low-signal-intensity septations.



Axial view of the right leg after contrast administration images (figure 5,6) there is mainly peripheral thick enhancement.

DISCUSSION

Human hydatid disease is caused by the larval stage of *Echinococcus granulosus*, the primary target sites are the liver and lungs of involvement because of their role as a capillary filter station⁽⁵⁾. However, it can manifest in other organs or areas including bones, kidney, spleen, pancreas, peritoneum, heart, and brain

Muscle hydatidosis is uncommon, accounting only for 3-5% of all cases⁽³⁾ and is usually secondary to hepatic or pulmonary disease.

The exceptional nature of muscle localizations of hydatid cysts can be elucidated by many contributing factors such as the efficacy of the hepatic and pulmonary barriers, unfavorable muscle environment for the growth of hydatid larvae due to high lactic acid content and muscle's contractility which hinders intramuscular growth of cysts⁽⁶⁾. The predominant localization in the proximal muscles of the lower limbs could be explained by the volume of the muscle mass and its rich blood supply⁽⁶⁾.

It is important to establish the diagnosis preoperatively in order to limit the risk of anaphylactic shock or dissemination of viable protoscolices in the event of puncture or accidental opening of the cyst during resection.

MRI is capable of adequately demonstrating most features of hydatid disease⁽⁷⁾. Double-layer wall,

daughter cysts and water-lily sign are the specific findings⁽⁷⁾. The detachment of the germinative membrane from pericyst (water-lily sign) is considered to be pathognomonic and is reported in locations other than the liver and lung in our case. The water lily sign of hydatid disease may occur in cerebral, orbital, and intramuscular lesions⁽⁸⁾. The membrane may detach naturally, as in this patient, or secondary to needle aspiration, as in the case reported by Gomori et al⁽⁹⁾. The detached membrane is hypointense relative to the matrix on MR images regardless of the pulse sequence used, and it does not enhance after contrast medium infusion.

In the present case, hydatid cyst was determined with MRI. Radiological view was useful for differentiating hydatid disease and other diseases such as muscle malignancy.

Furthermore, despite the common perception that MRI is not specific in the differentiation of soft-tissue tumors, we recommend it for soft-tissue hydatid disease provided the specific findings including water lily sign, double-layered wall, and daughter cysts. Overall, Hydatid disease should always be kept in mind for the differential diagnosis of cystic soft-tissue tumors, even without specific findings.

CONCLUSION

Despite the very rare incidence of Hydatid cyst in the soleus muscle and the difficulty in diagnosis, it should be kept in mind when observing soft tissue mass of the extremities in patients for differential diagnosis of a cystic mass in the muscle, especially in endemic areas in order to avoid misleading treatment intervention such as fine-needle biopsy which can consequently result in the spillage of cyst contents.

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