

# Primary Musculoskeletal Hydatid Cyst of Thigh

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## ABSTRACT

Primary musculoskeletal hydatid disease means that there is no primary focus of hydatid disease in body. It is a rare disease and present in approximately 3% of the patients. We present a case of primary hydatid cyst of thigh in 40-year female with history of swelling in left thigh for 2-years and referred for MRI at CT & MRI Centre, at Radiology Department, Dow University of Health Sciences/Civil Hospital Karachi. This case highlights that hydatid disease should be considered in the differential diagnosis of every soft tissue cystic mass in any anatomical location. Preoperative diagnosis of hydatid cyst is important for proper management and to avoid the long-term complication of recurrence.

**Key Words:** Echinococcosis, Hydatid cyst, MRI, Primary, Thigh.

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## Introduction

Hydatid cyst disease is a parasitic infection caused by larva of *Echinococcus granulosus*. Man is an incidental or accidental intermediate host and becomes infected by ingesting contaminated food or water.<sup>1</sup> Hydatid cysts are usually found in liver and lungs, but can affect any part of the body,<sup>2</sup> so the differential diagnosis of hydatid disease should be considered for every soft cystic mass in any anatomical location. We present a case of an unusual primary musculoskeletal hydatid disease in 40-year female with history of a slow-growing soft tissue mass on the medial side of the left thigh with no detectable primary site in the liver, lung or other common site of involvement. To the best of authors' knowledge, this site of localization has not been reported previously from Pakistan.

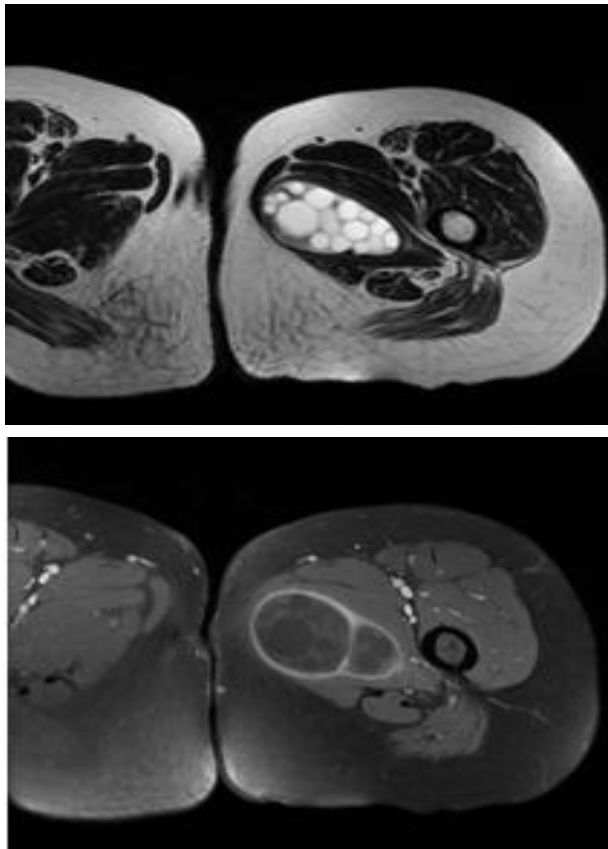
## Case Reports

A 40-year female referred to CT & MRI Centre, Radiology Department, Dow University of Health Sciences/Civil Hospital Karachi for MRI with the complaint of a very slowly growing mass on the medial aspect of left thigh for the past 2 years. There was no history of pain, fever or

weight loss. She had no contact with domestic livestock. There was no history of trauma. The past medical and surgical history was unremarkable. On clinical examination, a non-tender cystic swelling was noted on the medial aspect of left thigh. The swelling was firm in consistency without fluctuation and free from the skin as well as underlying structures. Routine laboratory studies were normal except slight increase of eosinophil count.

MRI of the thigh was performed which revealed a well-defined multicystic lesion along with daughter cysts, floating membranes and hypointense peripheral ring (rim sign) involving the left adductor magnus muscle. It appeared hypointense on T1WI, hyperintense on T2WI and STIR showing marginal post Gadolinium enhancement (Figure 1 a+ b). It measured 10.0 x 7.7 x 4.4cm. Neurovascular bundle was spared. Bones and muscles of the rest of the thigh were normal. CT scan of thorax and abdomen were performed to rule out any hydatid cyst of the lungs, liver, or other common sites of involvement. Based on these findings the patient was

diagnosed as Primary musculoskeletal hydatid disease and advised the antibody titer (IgG) for hydatosis which showed slightly increase value, which further supported the diagnosis of hydatid disease. Based on the clinical, imaging and laboratory findings, preoperative diagnosis of hydatid cyst was made. To avoid complications like anaphylactic reaction, infection and recurrence. The patient underwent enucleation of cyst and was kept on adjunctive antihelmenthic therapy to eliminate any possible larvae dissemination. The post-surgical period was uneventful. There were no post-procedure complications like urticaria or anaphylactic reaction. The histopathology confirmed the diagnosis of hydatid cyst disease.



**Figure 1(a+b): T2 and post Gd T1WI show a well-defined multicystic lesion with daughter cysts and floating membranes, hyperintense on T2WI showing marginal post Gd enhancement.**

## Discussion

Hydatid disease remains a health issue in developing countries because of the lack of control programs to prevent the transmission of this infection, high populations

of stray dogs, illegal butchering of animals and poor public education /awareness.<sup>3</sup> Hydatid disease is infested by the larval form of the Tapeworm, *Echinococcus granulosus*. Although it can involve any part of the body, the most commonly affected organs are liver (75 %), lungs (15.4 %) and spleen (5.1%).<sup>2</sup> Primary musculoskeletal hydatid disease is a rare entity and is present in approximately 3% of the patients.<sup>4</sup> According to various studies, the incidence of musculoskeletal hydatid disease including subcutaneous tissue ranges between 1 – 5.4% amongst all the cases of hydatid disease.<sup>5</sup>

Musculoskeletal hydatid disease can be primary or secondary. In later case, there is primary location of hydatid cyst in the liver, lung or spleen that may or may not be operated.<sup>6</sup> Primary musculoskeletal hydatid disease is rare, as the parasite has to cross pulmonary and hepatic barriers to reach the muscles.<sup>6,7</sup> The exact mechanism is unclear but a possible dissemination through lymphatic channels has also been reported.<sup>8</sup> The muscles are supposed to be an unfavourable site for infestation because of its high lactic acid concentration as well as contractility.<sup>6,9</sup>

The primary soft tissue involvement of hydatid disease is very rare, so its diagnosis is challenging. Imaging methods like ultrasonography (USG), computed tomography (CT), or magnetic resonance imaging (MRI) especially the later, have a primary role in its preoperative diagnosis by the characteristic appearance of a unilocular or multilocular cyst with multiple daughter cysts and hypointense peripheral ring (rim sign),<sup>5,6</sup> as seen in MRI of our case. Hydatid serology is only valuable and supports the diagnosis when it is positive. However negative serology does not exclude the diagnosis.<sup>10</sup> In our case there was slight increase in both eosinophil count and echinococcal antibody titer. Our patient did not give history of surgery for hydatid disease and her investigations did not reveal any hydatid cyst in liver, lung or spleen. So, she was diagnosed as having primary musculoskeletal hydatid disease and this was confirmed on histopathology.

A preoperative diagnosis of hydatid cyst is based on combination of clinical, imaging and laboratory data. Preoperative MRI is the imaging modality of choice not only for diagnosis the hydatid cyst, but clearly identifies the involved structures and helps in surgical planning. The

preoperative diagnosis and avoidance of diagnostic biopsy/aspiration is crucial in preventing local recurrence, cystic infection, and anaphylactic shock. The only successful treatment is complete excision of cyst with pre- and postoperative antihelminthic treatment; as was also given to our patient.

### Conclusion

A hydatid cyst is rarely seen in thigh so it should be investigated with serological tests and imaging modalities. Particularly in patients coming with a soft tissue cystic swelling, the possibility of hydatid cyst should be included in differential diagnosis. If possible, total surgical excision of hydatid cyst in the muscle should be performed along with antihelminthic therapy to avoid complications like anaphylactic reaction, larvae dissemination and recurrence.

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