Hydatid cyst in the vastus lateralis muscle: a case report

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Summary

Hydatidosis is a zoonotic disease; human infection occurs through the consumption of food and water contaminated with the eggs of parasites of the Echinococcus type. While the liver is the most common site of infection, involvement of the musculoskeletal system is extremely rare. In the context of musculoskeletal involvement, the spine is the most commonly infected site, while the muscles are rarely infected and account for approximately <1% of cases. It has been suggested that muscles provide an unsuitable environment for the parasite, because of the presence of lactic acid. The cysts appear as slow-growing masses of soft tissue, and signs of inflammation and fistulization often coexist. We report a rare case of an hydatid cyst located in the vastus lateralis muscle of a 41-year-old man.

Introduction

Hydatidosis is a zoonotic disease; human infection occurs through the consumption of food and water contaminated with the eggs of parasites of the Echinococcus type. While the liver is the most common site of infection, involvement of the musculoskeletal system is extremely rare (1-3). In the context of musculoskeletal involvement, the spine is the most commonly infected site, while the muscles are rarely infected and account for approximately <1% of cases. It has been suggested that muscles provide an unsuitable environment for the parasite, because of the presence of lactic acid (4, 5). The cysts appear as slow-growing masses of soft tissue, and signs of inflammation and fistulization often coexist (2, 5).

We report a rare case of an hydatid cyst located in the vastus lateralis muscle of a 41-year-old man.

Case presentation

A 41-year-old man was admitted to our institution complaining of a slowly growing tumefaction in the anterolateral aspect of his left thigh. The patient referred moderate pain his medical, development and family histories were unremarkable. The patient lived in a rural area and he is in close contact with dogs. Physical examination showed a mobile, tender mass in the anterolateral aspect of the thigh. Neither ecchymosis, nor erythema, nor signs of lymphadenopathy coexisted. A laboratory examination, including a complete blood cell count, serum chemistries, erythrocyte sedimentation rate testing, C-reactive protein testing, and a coagulation profile showed values within normal ranges. Ultrasound examination showed multiple cystic lesions located in the vastus lateralis muscle. Magnetic resonance imaging (MRI) scans showed multiple cysts located in the vastus lateralis muscle (Figure 1). The patient received a 6-month pharmacological therapy with albendazole 400 mg/bid, and a further MRI evaluation was then performed: scans revealed a 19×14×3.5 cm cyst. The mass contained round daughter cysts, and was characterized by a low signal intensity in T1-weighted scans and a high signal intensity in T2-weighted scans (Figure 2).

Since the MRI results were suggestive of hydatid cyst, further laboratory and imaging examination was carried out using ultrasonography and computed tomography scan to confirm the diagnosis and exclude other possible sites of involvement. Investigations showed no other sites of involvement. Results were discussed with the patient and the potential risks and benefits of a surgical excision of the mass were indicated, and an excision with wide margins is mandatory to avoid the rupture of the cyst and anaphylaxis. Adjuvant pharmacological therapy is recommended to minimize the risk of recurrence.

KEY WORDS: hydatidosis, cyst, vastus lateralis, muscle, excision.
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Surgery was carried out under general anesthesia. A lateral longitudinal incision was performed and the entire vastus lateralis muscle was removed, to preserve the membrane of the cyst. The surgical site was irrigated with hypertonic saline solution (3%), to reduce the risk of recurrence. Histological examination of the specimen revealed the lamellar membrane of the hydatid cyst, mixed type of inflammatory cells, connective tissue, histiocytes and necrosis. The patient received a 4-week postoperative pharmacological therapy with albendazole 400 mg/bid.

At the latest available examination one year postoperatively, the patient showed no signs of local recurrence.

Discussion

Hydatid disease is a parasitic infection caused by parasites of the Echinococcus type characterized by the formation of cysts in different organs and tissues. The Echinococcus natural habitat is the small intestine of carnivores (1, 6-8). Two species of Echinococcus (E. Granulosus and E. Multilocularis) cause cystic echinococcosis and alveolar echinococcosis in humans. The disease is particularly common in Asia, North and East Africa, South America, Australia and the Middle East. The liver is the most frequent (62%) site of involvement, followed by the lungs (20%) (1-3, 5-7). Less common sites of involvement

Figure 1 - a) Axial T1-weighted MRI scan before albendazole therapy showing multiple cysts in the vastus lateralis muscle. b) Coronal T2-weighted MRI scan before albendazole therapy showing daughter cysts with high signal intensity.

Figure 2 - a) Axial T2-weighted MRI scan after preoperative albendazole therapy showing the oval cyst in the vastus lateralis muscle. b) Sagittal T1-weighted MRI after preoperative albendazole therapy showing the oval cyst in the vastus lateralis muscle, containing round daughter cysts.
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include the kidney, the heart, the spleen, the pancreas, and the brain. Musculoskeletal echinococcosis is uncommon and accounts for only 3-5% of all cases. Several factors can explain the rare occurrence of muscular involvement: first, the muscle is considered an unfavorable habitat for the Echinococcus because of the high levels of lactic acid, which creates an unfavorable growth environment. Second, the role of hepatic barrier should also be considered (3).

A diagnosis of echinococcus should always be taken into account in the presence of a slowly growing soft tissue mass in patients who live in a rural areas, especially in known endemic areas or countries. As differential diagnoses, a skeletal muscle haematoma, abscess, benign soft tissue tumors, or soft tissue sarcoma should be considered. Ultrasonography, computed tomography and MRI scans play a key role in the diagnosis of hydatid disease. Garcia-Alvarez et al. (2) and Mseddi et al. (4) previously advocated the role of ultrasonography and MRI as gold standards to confirm the diagnosis before surgery. Notably, MRI is capable of adequately highlighting most of the characteristic features of hydatid disease, except calcifications (2, 9): a double-layer wall, the presence of daughter cysts and the water-lily sign are the specific features of hydatid disease; MRIs scans show the daughter cysts with high signal intensity or low signal intensity in T2-weighted images. The lower signal intensity of daughter cysts compared with the matrix of the mother cyst in T2-weighted images is a sign of the parasite death (9). On the other hand, computed tomography is the best tool for detecting cystic wall calcification and revealing the internal cystic structure posterior to calcification (1-3, 9).

While blood culture is not useful as a diagnostic tool. Immunodiagnostics can play an important complementary role in the context of primary diagnosis, as well as in the follow-up of patients after surgical or pharmacological treatment. Enzyme-linked immunosorbent assay (ELISA), indirect immunofluorescence test, immunoelectrophoresis (IEP) and immunoblotting (IB) are the routine laboratory tests for serological diagnosis. When AgB is used as antigen, both ELISA and IB have shown specificity of up to 100% and sensitivity of up to 89% and 92%, respectively (1-7).

Biopsy can be used for histopathological diagnosis, although it must be noted that infection can spread after direct inoculation; however, the current available literature does not recommend the routine use of biopsy in the diagnosis of hydatid disease (2, 3, 7).

A surgical treatment consisting of the cyst excision and pericystectomy are advisable for most of the patients. Rupture or spoilage of cysts should be avoided to prevent local or distant dissemination and immediate anaphylaxis: an excision with wide margins is therefore recommended. During surgery, irrigation with hypertonic saline should be carried out in order to remove scoleces (1-3, 8).

A preoperative and postoperative adjuvant pharmacological therapy should be administered to reduce the rate of local recurrence after excision. Mebendazole and albendazole are commonly used in hydatid disease; of them, albendazole should be preferred due to the better intestinal absorption and higher concentration within the cystic material (1-3, 8).

In summary, muscular echinococcosis is an extremely rare disease. A MRI evaluation should be taken into account as gold standard in the diagnosis. Surgical cystectomy is often indicated, and an excision with wide margins is mandatory to avoid the rupture of the cyst and anaphylaxis. Adjuvant pharmacological therapy is recommended to minimize the risk of recurrence.

Ethical standard statement

The patient gave the informed consent to the publication of the case study.

References