

## Muscular Location of the Hydatid Cyst on the Limbs (About 7 Cases)

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| Received: 13.03.2024 | Accepted: 20.04.2024 | Published: 23.04.2024

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**Abstract****Original Research Article**

Echinococcosis or hydatidosis is an anthrozoosis following development in humans and certain animals from the larva of a cestode transmitted by dogs: *Echinococcus granulosus*. The soft parts of limbs represent a rare location of this parasite. We present a retrospective study of a series of 7 cases of isolated and primary hydatid cyst (kh) in peripheral muscles. The preferred terrain was that of men of rural origin (85.7%), the average age is 43.4 years. Swelling that has been present for at least 3 months was the first reason for consultation. There is no change in general condition. The preferred seat was at the level of thigh muscles 6 times out of 7 (85.7%), including 4 at the level of the adductor compartment of the thigh. The diagnosis is based on imaging and immunological reactions and it was confirmed by histology. All patients benefited from a surgical excision supplemented by chemotherapy based on antiparasitics.

**Keywords:** Hydatid cyst - Muscle - ultrasound.

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### INTRODUCTION

The muscular location of the hydatid cyst is rare, even in endemic countries [1, 2]. It is a zoonosis caused mainly by the larva of *Echinococcus granulosus*, multilocular echinococcosis, *Echinococcus vogeli*, *Echinococcus oligarthrus* [3]. This primitive and isolated parasitosis continues to pose a public health problem. The diagnostic path must remain simple whatever the imaging means made available to the medical team. The aim of this work is to analyze the epidemiological, diagnostic, and therapeutic aspects of muscular hydatidosis; and to insist on the place that ultrasound must occupy in the preoperative diagnosis of this condition, while gradually addressing the means of diagnosis, prognosis and recommendations for therapeutic solutions which will make it possible to resolve the consequences of possible failure and to avoid recurrences.

### MATERIALS AND METHODS

This study focused on 7 cases of isolated hydatid cysts in peripheral muscles, collected between January 2019 and December 2023, observed in the Department of orthopedic surgery of Ibn Tofail Hospital in Marrakech). There were 6 men and 1 woman. The average age was 43.4 years with a range of 26 to 61 years. Origin and residence in rural areas were noted 5 times (71.4%), and the history of contact with dogs was present 6 times. Clinically, the progressive appearance of

soft tissue swelling, evolving for an average of 13.8 months (range 4 to 24 months), with preservation of general condition, was the primary reason for consultation (Figure 1). This swelling was painful 3 times, not associated with inflammatory signs or lymphadenopathy. Its topography is summarized in table one.



Figure 1: Painless mass on the inner side of the left thigh

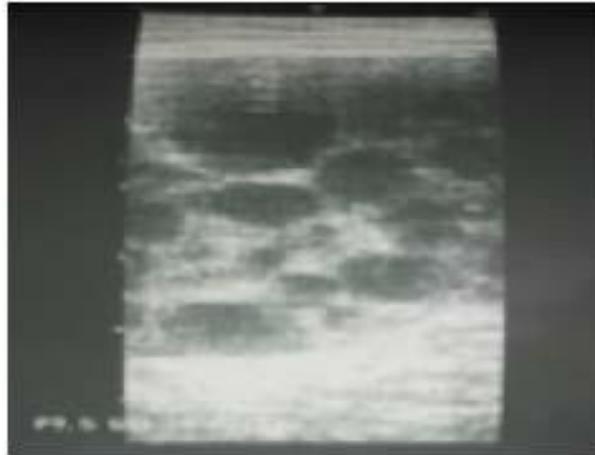
Table I: Location of lesions

Topography	Number of Cases
Medial compartment of the thigh	5
Posterior compartment of the thigh	1
Medial compartment of the arm	1

The locations were 4 times on the left in the lower limb and once on the right in the upper limb.

Systematic ultrasound examination of the swelling revealed signs suggestive of hydatid disease, which were

analyzed according to the Gharbi classification [4] as Type III for all patients (Figure 2).



**Figure 2: Cystic-looking image suggestive of KH**

MRI was done in 5 of our patients, it showed a hyposignal appearance on T1 and hypersignal on T2, with the presence of multiloculated cystic formations and

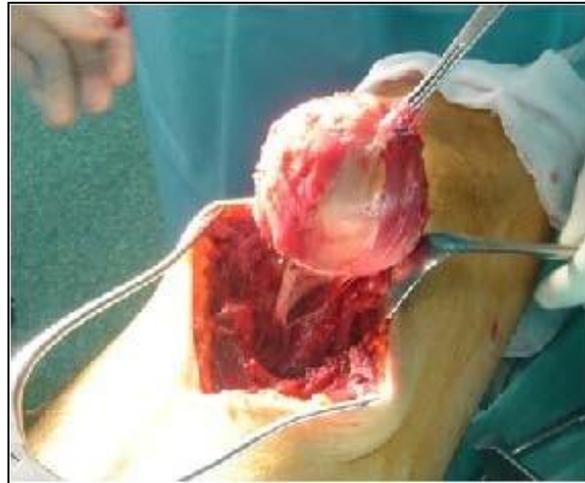
numerous daughter vesicles at the level of the muscular compartments (figure 3a and 3b).



**Figure 3a and 3b: multi-loculated cystic formation with numerous daughter vesicles compatible with a hydatid cyst**

Biologically, hypereosinophilia was present in 2 patients, and hydatid serology (indirect immunofluorescence, ELISA) came back positive 3 times out of 4. The extension assessment included a chest x-ray and an abdominopelvic ultrasound. He had not detected any other visceral localization, particularly hepatic or pulmonary. Surgical treatment was carried out

using a direct approach to the swelling. Single-piece excision passing through the peritumoral muscular tissue was possible 5 times (71.4%), while peri-cystectomy was subtotal in 2 cases due to adhesions of the pericyst. Opening of the cyst intraoperatively occurred twice, without anaphylactic shock resulting. Washing the cystic bed with hydrogen peroxide was systematic (figure 4).



**Figure 4: One-piece resection of the KH after its cleavage from the muscle**

## RESULTS

On the anatomico-pathological level, the macroscopic appearance of hydatidosis was typical at the

opening of the cystic tumor, which was confirmed by histology. The parasitized muscles are summarized in Table II: Table II: parasitized muscles according to the number of cases.

Parasited muscles	Number of cases
Adductores femoris	4
Triceps brachii	1
Hamstrings	1
Vast interne	1

The hydatid cyst was multivesicular in all patients with the presence of necrosis in one patient (figure 5).



**Figure 5: KH after opening its shell showing vesicles, membranes and purulent fluid. The average follow-up is 40 months (range 8 months to 10 years). A single recurrence was objected to by clinical examination after 10 years due to re-infestation. Serology decreased in all three patients**

## DISCUSSION

The frequency of muscular hydatidosis is currently decreasing, despite the diffusion of efficient imaging techniques. It is currently estimated between 1 and 5.4% of all hydatid locations [5, 6, 7]. This difference in estimates is due to the fact that old studies include muscular locations with cysts of subcutaneous cellular tissues [8, 9]. The muscle constitutes an environment that is not conducive to the development of the hydatid larva because of muscular contractility on the one hand and the production of lactate on the other hand [10]. Hexacanth embryos arriving in the digestive tract are most often stopped by the liver and lungs acting as real filters. A very small number of embryos enter the general circulation where they spread throughout the body. A certain number of muscle locations have been described, with the predominant participation of the neck, trunk and limbs, particularly those of the lower limb, such as we observed in our patients. In fact, the thigh muscles were affected 5 times out of 7 in our series (71.4%), including 4 times at the level of the adductor muscles of the thigh (57.1%). This selectivity for the proximal muscles would be related to the importance of blood flow. Furthermore, muscular hydatidosis is most often isolated primary [10], it is only associated with other hydatid locations in 8% of cases. Clinically, the symptoms of muscular hydatidosis are not specific. It is most often a soft tissue tumor, which grows very slowly, and may also suggest a cold abscess, myositis, or a calcified hematoma [11]. Sometimes, the picture is noisy, simulating a hot abscess or a malignant tumor of the soft tissues, when the cyst is cracked or superinfected. Rarely it is discovered when there are signs of nearby compression, particularly in hydatidosis of the psoas major muscle, which poses a diagnostic problem with retroperitoneal tumors themselves [12]. In endemic countries, rural origin and contact with dogs guide the diagnosis which must be made preoperatively. This allows both to avoid untimely procedures such as puncture or biopsy of the cyst, and to take measures to protect the operating field against possible hydatid dissemination with the risk of anaphylactic shock, by the use of fields soaked with a scolicide [10]. In this respect the contribution of ultrasound is considerable, it must be a first-line examination. In our series it made it possible to make the pre-operative diagnosis in all cases. Generally it is sufficient and reliable in 95% of cases [13]. CT, a more expensive examination, should be reserved for doubtful cases after ultrasound. As for MRI, it allows the diagnosis of hydatid cyst in its different evolutionary stages, in particular its rupture, it allows a better locoregional anatomical study and a good analysis of the cyst wall. This wall presents a characteristic hyposignal on all sequences but more evident on T2 weighting.

On the other hand, arteriography is of little interest, apart from the study of the relationship of the hydatid cyst with the vascular axes. However, it can be

misleading by showing signs of malignancy in the event of inflammation of the pericyst [12]. Furthermore, the biological diagnosis of muscular hydatidosis is difficult [14]. Hypereosinophilia is neither constant nor specific, and immunological reactions are often negative when the cyst is not cracked or remodeled [11]. However, they constitute a complement to clinical and imaging in diagnosis and especially in monitoring treatment [13]. The persistence of a high titer of antibodies or better a resurgence observed 6 months to 1 year after an intervention are in favor of secondary echinococcosis [14]. However, the treatment of muscular hydatidosis still remains surgical. Surgery is the most effective treatment, with significant morbidity of conservative surgical treatment that must be emphasized. Recent years have been marked by the development of percutaneous interventional radiology such as puncture-aspiration-injection and re-aspiration (PAIR), and percutaneous drainage without re-aspiration, which have made it possible to improve mortality and morbidity. hydatid cysts. Additional drug treatment is necessary to achieve complete curative treatment and avoid reinfestations. Prophylaxis is a real treatment which must act at all levels of the epidemiological chain [15].

## CONCLUSION

Muscular hydatidosis remains a rare and benign disease, provided you carry the pre-operative diagnosis using ultrasound, which makes it possible to avoid certain pitfalls such as biopsy or intra-operative opening of the cyst. Even with the development of interventional radiology; total pericystectomy remains the most effective treatment. However, as this is a parasitosis that is not very stable in its domestic biological cycle, and sensitive to control measures [15], it remains accessible to individual and general prophylaxis, which constitutes the real treatment.

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