

Soft tissue hydatid disease in eight patients at a Moroccan tertiary hospital *Clinical presentation, diagnostic challenges and surgical outcomes*

YACINE HAMID-ALLAH, MEHDI LAHLALI, MOHAMMED BENSABA, HATIM ABID, MOHAMMED EL IDRISSE, ABDELMAJID EL MRINI

Affiliation: Department of Osteoarticular Surgery B4, Hassan II University Hospital, Fez, Morocco

Corresponding author and email: yassinehamidallah15@gmail.com

Abstract: Background: Soft tissue cystic echinococcosis is an uncommon cause of a slowly enlarging limb mass. Its nonspecific presentation and potentially negative serology can delay diagnosis. This study describes eight surgically treated cases from an endemic setting. **Materials and methods:** A retrospective descriptive synthesis was conducted of eight histologically confirmed cases reported over five years in the Orthopaedics and Traumatology Department of Hassan II University Hospital, Fez, Morocco. Demographic characteristics, clinical presentation, imaging, treatment and outcomes were extracted from the original medical thesis. Analyses were descriptive. **Results:** Six patients were women and two were men; mean age was 39.25 years (range 21-64). Six patients originated from rural areas. Seven lesions involved the thigh or hip region and one the forearm. Mean symptom duration was 24.4 months. All patients underwent ultrasonography and magnetic resonance imaging. Indirect hemagglutination was negative in all seven tested patients. One lesion was initially interpreted on MRI as a tuberculous cold abscess. All patients underwent excision; one ruptured cyst was documented. Adjunctive medical treatment was reported in two patients, for recurrent disease and cyst rupture. No postoperative recurrence was reported over a mean follow-up of 27.5 months (range 12-60). **Conclusion:** Hydatid disease should be considered when assessing a cystic soft tissue mass in an endemic region despite negative serology. Imaging supports diagnosis and operative planning. Surgical outcomes were favorable, but the small cohort, incomplete reporting and variable follow-up preclude conclusions about comparative treatment efficacy or long-term cure.

Keywords: Cystic echinococcosis; hydatid cyst; skeletal muscle; soft tissue mass; magnetic resonance imaging; pericystectomy.

Introduction

Cystic echinococcosis is a zoonotic infection caused by the larval stage of *Echinococcus granulosus* sensu lato. Humans become accidental intermediate hosts after ingesting parasite eggs. The liver and lungs are the usual sites of disease, whereas soft tissue involvement is uncommon. Transmission persists in pastoral settings, and echinococcosis remains a public health concern in Morocco [1,2].

Muscular lesions often present as indolent swellings without fever or systemic deterioration. Their resemblance to benign tumors, chronic collections or other soft tissue lesions can obscure the diagnosis. Recognition before intervention matters because disruption of a viable cyst may cause dissemination or anaphylaxis [3]. Ultrasonography identifies cystic architecture, while magnetic resonance imaging (MRI) can demonstrate daughter cysts, membranes and relationships to adjacent structures [4,5].

This article examines the presentation, diagnostic work-up and outcomes of eight cases reported in a Moroccan medical thesis [6]. It focuses on the limitations of serology, the contribution of imaging and the interpretation of outcomes after surgical excision.

Materials and methods

Study design and setting

This retrospective descriptive case series was derived from the eight individual observations and aggregate results in Morchid's 2019 medical thesis [6]. Patients were treated in the Orthopaedics and Traumatology Department, designated B4 or Department 2 in the thesis, at Hassan II University Hospital in Fez, Morocco. The source describes a five-year study period but does not specify its calendar boundaries. All eight reported patients underwent surgery and had histopathological confirmation of hydatid disease. One presented with a local recurrence after previous surgery; the cohort was therefore not restricted to primary disease.

Data extraction and diagnostic assessment

Extracted variables comprised age, sex, rural or urban origin, exposure history, symptom duration, lesion location, clinical findings, laboratory investigations, imaging, operative treatment, adjunctive medication and follow-up. Patient-level observations were

checked against the thesis summary tables and results. Where reporting differed, detailed clinical descriptions were prioritized and unresolved discrepancies were retained as limitations. No access to the original hospital records, laboratory reports or imaging archive was available.

Ultrasonography and MRI were performed in all eight patients. Sonographic appearances were reported using the Gharbi classification [7]. These categories were retained as documented and were not retrospectively converted to WHO-IWGE stages [8]. Screening for hepatic and pulmonary disease was summarized in the thesis as abdominal ultrasonography and chest radiography. Serology included indirect hemagglutination, enzyme-linked immunosorbent assay (ELISA) and, in one patient, indirect immunofluorescence. Assay-specific denominators were reported only where clear.

Treatment outcomes and analysis

Operative excision, documented cyst rupture, adjunctive medical treatment, postoperative complications and reported recurrence were recorded. Follow-up was measured in months from the index operation. Counts and percentages describe categorical variables, and means and ranges describe continuous variables. Mean age, symptom duration and follow-up were checked against the eight case descriptions. No hypothesis testing, diagnostic accuracy analysis or treatment comparison was undertaken. Absence of recurrence refers to the available follow-up, without assuming a uniform surveillance protocol or lifelong cure.

Results

Patient characteristics and presentation

The cohort included six women (75%) and two men (25%), with a mean age of 39.25 years (range 21-64). Six patients (75%) were of rural origin. Dog contact was reported in six patients in the aggregate results, although exposure histories were less complete in individual observations. Seven patients (87.5%) had lesions in the thigh or adjacent hip region, and one had a left forearm lesion. Four patients had involvement centered on the thigh adductor compartment.

All patients presented with a localized swelling, generally enlarging gradually. Symptom duration ranged from 3 to 60 months, with a mean of 24.4 months. Pain was recorded as a presenting symptom in two patients and functional discomfort in one. All were afebrile and in preserved general condition, without overlying inflammatory changes or clinical neurovascular impairment. One woman had previously undergone surgery for a hydatid cyst at the same right thigh site. Table 1 summarizes the individual cases.

Table 1 Individual patient characteristics and follow-up

Case	Age / sex	Site	Symptoms months	Follow-up months
1	21 / F	Left forearm	12	60
2	32 / F	Left posterior thigh	60	18
3	55 / F	Left anterior hip and thigh ¹	18	36
4	31 / F	Right posterolateral thigh ²	24	30
5	43 / M	Right adductor compartment	36	36
6	64 / F	Right medial thigh ³	36	12
7	28 / M	Right adductor compartment	3	14
8	40 / F	Right adductor magnus	6	14

F, female; M, male. All patients underwent excision with histological confirmation. No postoperative recurrence was reported during available follow-up. ¹Ruptured cyst; adjunctive medical treatment reported. ²Recurrence after prior surgery; adjunctive medical treatment reported. ³Three cystic formations. Source: individual observations in the thesis [6].

Laboratory and imaging findings

Indirect hemagglutination was negative in all seven tested patients. ELISA results were also described as negative, but the number tested was not consistently specified. Indirect immunofluorescence was negative in the one reported patient. Two eosinophil counts

were labeled elevated in the thesis, although the reported absolute values were approximately 390 and 475 cells/ μ L; the laboratory reference thresholds were not provided. These findings do not support assigning a reliable prevalence of absolute eosinophilia.

The aggregate ultrasound results classified seven lesions as Gharbi type III and one forearm lesion as type I. MRI described predominantly cystic or multivesicular lesions, generally hypointense on T1-weighted and hyperintense on T2-weighted sequences. One patient had three distinct fluid-containing formations involving the gracilis, adductor magnus and adjacent intermuscular space. Screening investigations were reported as showing no hepatic or pulmonary localization.

Case 3 illustrated an atypical diagnostic pathway. MRI was interpreted as suggesting tuberculous hip osteoarthritis with fistulous tracts and an intermuscular cold abscess. Histology subsequently showed a granulomatous reaction around laminated acellular membranes compatible with a ruptured hydatid cyst, without caseous necrosis. The ultrasound description in this individual observation also differed from the aggregate classification. These discrepancies prevent a reliable estimate of the proportion correctly diagnosed before surgery.

Treatment and follow-up

All eight patients underwent surgical excision. The results section described removal without capsular breach in seven patients and a ruptured cyst in one. The precise timing of rupture in the latter case could not be established from the report. Adjunctive medical treatment was documented in two women: one treated for recurrent disease and one with a ruptured cyst. The agent, dose, timing and duration were not specified in their case descriptions.

Histopathology confirmed hydatid disease in all patients. Postoperative courses were reported as uncomplicated, with no subsequent recurrence during available surveillance. Mean follow-up was 27.5 months, ranging from 12 to 60 months. These results concern recurrence after the index treatment; they do not negate the pre-existing recurrence in case 4. Functional outcomes were described favorably but were not measured using a standardized score.

Discussion

Clinical recognition in an endemic setting

The principal clinical pattern was a persistent limb swelling with few systemic manifestations. The prolonged symptom history and predominance of thigh lesions resemble published muscular hydatid cases and small series [3,9,10]. This pattern has practical diagnostic value: preserved general health and lack of inflammation do not exclude parasitic disease. Conversely, the presence of a slowly enlarging mass cannot establish hydatidosis without appropriate imaging and diagnostic confirmation.

Women and rural residents predominated in this cohort, but eight selected surgical cases cannot define population risk. Other series show substantial demographic variation. Gougoulas et al. reported nine patients, predominantly older men, whereas Tekin et al. described 22 patients, of whom 15 were women [11,12]. Differences may reflect exposure, geography and referral patterns. The present findings support clinical awareness in an endemic setting rather than a sex-specific screening strategy.

Imaging and the limits of serology

Ultrasonography provides an accessible initial assessment of whether a mass is cystic and whether internal vesicles or membranes are present. MRI contributes anatomical detail, particularly for deep lesions and those near important nerves or vessels. The multivesicular appearances in this cohort are consistent with previous MRI reports [4,5,13]. The forearm case also shows why diagnostic suspicion should extend beyond the proximal lower limb; this uncommon location has been described independently [14].

Imaging findings nevertheless require clinical interpretation. The suspected cold abscess in case 3 demonstrates how an atypical or ruptured cyst may be mistaken for another infection. A contemporary series also emphasized that extremity hydatid cysts can resemble soft tissue tumors [15]. When imaging raises this possibility, an unplanned aspiration or biopsy should be avoided pending specialist assessment, because cyst disruption carries risks [3]. If tissue sampling is needed for an indeterminate lesion, it should be planned within an appropriate multidisciplinary pathway.

Negative serology was a prominent finding, with no positive indirect hemagglutination result among the seven tested patients. This cannot be interpreted as a general estimate of test sensitivity: the sample is small, assay details are incomplete and patients were selected after surgery and histological confirmation. In contrast, Gougoulas et al. reported positive indirect hemagglutination in six of nine muscular cases [11]. Research in hepatic echinococcosis has shown that antibody responses vary with cyst activity, size, number and recent treatment [16]. Those hepatic findings offer context but do not supply performance estimates for muscular disease. Serology should therefore remain complementary to imaging.

Surgical management and adjunctive treatment

Excision was followed by favorable reported outcomes in all eight patients. Complete removal without disrupting the cyst is a reasonable operative objective when anatomy permits. Similar approaches have been described in muscular case series, including the seven thigh cases reported by Madhar et al. [3,10]. The present observations support the feasibility of excision in selected patients, but the absence of a comparator prevents a claim that surgery is superior to every alternative.

The two indications for adjunctive medication were clinically distinct: established local recurrence and cyst rupture. Because the actual regimens were not recorded, the outcomes cannot be attributed to albendazole or any specified drug schedule. Broader expert consensus advocates management tailored to cyst stage, site, complications and available expertise [17]. For muscular disease, decisions about perioperative antiparasitic treatment require individualized assessment; this series cannot resolve the optimal indication or duration.

Percutaneous treatment has also been described for selected muscular cysts. Ormeci et al. treated five cysts in three patients using a modified percutaneous technique, with favorable reported outcomes [18].

Such limited experience does not justify routine puncture of an undiagnosed limb mass. The 2025 WHO treatment guidelines primarily address uncomplicated hepatic cysts and selected pulmonary disease, so their stage-based recommendations should not be transferred directly to soft tissue lesions without specialist judgment [19].

Surveillance and study limitations

No recurrence was reported, but follow-up varied substantially and four patients were observed for only 12-18 months. Delayed recurrence therefore remains possible. Literature on hepatic recurrence identifies spillage and residual viable parasitic tissue as relevant mechanisms and supports dedicated follow-up [20]. Although recurrence rates from hepatic disease cannot be applied to this cohort, the same concern about residual infection makes continued clinical and imaging surveillance reasonable. Negative baseline serology limits its usefulness as the sole follow-up tool.

This study is limited by its retrospective, single-center design and small sample of surgically treated patients. It cannot estimate prevalence, diagnostic accuracy or comparative efficacy. Selection criteria, calendar dates, surveillance intervals and standardized functional outcomes were not fully reported. Chest radiography and abdominal ultrasonography did not reveal additional disease, but this does not exclude every extra-muscular focus. The source also contains discrepancies: its abstracts state that no medical treatment was used, whereas the detailed observations and results describe two treated patients. The timing of cyst rupture and some ultrasound findings remain uncertain. Ethics approval and consent procedures were not specified in the source report.

Despite these limitations, the series illustrates a recurring diagnostic problem in endemic practice. A slow-growing cystic limb mass warrants consideration of echinococcosis, including when serology is negative. Prospective collection of assay methods, operative findings, medication exposure and uniform imaging follow-up would strengthen future evidence on muscular disease. Prevention remains dependent on interrupting transmission through dog deworming, safe management of infected offal and public education [1].

Conclusion

Soft tissue hydatid disease should be included in the differential diagnosis of a persistent cystic limb mass in endemic regions. In these eight patients, ultrasonography and MRI supported assessment, while serology was negative where clearly documented. All underwent surgical excision, and two received unspecified adjunctive medical treatment. No recurrence was reported over a mean of 27.5 months. These encouraging descriptive outcomes support careful preoperative recognition and individualized management, with longer, standardized follow-up needed before durable cure can be inferred.

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