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Primary extra hepatic hydatid cyst of the kidney: A case report

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Abstract

Human echinococcosis (hydatid disease) is highly endemic in Morocco and reemerging as a significant public health problem in this country. It is a cyclozoonotic infection introduced by *Echinococcus granulosus*, that can invade any organ in the human body. The liver is the mostly affected organ, which is the primary site of human infestation, followed by lungs. Renal involvement by hydatid disease is commonly secondary, occurring owing to primary cyst rupture or disseminated disease. Primary renal localization, often presented as solitary cysts with no visceral involvement, is uncommon even in endemic zone. Herein, a rare cause of renal mass due to an isolated hydatid cyst in a 56-year-old woman who presented with ambiguous left flank pain for the last 10 years. Findings imaging did not reveal any other localizations of hydatid disease. For this scolicidal effect and to prevent peritoneal seeding, the patient was placed on albendazole 400 mg. Three weeks later, the surgery was performed successfully with a left total nephrectomy.

Keywords

Renal mass, primary hydatid cyst, imaging

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Introduction

Hydatid disease, or cystic echinococcosis, is known since the ancient times, and Hippocrates first described it as being located in the liver. it is a neglected zoonosis, caused by cestode larvae called *Echinococcus granulosus* and is still endemic in many rural areas in North Africa, the Middle East, South America, Australia, New Zealand, Alaska, and northern China.[1,2] In Morocco, the prevalence of this pathology in humans is underestimated with an annual increase in the number of cases.[3]

Renal hydatid cyst is a rare condition, it occupies the third position after the classic localizations (liver and lung). It is estimated to be between 2% and 4% of all visceral locations.[4]

The diagnosis is based mainly on imaging, including ultrasound imaging, computerized tomography (CT), and magnetic resonance imaging (MRI) while the recommended treatment is surgical excision, but this surgery needs to be meticulous, to prevent parasite swarming. It is associated with medical treatment, preoperatively to reduce the risk of intraperitoneal seeding and recurrence of infection.

Case report

A 56-year-old woman without medical history presented with a 10-year history of left lumbar pain. However, there was no history of nausea, vomiting, burning micturition, hematuria, or fever.

The physical examination was unremarkable, except for the palpable mass in the left upper quadrant.

Tests showed normal renal function (creatinine 0.9 mg/dl, urea 30 mg/dl, and eGFR (89 ml/min/1.73 m^2). No pathological findings in urinary sediment).

Additionally, routine laboratory investigations (complete blood count, coagulation profile, biochemistry, liver function test, and electrolytes) were normal except for mild eosinophilia.

A multivesicular formation was discovered by abdominal ultrasonography involving the upper pole of the left kidney and measuring 11.6 cm × 5.5 cm. This formation had the characteristic "honeycomb like" appearance. There is no evidence of solid components.

A hydatid cyst type III was evoked (Figure 1).

For further diagnosis, our investigation with CT-scan showed an anterior exophytic left renal mass with cortical

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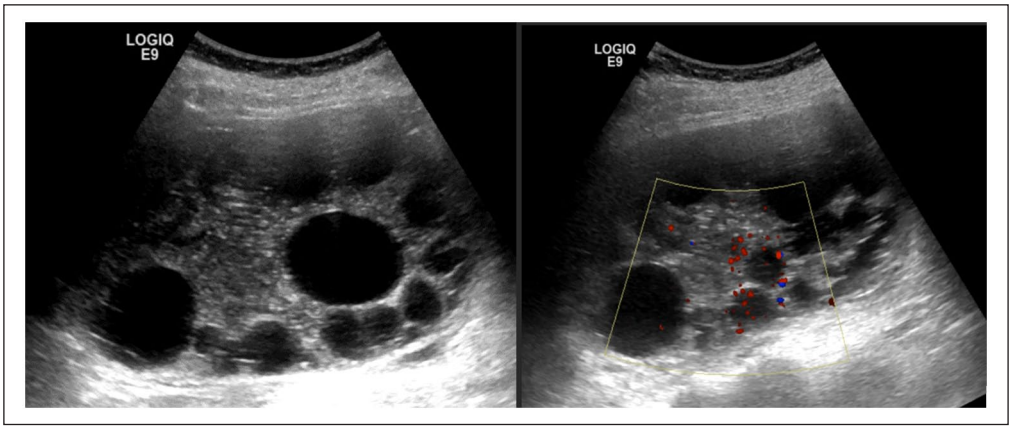

Figure 1. Abdominal ultrasound shows a huge multicystic lesion on the upper pole of the left kidney with a honeycomb appearance representing daughter cysts. GharbiII-CE2.

Figure 2. (a) Pre-contrast CT abdomen and pelvis showed a large wall well-defined multicystic mass is seen arising from the upper renal pole, showing thick septations. (b) post-contrast scan showed no significant enhancement.

development, well defined with a calcified wall, measuring approximately 13.8 cm × 6.8 cm × 5.8 cm (CC × TR × AP) and showing thick septations, without a solid component. There is no significant post-contrast enhancement. (Figures 2 and 3). The diagnosis of a hydatid cyst was retained.

Serological tests for hydatidosis were negative in our patient.

The patient was placed on albendazole 400 mg. Three weeks later, the surgery was performed with a left total nephrectomy. The diagnosis was confirmed intraoperatively by macroscopic data: A cystic tumor shaped like a grape.

The operating suites were simple. There is no recurrence after 1 year of decline.

Discussion

Hydatid disease, an endemic parasitosis in Mediterranean countries, caused by the development of the cysts containing the larval stages of *Echinococcus granulosus* tapeworm.[1]

Primary renal hydatic cyst is very rare and has been mostly reported in association with hepatic, pulmonary, or multi-organ hydatidosis.[2]

Clinical signs of the renal hydatic cyst are highly variable and non-specific, according to the size and extent of the cyst.

The most frequent symptom is an abdominal mass syndrome that is often associated with signs varying from general to urinary tract symptoms. Hydaturia is the only pathognomonic sign results from the rupture of a hydatid cyst into the collecting system. There are different incidences of hydatiduria in literature; a study by Horchani et al. reported it to be 28%; a study by Göğüş et al. reported it as 5% and in the study conducted by Mehmet Demir, no cases were observed.[4,5]

Ultrasound is the first-line imaging, but the CT scan allows for better further workup of lesions.

The ultrasound appearance of hydatid cysts varies with the stage of evolution and has been detailed in the work of Gharbi (Table 1). It is the oldest classification and most

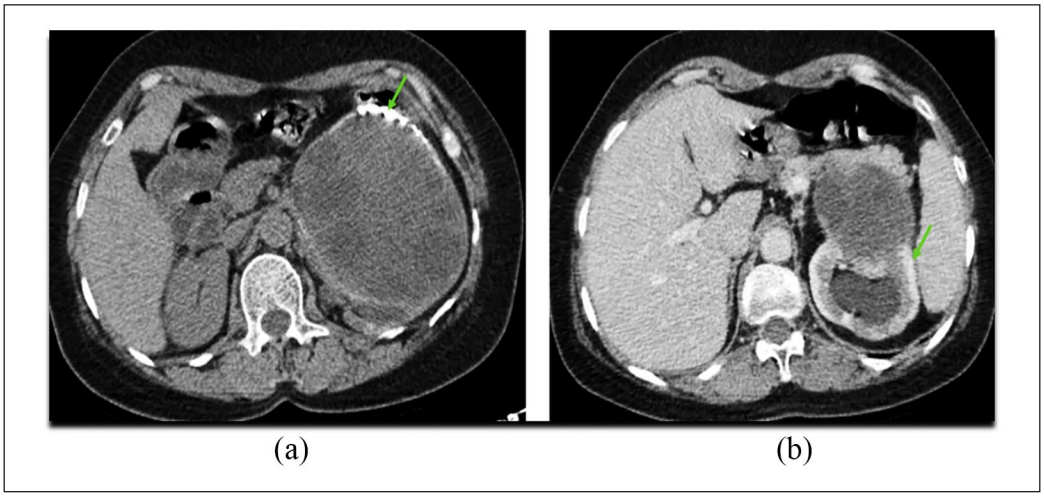

Figure 3. (a) Pre-contrast CT abdomen and pelvis showed a large wall well-defined multicystic mass with partially calcified margins. (b) post-contrast scan showed exophytic cortical development of the mass.

Table 1.

Gharbi	WHO-IWGE	Sonographic characteristics
—	CL	Unilocular cyst, anechoic, no wall depicted
Type 1	CE1	CL characteristics + wall mobile internal echogenicities
Type 3	CE2	Multivesicular, multiseptated cyst, daughter cysts, honeycomb pattern
Type 2	CE3	Detached member (water lily sign)
Type 4	CE4	Heterogeneous, hypo-, or hyperechoic cyst, no daughter vesicles
Type 5	CE5	Cyst with a partial or complete wall calcification

CL: cystic lesion; CE: cystic echinococcosis.

widely used, and differentiates five types of hydatid cyst: Type I: pure cystic lesion; Type II: cystic lesion with total or patchy detachment of membranes; Type III: multivesicular lesion with endo cavitary daughter vesicles ("honeycomb" appearance); Type IV: solid pseudo tumoral lesion; Type V: cyst with calcified wall.

In our case, the ultrasound appearance corresponds to Gharbi stage III. The WHO-IWGE classification allows to define the staging of hydatid cysts based on morphologic aspect, the degree of parasite activity and to guide management depends on this staging. This classification has six stages; we present a comparison of the two classifications (Table 1).

CT findings highly suggestive of renal hydatic cyst include: a cortical de development of the tumor syndrome, low-density mass; any enhancement of cyst wall or septations; and calcifications.

CT help for diagnosis, lesion mapping and also guide management by evaluating the amount of healthy parenchyma remaining for possible conservative surgery.

On MRI, hydatid fluid is hypointense on T1-weighted images and hyperintense on T2-weighted images. The characteristic hypointense rim sign is more evident on T2-weighted images.[6]

Despite being a benign disease, multiple complications can occur, such as vascular compression, rupture, cyst infection, shock, sepsis, and death.

Intraperitoneal dissemination remains a rare complication requiring vigilance and meticulous surgery to ensure that the abdominal cavity is protected from parasite swarming. Sengul et al.[7] have reported an exceptional case of secondary hydatidosis, which rarely occurs during surgical treatment of hydatid cysts. The research has documented and demonstrated that the spread of the cyst into the abdomen, insufficient cystic resection, and the chosen surgical approach are significant factors in the disease's recurrence.

For this reason, the extra-peritoneal lumbotomy approach is recommended.

Sterilization of the cyst by intracystic injection of a scolicidal solution and isolation of its contents with impregnated compresses are intraoperative trends to avoid projection of scolex and daughter vesicles, which are at the origin of peritoneal infestation.[8]

Chemotherapy with albendazole compounds should be used preoperatively to sterilize the cyst, decrease the chances of anaphylaxis, and reduce the complications and recurrence rate post-operatively.[6]

Renal hydatic cyst must be differentiated from benign cysts, tuberculosis, abscesses, or complex benign cysts like renal lymphangioma, angiomyolipoma and particularly malignancies including renal cell carcinoma.[8]

Kidney-sparing surgery is the reference treatment, but various options are available: pericystectomy, partial nephrectomy, and total nephrectomy.[9]

In our case, a left total nephrectomy was performed because of the small amount of residual viable tissue and to cyst size.

Conclusion

Primary extrahepatic hydatid cysts of the kidney is very rare, even in an endemic country, but should be taken into consideration in the differential diagnosis of single or multiple renal cystic lesions.

Ultrasound, computed tomography, and MRI make a great contribution to the diagnosis and to guiding the therapeutic strategy.

Preoperative albendazole therapy is known to reduce the risk of intraperitoneal seeding and recurrence of infection after surgery.

Not forgetting to emphasize the importance of prevention, particularly in endemic areas.

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Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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