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Urology Case Reports

journal homepage: www.elsevier.com/locate/eucr

Inflammation and infection

A case report of hydatid cyst in the right kidney of a 58-year-old woman

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ABSTRACT

This study focused on a rare case of an isolated renal hydatid cyst. A 58-year-old asymptomatic woman was referred to the urologic clinic after an abdominal computed tomography (CT) scan revealed a renal cystic mass. While immunologic tests were normal, the final diagnosis was a renal hydatid cyst after radical nephrectomy of the affected kidney. We believe isolated occurrence of hydatid cysts is rare.

1. Introduction

A hydatid cyst is a parasitic infection caused by the larval stage of the *Echinococcus* tapeworm.¹ The hydatid cyst commonly involves the liver because it is the first line of defence and, less commonly, the lungs, and only 4 % of cases showed renal involvement. Isolated renal involvement was rarely reported.² A renal hydatid cyst can be reached through multiple imaging modalities, including ultrasound imaging and computed tomography (CT) scans, but it may be a diagnostic dilemma resembling a cystic renal cell carcinoma (CRCC).³ The treatment of choice is surgery.¹ This report describes a rare case of an isolated renal hydatid cyst that was managed by radical nephrectomy of the affected kidney.

2. Case report

A renal cystic mass seen by an abdominal CT scan led to the referral of a 58-year-old asymptomatic woman to the urologic clinic. She resided in a rural setting near Ardabil province, in Iran's north. She had experienced controlled hypertension and a transient ischemic accident (TIA) six months prior. Her physical examination was unremarkable, and her vital signs were within normal limits. The results of the complete blood count, electrolytes, renal and liver function tests, and urine analyses are all within normal ranges. A contrast-enhanced CT scan of the abdomen revealed a partial enhanced, multiloculated solid-cystic mass with a calcified wall and thickened septae measuring 80 × 76 × 72 mm located in the mid and lower poles of the right kidney extending to the renal sinus (Bosniak 3; Fig. 1 a,b). The *Echinococcus* IgG and IgM antibody test results were negative. There was no evidence of eosinophilia. The

patient was admitted to the hospital and underwent a right radical nephrectomy since it was thought that she might have renal cell carcinoma. The specimen was sent to the pathology department. A well-defined cystic lesion (7.5 × 6 × 5.5 cm) was detected on gross examination in the renal parenchyma, which contained many white, soft, variable-sized cystic lesions filled with clear, colourless fluid (Fig. 2). Tissue sections revealed an acellular laminated membrane with protoscolices, which confirmed the diagnosis of a hydatid cyst (Fig. 3a,b,c). The patient had no complications postoperatively and was discharged from the hospital.

3. Discussion

Hydatid cysts are a major public health concern worldwide, particularly in endemic areas.⁴ The kidneys are an uncommon target because hydatid cysts often affect the liver and lungs. Radiology plays a significant role in disease diagnosis and evaluation. The size of the mass, surface characteristics, the presence of a daughter cyst, and other associated regional abnormalities can all be determined by ultrasound. Ultrasonography has little specificity in identifying hydatid disease in appearance, and other lesions, such as necrosed tumours, can imitate hydatid cysts. CT and magnetic resonance imaging (MRI) are more accurate methods of imaging. CT scan is useful because it reveals cystic lesions and calcification, which can manifest as thick, unilocular, or multilocular heterogeneous cysts or the existence of low-density offspring cysts. The unilocular appearance of type 1 cysts, which lack internal architecture, corresponds to the earliest developmental stage. Multiple daughter cysts are visible in type 2 cysts, which are in an intermediate stage of parasite development, whereas type 3 cysts are

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<https://doi.org/10.1016/j.eucr.2023.102646>

Received 12 November 2023; Received in revised form 17 December 2023; Accepted 26 December 2023

Available online 30 December 2023

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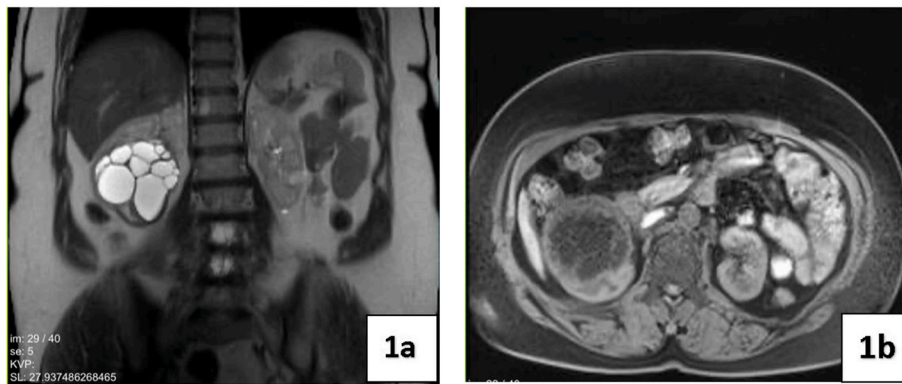


Fig. 1. (a,b) CT scan showing multiloculated renal mass.



Fig. 2. Numerous daughter cysts isolated from the excised kidney.



Fig. 3b. Acellular lamellated hyaline ectocyst, 10X, H&E.

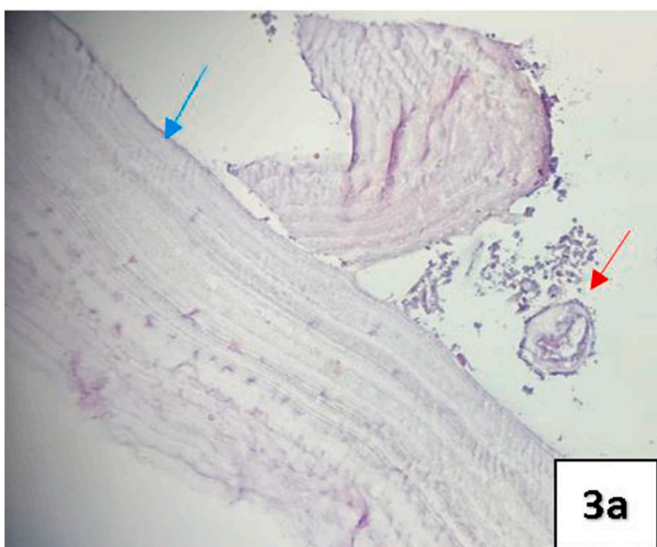


Fig. 3a. Acellular lamellated hyaline ectocyst (blue arrow) and a scolex (red arrow), 4X, H&E. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

totally calcified, reflecting the deceased parasite.⁵

On MRI-T1W images, hydatid fluid is depicted as being hypointense; yet, on T2W images, it is shown as being hyperintense or heterogenous with a surrounding hypointense rim. Both hypointense and hyperintense fluid can be seen in the daughter cysts.

Primary renal hydatidosis typically has negative serological markers. Although the specificity and sensitivity of immunological assays are limited, they can be used as an epidemiological tool to track transmission.⁶ Eosinophilia is also not a common symptom.²

Fine needle biopsy seems to be a diagnostic method in evaluating patients with suspected hydatid disease, but performing a biopsy from a hydatid cyst is dangerous because of the risk of anaphylaxis. In this case, regarding the patient's status, we preferred not to do a biopsy. Due to the risks of biopsy for the patient, the patient was scheduled for nephrectomy. Although nephrectomy also has risks, due to the large size of the cyst and the lack of significant normal kidney tissue, this decision was taken. final pathology showed a hydatid cyst.

Hydatid cysts can have a variety of differential diagnoses, such as simple renal cysts, calcified hematomas, cystic nephroblastomas, or renal abscesses. Surgery is the preferred course of treatment because medicinal care and interventional radiological therapies are inadequate.

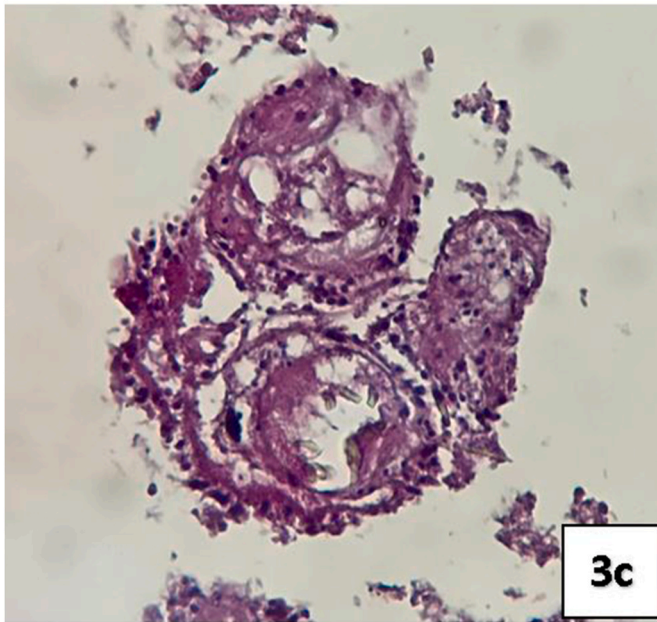


Fig. 3c. Protoscolex, 40X, H&E.

Laparoscopic and laparotomic procedures both have positive outcomes. The size of the cyst, the presence of invasion to surrounding structures, the existence of additional or multiple renal cysts, and the findings of renal function testing all have a role in the surgical procedure that is

chosen.

4. Conclusion

Hydatid disease is a major health problem in endemic regions such as Iran. Although isolated renal involvement is a rare disease, it should be considered in the differential diagnosis of the renal mass.

CRedit authorship contribution statement

Mahsa setayeshfar: Writing – original draft, Formal analysis. **Hossein Rahnama:** Project administration, Writing – review & editing. **Azadeh Rakhshan:** Supervision. **Amirreza abedi:** abedi, Data curation, Supervision.

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