

A rare case of renal hydatid cyst in an elderly patient

Khaled Abdelsattar Gad Ibrahim

khaledagaduro@gmail.com

Military Medical Academy

Mohamed Maher Soliman

Military Medical Academy

Esmail Mohamed Saber

Military Medical Academy

Case Report

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Abstract

Hydatid disease is a zoonotic parasitic infection caused by the larval form of *Echinococcus granulosus*, transmitted to humans through ingestion of parasite eggs. It is characterized by cyst formation in various organs, most commonly the liver and lungs. Renal involvement is rare, accounting for a small proportion of cases, and may present a diagnostic challenge due to its nonspecific clinical and radiological features. Other less frequently affected sites include the brain, heart, bones, and spleen.

In the present scenario, a 65-year-old man had been experiencing left-sided flank pain for three months. A thorough examination that included radiographic and laboratory testing revealed a complicated cystic lesion of the left kidney. After that, complete excision of the cyst without renal parenchymal resection

Introduction

Cystic echinococcosis is a parasitic zoonosis caused by the larval stage of *Echinococcus granulosus*, in which humans serve as incidental intermediate hosts. and humans act as accidental hosts (1).

Human infection usually occurs through ingestion of parasite eggs contaminating food, water, or soil, or through direct contact with infected dogs. Tables polluted with canine waste harbor parasite eggs. After digestion, the eggs break open in the digestive system and move into the intestines. via the mucus and penetrate the bloodstream (2). Infection can additionally be acquired through direct contact with infected canids. Effective prevention strategies include regulation of livestock feeding, rigorous pre-market meat inspection, freezing at -18°C , and sufficient thermal processing at temperatures above 50°C , thereby limiting transmission within the population (3).

The liver and lungs represent the most frequently involved organs, whereas renal involvement remains uncommon. although involvement of other sites such as the heart, breast, cervical soft tissues, and kidney is uncommon. In humans, cysts are frequently asymptomatic and are often identified incidentally, with symptoms typically arising secondary to gradual cyst expansion. Hydatid disease should be included among the key differential diagnoses in the assessment of cystic renal masses (4).

Case presentation

A 63-year-old male presented with a 3-month history of continuous, localized left flank pain. He denied hematuria, dysuria, urinary frequency, fever, chills, weight loss, or loss of appetite. His vital signs were stable on examination. Contrast-enhanced CT scans of the abdomen and pelvis are shown in Figures (1 and 2)

Contrast-enhanced computed tomography (CT) demonstrated a moderately sized, well-defined, multiloculated cystic mass arising from the lower pole and interpolar of the left kidney. The lesion exhibited a thin wall, with evidence of calcification and some contrast enhancement.

A key point of interest in this case is the diagnostic challenge posed by its atypical radiological appearance. Despite being from an endemic region such as Egypt, neither the CT nor the ultrasound findings were suggestive of hydatid disease. No daughter cysts, detached membranes, or characteristic 'water-lily sign' were identified, making preoperative radiological diagnosis of hydatid disease difficult. The lesion was interpreted as a complex renal cyst. Consequently, hydatid disease was not considered in the preoperative differential diagnosis. The diagnosis was unexpectedly confirmed only after histopathological examination of the surgical specimen. The absence of classical hydatid features significantly limited preoperative diagnostic suspicion. The lesion therefore mimicked a Bosniak III–IV complex renal cyst, and cystic renal neoplasm remained the primary differential diagnosis Figures (1 and 2).

Laboratory investigations were within normal limits, with no evidence of eosinophilia. Urinalysis was unremarkable, and no parasitic elements were identified. Due to the atypical radiological appearance and the absence of classical features suggestive of hydatid disease, serological testing for echinococcosis was not performed preoperatively.

Although partial nephrectomy was initially planned based on the radiological suspicion of a complex renal cystic mass, intraoperative findings demonstrated a well-encapsulated cyst located within a sub capsular plane and completely separable from the renal parenchyma. Consequently, complete cyst excision was successfully performed without hilar clamping or renal ischemia.

The lesion was carefully dissected and completely excised intact without rupture. The renal parenchyma was preserved. Meticulous care was taken to avoid cyst spillage given the potential diagnosis of an atypical cystic lesion. The surgical field was irrigated, hemostasis secured, and a drain was placed before closure.

The specimen was sent for histopathological examination. Hemostasis was secured, and the wound was closed in layers. A surgical drain and urinary catheter were inserted at the end of the procedure Figure (3).

Following histopathological confirmation of hydatid disease, the patient was referred for infectious disease consultation and received postoperative Albendazole therapy to minimize the risk of recurrence

A minor postoperative complication occurred, as the patient developed abdominal pain. A non-contrast CT scan was performed, which revealed a small collection at the surgical site. This postoperative collection resolved with conservative management, and no recurrence or further complications were observed during follow-up, Figure (4).

Following histopathological confirmation of hydatid disease, the patient was commenced on Albendazole therapy (400 mg twice daily). This was administered for 4 weeks postoperatively to reduce the risk of recurrence and to eliminate any potential residual or undetected parasitic elements. Liver function tests were monitored during treatment and remained within normal limits

At 3-month follow-up, the patient remained asymptomatic with no radiological evidence of recurrence.

Discussion

Hydatid cyst disease is a significant zoonotic infection with considerable public health and economic implications, particularly in endemic regions. It is caused by the larval stage of *Echinococcus granulosus* and can affect both humans and animals. Egypt is considered an endemic area for cystic echinococcosis, although the true incidence remains uncertain due to underreporting and lack of comprehensive surveillance systems (5).

Transmission is facilitated by close contact with dogs, poor sanitation, and livestock exposure in endemic rural communities. In Egypt, important risk factors include rural residency, certain occupations such as farming and household work, and younger age groups, particularly those under 40 years, a pattern also reported in other endemic countries such as Iran, Lebanon, and Turkey. Renal involvement occurs when *Echinococcus* embryos bypass the hepatic and pulmonary filters and enter the systemic circulation. Through hematogenous dissemination, the larvae may reach the renal parenchyma, where they gradually develop into hydatid cysts. This mechanism explains the rarity of isolated renal hydatid disease compared with hepatic and pulmonary involvement) (6, 7).

Accurate diagnosis of hydatid cysts relies on a combination of clinical assessment and adjunctive investigations, including serological tests and imaging modalities such as ultrasonography, CT, and MRI. However, both radiological and serological findings are often non-specific, which may limit diagnostic certainty. Therefore, definitive diagnosis is typically established through histopathological examination of the excised tissue following surgery (8).

Renal hydatid disease represents an uncommon form of extrahepatic echinococcosis and may mimic other cystic renal lesions. Although hydatid disease predominantly affects the liver and lungs, involvement of atypical sites such as the kidney, brain, pancreas, and breast is rare. The absence of characteristic clinical and radiological findings in renal involvement often makes preoperative diagnosis difficult, with many cases initially mistaken for complex renal cysts or cystic renal neoplasms (9).

Existing literature suggests that renal hydatid cysts are uncommon, with previous reviews listing only a few cases, typically occurring in females of a relatively young average age. Later research indicates a trend towards younger demographics, showing a rise in cases documented among children. In contrast, our case featured a 65-year-old man, emphasizing that renal hydatid disease, while rare, can also present in older individuals and beyond the usual demographic profile (10).

The differential diagnosis of renal hydatid cyst includes complex renal cysts, cystic renal cell carcinoma, renal abscess, necrotic tumors, and other retroperitoneal cystic lesions. In endemic areas, hydatid disease should remain a diagnostic consideration even when classical imaging findings are absent. Failure to recognize hydatid disease preoperatively may increase the risk of intraoperative cyst rupture,

dissemination, anaphylactic reaction, and disease recurrence. Therefore, careful preoperative evaluation and meticulous surgical handling are essential (3, 10).

Surgery is the primary and conclusive treatment, and complete excision of the cyst is crucial to avoid recurrence. Medical treatment with medications like Albendazole and Mebendazole is advised when surgery is not an option and can also be utilized before surgery to lower the chance of cyst spread. These agents are generally more effective in younger individuals (10).

Recurrence may occur either locally or at distant sites, most commonly due to intraoperative spillage of cyst contents. Therefore, careful surgical procedures are essential to reduce the chances of spread and recurrence (9–10).

Conclusion

Renal hydatid cyst should be considered in the differential diagnosis of complex renal cystic lesions, particularly in endemic regions. As hydatid disease predominantly affects the liver and lungs, its occurrence in unusual sites such as the kidney creates considerable diagnostic difficulty. It must be differentiated from more commonly encountered cystic lesions, including neoplastic cysts, para pancreatic lesions, and other peri renal cystic structures, to prevent misdiagnosis and inappropriate treatment.

Clinically, the disease typically manifests as a gradually enlarging cystic mass in a patient who is otherwise asymptomatic, which can further complicate early recognition.

Declarations

Author Contributions

Khaled Abdelsattar Gad Ibrahim is the corresponding author, contributed to study conception, patient management, manuscript drafting, and final revision. **Mohamed Maher Soliman** and **Esmail Mohamed Saber** contributed to manuscript revision, literature review, and supervision. All authors approved the final manuscript.

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Conflict of Interest

The authors declare no conflict of interest.

Ethical Approval

Ethical approval for this case report was waived by the **Ethics Committee of the Armed Forces College of Medicine, Egypt**, in accordance with the institutional policy for single case reports.

Informed Consent

written informed consent was obtained from the patient for publication of this case report and accompanying images.

Data Availability Statement

The datasets generated or analyzed during the current study are available from the corresponding author on reasonable request.

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Figures

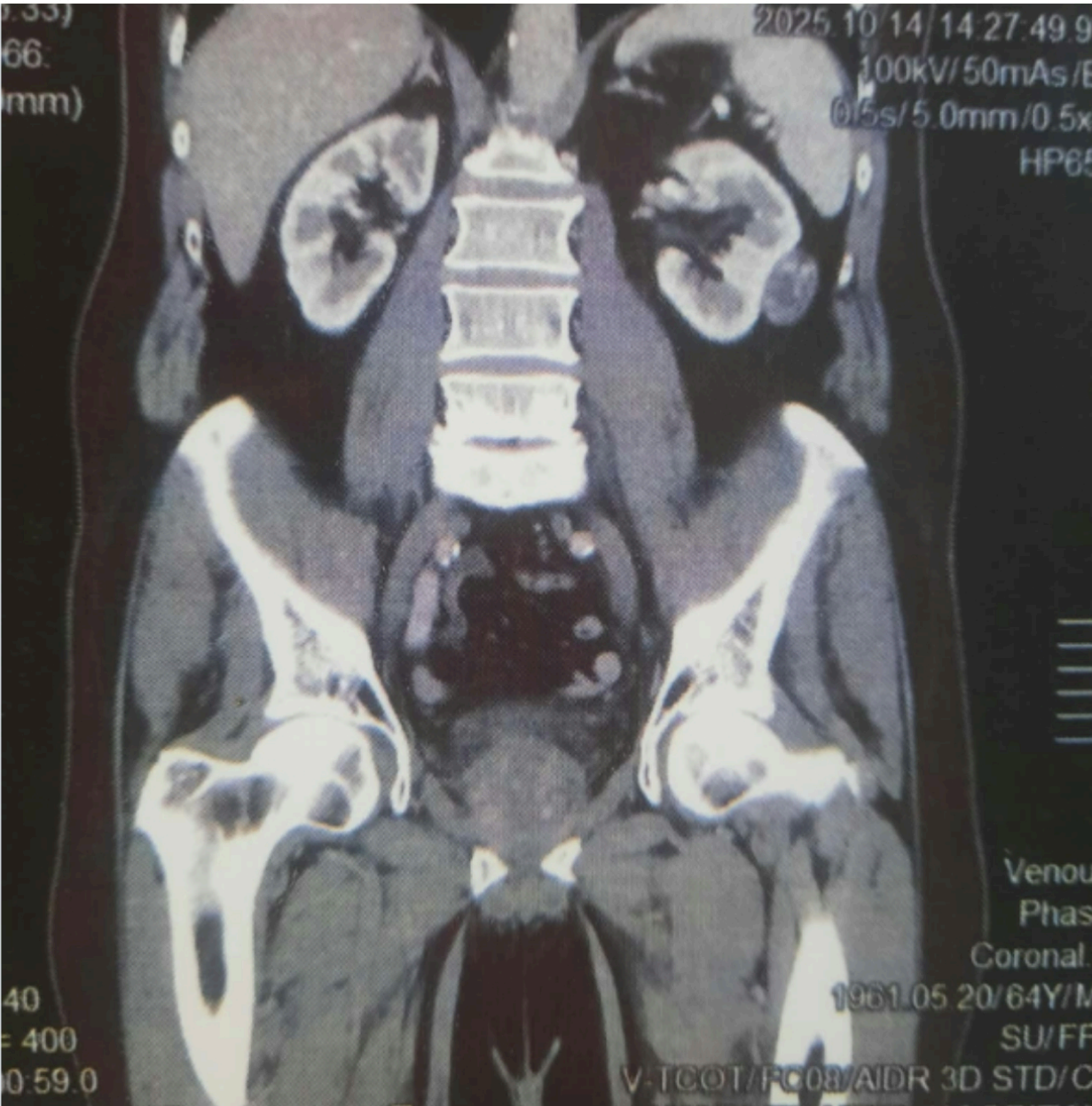


Figure 1

Coronal view of abdominal and pelvic CT scan with injected contrast of renal hydatid cyst

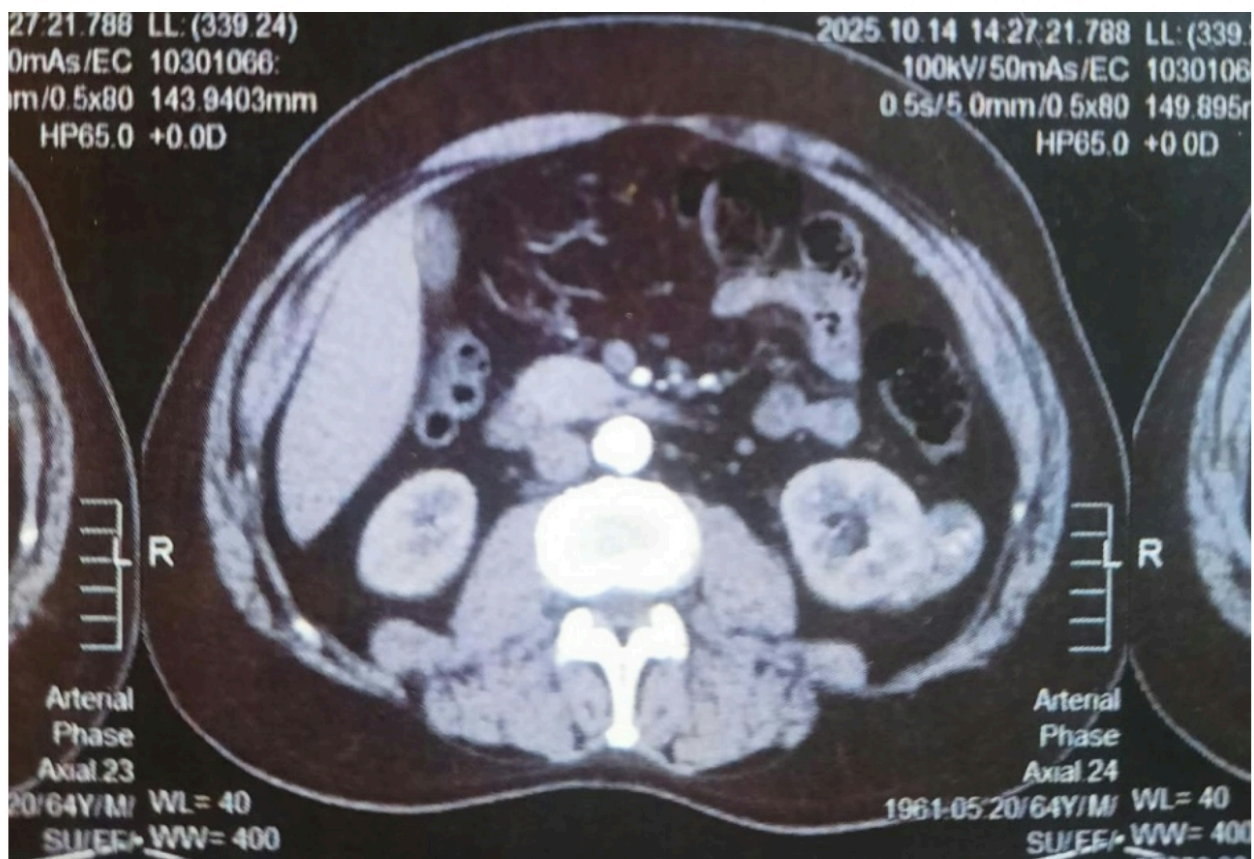


Figure 2

Axial view of abdominal and pelvic CT scan with injected contrast of renal hydatid cyst.

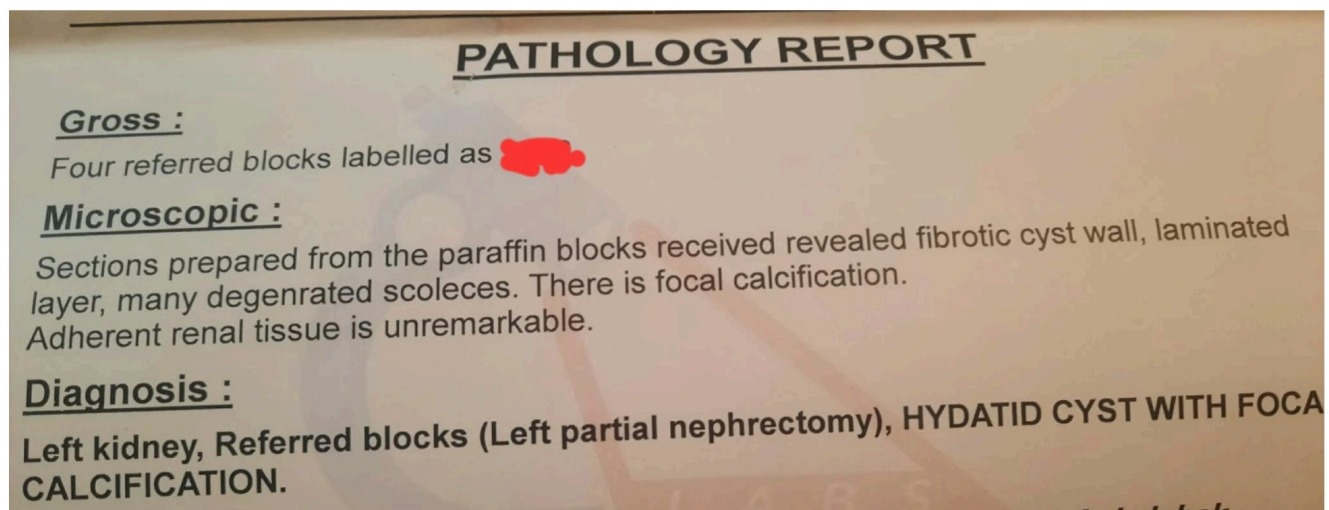


Figure 3

Pathology report of the specimen.

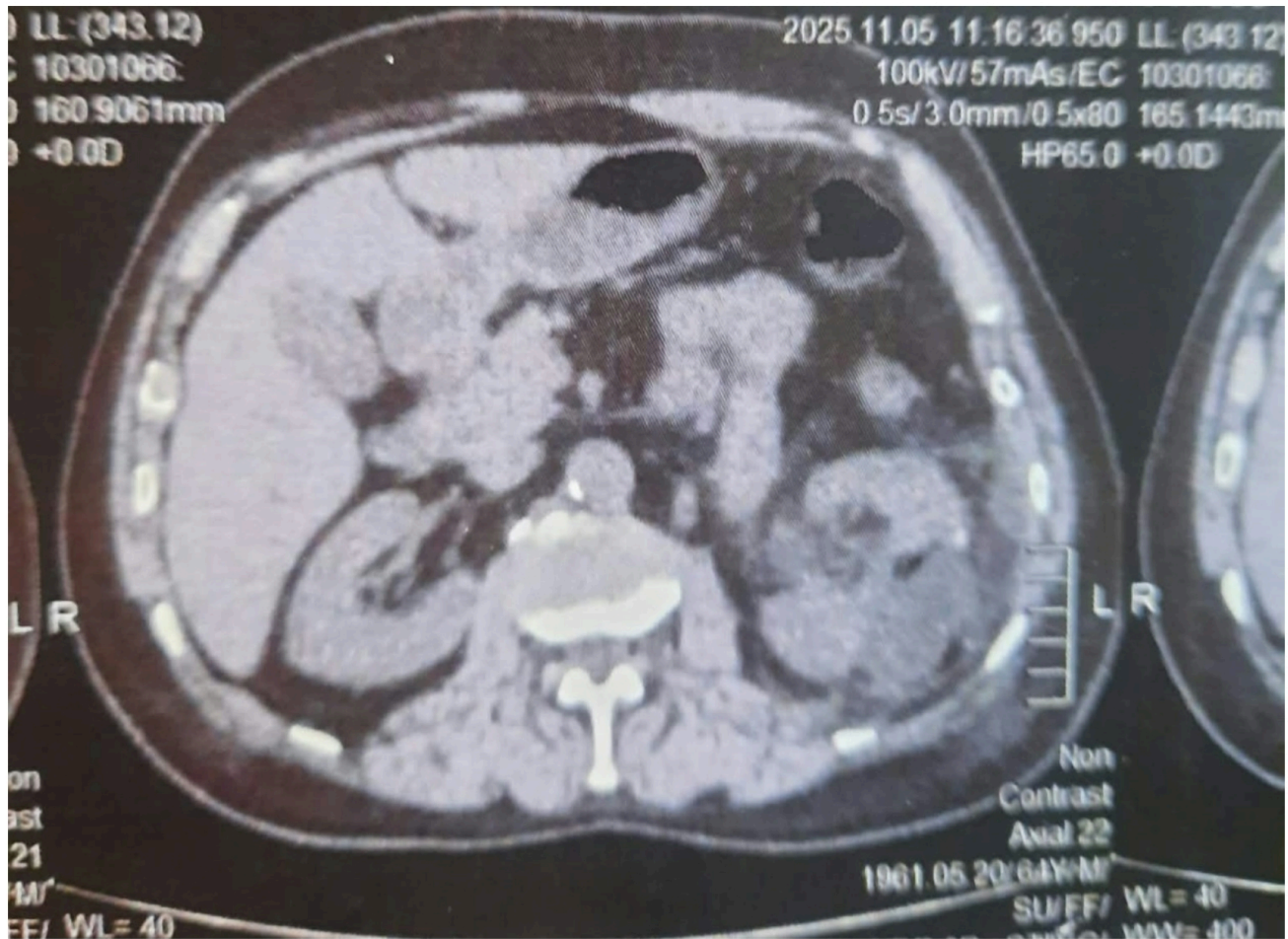


Figure 4

Axial view of abdominal and pelvic CT scan with small operative bed collection.