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Case Report

Renal Hydatid Disease in a Child: A Rare Organ-Specific Encounter

Dr. Saptarshi Roy[1]*, Dr. Sachin Shetty[2], Dr. Abhishek Jain[3], Dr. Nunes Neil Aurelio[3]

[1]Junior Resident Department of Radio-Diagnosis, Sree Balaji Medical College and Hospital, Chennai
[2]Associate Professor of Radiology, Department of Radio-Diagnosis, Sree Balaji Medical College and Hospital, Chennai
[3]Junior Resident Department of Radio-Diagnosis, Sree Balaji Medical College and Hospital, Chennai

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Abstract: Hydatid disease is a parasitic infection caused by *Echinococcus granulosus* or, less commonly, *Echinococcus multilocularis*. It remains a significant public health concern in endemic areas, particularly in the Mediterranean region. Due to its non-specific clinical presentation and the often inconclusive nature of standard laboratory tests, diagnosis can be challenging. The liver is the most commonly affected organ, involved in approximately 70% of cases, while pulmonary involvement occurs in about 25%, due to larvae bypassing hepatic filtration. Renal involvement is relatively uncommon, accounting for 2–4% of all hydatid cyst cases, with isolated kidney involvement being extremely rare, seen in only 1.9% of cases. Here, we report a rare case of an isolated renal hydatid cyst in a pediatric patient, in whom the diagnosis was delayed due to its atypical presentation.

Keywords: Hydatid disease, Echinococcus granulosus, Renal hydatid cyst, Pediatric case, Diagnosis.

INTRODUCTION

Hydatid disease is a parasitic infection primarily caused by Echinococcus granulosus, and less commonly by Echinococcus multilocularis, which leads to alveolar echinococcosis. It remains a significant public health concern in endemic areas, particularly in the Mediterranean region. Due to the non-specific nature of symptoms and often inconclusive results from standard laboratory tests, diagnosing hydatid disease can be challenging [1]. The liver is the most commonly affected organ, involved in about 70% of cases, while pulmonary involvement occurs in roughly 25% due to larvae bypassing hepatic filtration. Renal involvement is relatively uncommon, accounting for only 2–4% of all hydatid cases, with isolated kidney hydatid cysts being particularly rare—seen in just 1.9% of the population [2,3]. This case report discusses a rare pediatric instance of an isolated renal hydatid cyst, where diagnosis was notably delayed.

CASE PRESENTATION

A 12-year-old male was referred to our facility from a local healthcare center with complaints of left-sided flank pain. An initial abdominal ultrasound revealed a 15 mm cortical cyst located at the lower pole of the left kidney. Physical examination and routine laboratory investigations were unremarkable, with no significant abnormalities detected. Given the non-specific findings, a follow-up ultrasound was scheduled for ongoing evaluation.

Six months later, following a history of blunt abdominal trauma sustained in an accident, the patient underwent abdominal computed tomography (CT) for further assessment. The CT scan revealed a cystic lesion measuring 25 x 20 mm in the lower-central region of the left kidney. The lesion demonstrated a lobulated contour and contained internal membranous structures, raising suspicion for a hydatid cyst (Figure 1).

***Corresponding Author:** Dr. Saptarshi Roy
Junior Resident Department of Radio-Diagnosis, Sree Balaji Medical College and Hospital, Chennai

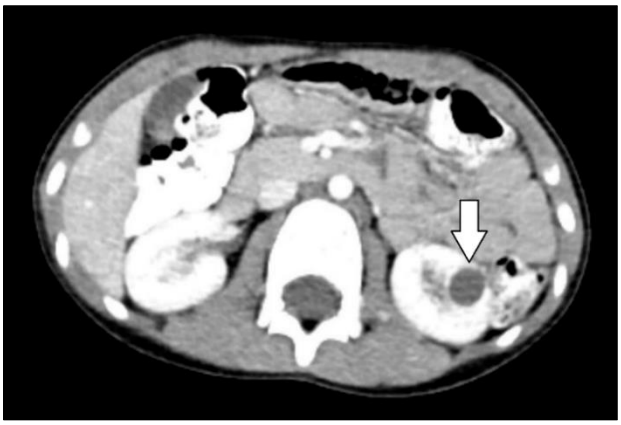

Figure 1: Abdominal CT image of the patient

The arrow indicates a cystic lesion measuring 25 x 20 mm, located in the lower-central region of the left kidney, displaying a lobulated outline with internal membranous components.

Based on the radiological findings, a hydatid cyst was suspected, and an indirect hemagglutination assay (IHA) was performed to support the diagnosis. The initial test result was negative (≤1:160). However, during the follow-up period, the patient developed urticarial plaques over the face and trunk, and laboratory investigations revealed peripheral eosinophilia (8.9%). Upon further inquiry, it was noted that the patient had a history of visiting relatives in a rural area, with possible exposure to domestic animals such as cats and dogs. Given the clinical suspicion, a repeat IHA test was conducted at a private diagnostic center, which returned positive for hydatid disease.

Further imaging studies of the thorax and abdomen did not reveal any additional cystic lesions, confirming isolated renal involvement. The patient was started on prophylactic oral albendazole therapy at a dose of 10 mg/kg/day for three weeks prior to surgery. Subsequently, the patient underwent surgical exploration via an extraperitoneal approach under general anesthesia, and a successful cystectomy was performed. The intraoperative and postoperative periods were uneventful. Albendazole therapy was continued postoperatively for an additional six months to reduce the risk of recurrence.

Hydatid disease is a zoonotic infection caused by *Echinococcus* species. The definitive hosts are canids such as dogs, wolves, foxes, and coyotes, while humans serve as incidental intermediate hosts. The disease can involve almost any organ system [4]. Renal involvement typically occurs alongside systemic disease; however, isolated renal hydatid cysts are extremely rare [5]. These cysts tend to grow slowly within the kidney over a period of 5 to 10 years, with the average age at diagnosis being around 30 years. Consequently, hydatid cysts presenting in the pediatric population, such as in this case, are uncommon [6].

The clinical manifestations of renal hydatid cysts can vary widely—from being completely asymptomatic to causing significant renal dysfunction. The most frequent symptom is vague flank pain, which results from the chronic pressure exerted by the enlarging cyst, as observed in our patient. In some cases, the cyst may rupture into the collecting system, leading to hematuria or hydatiduria. Hydatiduria is considered pathognomonic for renal hydatid disease but is seen in only 10–20% of cases [7, 8]. As a parasitic infection, it may also provoke allergic reactions, including urticaria, which was noted in our patient [9].

Given the rarity of isolated renal hydatid cysts, this condition should still be considered in the differential diagnosis of patients presenting with nonspecific flank pain, hematuria, or allergic symptoms. Although the indirect hemagglutination assay (IHA) is a sensitive diagnostic tool, false negatives can occur. Therefore, while a positive serologic result supports the diagnosis, a negative result does not exclude it [10].

Hydatid cysts can be effectively evaluated using imaging modalities such as ultrasonography (USG), computed tomography (CT), and magnetic resonance imaging (MRI). Among these, ultrasonography is the most frequently used due to its accessibility and effectiveness. However, CT or MRI may be more appropriate when detailed anatomical information is required [11]. On imaging, hydatid cysts typically appear as well-defined, unilocular or multilocular lesions with thickened walls. The presence of daughter cysts within the primary cyst is a highly characteristic feature identifiable on both ultrasound and CT scans [7].

The management of hydatid cysts typically involves antiparasitic therapy in combination with either surgical excision or percutaneous intervention, depending on the cyst's size, location, and complexity [12]. For cysts measuring less than 5 mm, albendazole monotherapy at a dosage of 10–15 mg/kg/day is generally effective. However, for cysts larger than 5 mm in diameter, as seen in our patient, a combination of medical and surgical approaches is usually required [13].

The optimal duration of antiparasitic therapy—both as a primary and adjunctive treatment—remains a subject of clinical uncertainty. In definitive medical management, albendazole is typically administered for a duration ranging from one to six months. In the surgical setting, it is commonly given for a few weeks prior to the operation and continued for at least one month postoperatively to minimize the risk of recurrence and to reduce cyst viability [14]. In our case, the patient received albendazole therapy for three weeks before surgery and continued treatment for six months postoperatively.

Hydatid cysts carry a risk of recurrence, which may occur even several years after treatment. As such, long-term follow-up is essential. However, the optimal monitoring strategy is not well established and should be tailored to the individual patient, considering clinical factors and the availability of diagnostic resources [15].

CONCLUSIONS

Renal hydatid cysts typically present as slow-growing lesions and may go undetected due to their vague and non-specific clinical symptoms. Delayed diagnosis can result in significant complications, including loss of renal function. In endemic regions, hydatid disease should be considered in the differential diagnosis of patients presenting with unexplained flank pain or urinary symptoms, even in cases with negative IHA serology. Greater clinical awareness of this parasitic infection is essential, and further research is needed to develop standardized treatment guidelines and optimize management strategies.

Conflict of Interest: Nil

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