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A rare case of renal hydatidosis in a child with congenital solitary kidney

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ABSTRACT

Hydatid cyst of a solitary congenital kidney is a rare entity because of the small percentage of cases with renal hydatidosis and the reduced number of cases with this renal anomaly. We report a case presenting this extremely rare combination and having a favorable outcome. The diagnosis was confirmed based on an association of imagistic techniques and positive serology. The case was managed using a minimal invasive surgical technique (PAIR) that reduced the operative risks. Additionally, an antihelminthic agent (albendazole) was administered. To our knowledge, this is the first case with such comorbidity and treated through percutaneous approach.

1. Introduction

Hydatid disease, also known as hydatidosis or echinococcosis, is a parasitic zoonosis acquired through infection with the metacestode (larval form) of a dog tapeworm belonging to genus Echinococcus[1]. It is estimated that about 2-3 million people suffer from this disease worldwide[1] especially in countries in the Mediterranean basin, sub-Saharan Africa, Eastern Europe, Asia, South America, western USA, and Australia[2]. Approximately 95% of human cases of echinococcosis are produced by Echinococcus granulosus.

We report a pediatric case of hydatidosis on a solitary congenital kidney, a rare combination because of the small percentage of cases with renal hydatidosis and the reduced number of cases with this renal anomaly.

2. Case report

A 15-year old male patient, inhabitant of a rural region in Western Romania (Arad County) was admitted to the hospital in October 2007 with right side abdominal pain and non-specific symptoms such as nausea and vomiting. The ultrasound examination and the urography revealed a unique right kidney with a cystic unilocular tumor measuring 10/6 cm and located in its inferior pole (Figure 1). No calcifications of the cystic wall were detected. The child presented chronic renal failure with creatinine value of 2.23 mg/dL. An ureterohydronephrosis grade II was also revealed. The chest X-ray and the echography of the liver were normal. The patient was sent to the Urology Department (Timisoara County Emergency Hospital) for surgical intervention. During this second hospitalization (December 2007) the cyst was also evidenced by computed tomography (CT) (Figure 2) and computed tomography angiography (CTA) (Figure 3). CT confirmed the existence of the right congenital solitary kidney containing the cyst with the above mentioned characteristics in the inferior pole. Noteworthy was its fluid content surrounded by a 1.2 mm thick wall. CTA also showed the right congenital unique kidney with an inferior pole cyst compressing the inferior calyx. There was no left renal artery, but 2 right arteries, the upper one with distribution to the inferior pole. According to Gharbi's classification, the renal hydatid cyst belongs to the second type. The serum detection of IgG antibodies against Echinococcus granulosus (ELISA technique) indicated a highly positive index of 11.9 (positive values > 1.1). During

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this hospitalization, all routine laboratory tests indicated normal values. The patient was temporally discharged from the hospital and followed a preoperative treatment with albendazole (2 × 400 mg daily) for 4 weeks.

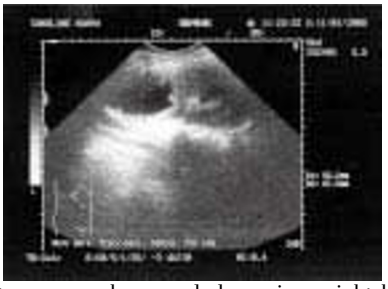
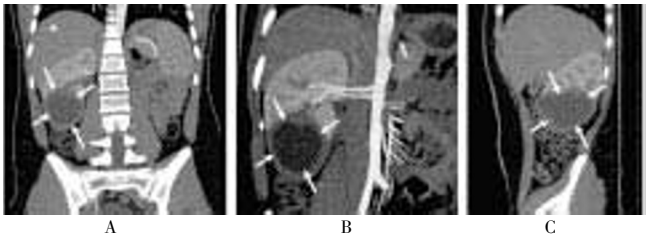


Figure 1. Ultrasonography revealed a unique right kidney with a cystic unilocular tumor.

Figure 2. Computed tomography angiography.
The arrows indicate the hydatid cyst.



A B C

Figure 3. Computed tomography.
(A) and (B) – Front view, (C) – Lateral view. The arrows indicate the hydatid cyst.

The absence of a right inferior renal artery reduced the possibility of a partial nephrectomy and the existence of a unique kidney represented a high risk for the standard surgical options such as cystectomty/pericystectomy or resection of the prominent dome. Instead, the less invasive surgical technique based on puncture, aspiration, injection, re-aspiration (PAIR) has been chosen. In January 2008, under general anesthesia, the ultrasound guided puncture of the cyst was performed. No allergic reactions were observed during and after the procedure.

Postoperative treatment with albendazole in the same dosage was continued for another 2 weeks. Sonographic follow-up examinations indicated a gradual decrease in the cystic size and volume, with the persistance of a "pseudotumor appearance". The echinococcal antibody titer decreased after 9 months, but remained still positive (index of 4.5).

3. Discussion

Liver and lungs represent the most common cystic locations[1], followed by the kidney which is affected in 1 to 4% of cases[3]. The primary affection of the kidney in hydatid disease as well as the occurrence of this condition in children represent extremely rare situations[4,5]. To our knowledge, the association between hydatid disease and this rare renal anomaly (congenital solitary kidney) was previously reported in the literature once only[6]. Although the standard treatment for renal hydatidosis remains surgery, the laparoscopic and percutaneous approach is nowadays preferred because of the reduced risk of partial or total loss of the kidney. The presence of a solitary kidney (either surgical or congenital) represented an additional argument for this technique.

Hydatid disease was reported in Romania as a rather frequent and problematic disorder in children. Noteworthy are its multiple negative consequences on both children's physical and psychical health. A systematic analyses of many pediatric studies showed a peak of the disease occurrence in children aged 13 and 14 years old[7]. The case presented herein in a 15-year adolescent represent a combination of 2 rare conditions and emphasizes the need for better implementation of the sanitary prophylactic programs in schools. At the same time it shows the importance of multidisciplinary collaboration towards the successful diagnosis and management of the case.

Conflict of interest statement

We declare that we have no conflict of interest.

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