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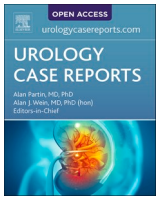

Inflammation and infection

Bladder echinococcosis presented by hydatiduria – Casuistic case

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ABSTRACT

Human echinococcosis is a parasitic disease caused by tapeworms of the genus Echinococcus. The two most important forms of the disease in humans are cystic echinococcosis (hydatidosis) and alveolar echinococcosis. Humans are infected through ingestion of parasite eggs in contaminated food, water, or soil, or through direct contact with animal hosts. Although most reported patients with Echinococcosis have cysts in their lungs and livers, more unusual cyst locations were also recorded. Evolution of cysts, irrespective of their localization is associated with many complications including life-threatening. We report unusual localization of parasitic cyst in urinary bladder, diagnostic and therapeutic problems.

1. Introduction

Echinococcosis is a prevalent zoonotic helminthic infection. Cystic echinococcosis exhibits a worldwide distribution. The mature parasite primarily inhabits the intestines of certain carnivorous mammals. In mammalian intermediate hosts, including humans, the larval stage develops within internal organs. Predominant sites for cyst formation include the lungs, liver, brain, and kidneys. Hematogenous dissemination of oocytes leading to the formation of hydatid cysts in atypical organs is an exceedingly rare occurrence. The manifestation of symptoms is contingent upon both the location and size of the cyst.[1]

2. Case report

We present a 32-year-old male with mild dysuria and episodic urination of "small white pieces". Suprapubic palpation revealed mild tenderness, and by digital rectal examination, a soft-tissue elastic mass above the normal prostate was palpated. Standard blood laboratory tests were within reference values. Urinalysis detected low-grade proteinuria and pyuria, and microbiological studies were negative for bacterial growth. By ultrasound examination, a lobulated cystic lesion measuring 102/90 mm was observed, located posterior to the bladder (Fig. 1). Computed tomography (CT) revealed a cystic lesion with septa and calcium deposits in the wall. The finding was located close to the posterior wall of the bladder (Fig. 2a) with suspected communication with the bladder cavity in a limited area (Fig. 2b). During the cystoscopy, a red area on the dome of the bladder and a narrow fistula were seen. An ELISA test for echinococcosis was performed on the patient, revealing a result 5.5 times above the upper reference value. The patient was consulted by a parasitologist, who recommended operative treatment with instructions to prevent dissemination.

By open surgery, the entire field around the cyst was covered with gauze soaked in 10 % iodine-povidone. The bladder was separated from the cyst, and the bladder was resected and sutured around the fistula. The entire cyst was removed without rupture. Histological examination revealed chitinous and germinative membranes (Fig. 3a) with scolexes (Fig. 3b). In the 1-year period, no recurrence or development of other parasitic cysts was detected.

3. Discussion

The history of echinococcosis spans over 2000 years and is recognized as one of the 20 neglected tropical diseases by the World Health Organization.[2] Echinococcosis comprises two significant zoonotic diseases caused by tapeworms: cystic echinococcosis (CE) and alveolar echinococcosis (AE), caused by Echinococcus granulosus sensu lato and Echinococcus multilocularis, respectively. Patients diagnosed with AE face higher mortality within 10–15 years, while the mortality rate for CE (2 %–4 %) is lower but can escalate with inadequate care.[1]

The parasite's life cycle hinges on predator-prey interactions

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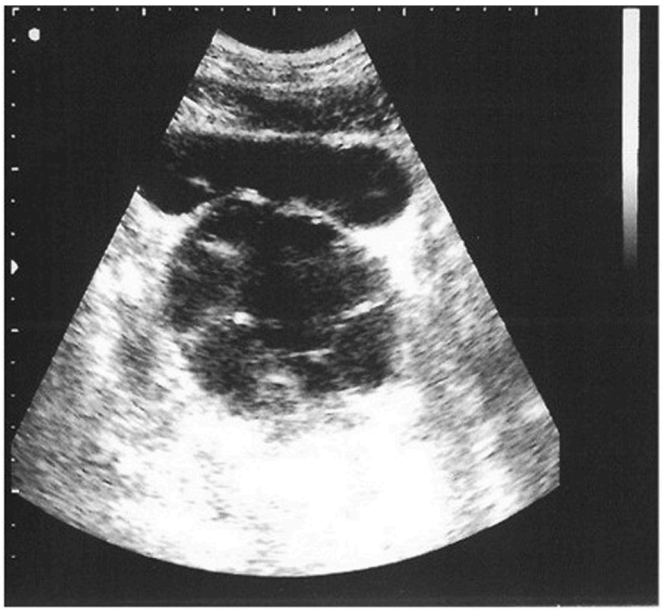

Fig. 1. Pelvic ultrasound – bladder and cystic lesion with septa.

involving two mammalian hosts. Carnivores act as definitive hosts for adult tapeworms, and their herbivorous prey serve as intermediate hosts. Humans and other intermediates contract the infection by ingesting eggs that hatch in their intestines, releasing oncospheres that typically settle and develop as larvae in the liver. Echinococcosis clinically presents with localized organ damage or dysfunction, primarily affecting the liver (70 %) and lungs (20 %), with additional cases involving the brain, spleen, kidney, and heart. Initial stages are often asymptomatic and may persist for 10–15 years.[1] It is acquired during childhood but it is more common during adulthood.[3]

Echinococcal involvement in the urinary tract is rare, constituting only 2%–4% of cases, with the kidneys being the most affected organs and bladder involvement being extremely uncommon.[4] Intravesical hydatid cysts' pathogenesis is attributed to hematogenous dissemination with cyst development within the bladder mucosa. While hydaturia is absent in reported bladder echinococcosis cases, it is typically associated with cysts in the kidneys where communication exists between the cyst and the kidney's cavitary system. Preoperative diagnosis is crucial to prevent cyst rupture during surgery and subsequent complications. Ultrasound aids in diagnosis, although it may pose challenges, and a CT scan provides more comprehensive information with a sensitivity of 90–100 %. Serological tests like IHA and ELISA may not yield positive results in all cases.[5]

During surgery, the abdominal cavity is isolated using gauze soaked in scolicidal agents such as 20 % hypertonic saline or 10 % povidone-iodine to prevent dissemination and allergic reactions.[6] Other scolicidal agents include cetrimide, chlorhexidine, and absolute alcohol. Percutaneous aspiration of CE is not recommended, and albendazole is recommended in symptomatic cases or those with dissemination, with a dosage of 10–15 mg/kg/day for 1–3 months. Utilizing ultrasound, CT scans, and serological tests facilitates easy diagnosis, but differential diagnosis must consider various oncological diseases in this context.

4. Conclusion

Echinococcosis is a rare and mostly endemic disease in humans. Of the single cases of echinococcosis of the bladder described, there is no communication between the bladder and the cyst. The case presented by us manifests clinically with hydatiduria. Surgical treatment is successful but requires antihydatid prophylaxis to prevent dissemination and the development of an anaphylactic reaction.

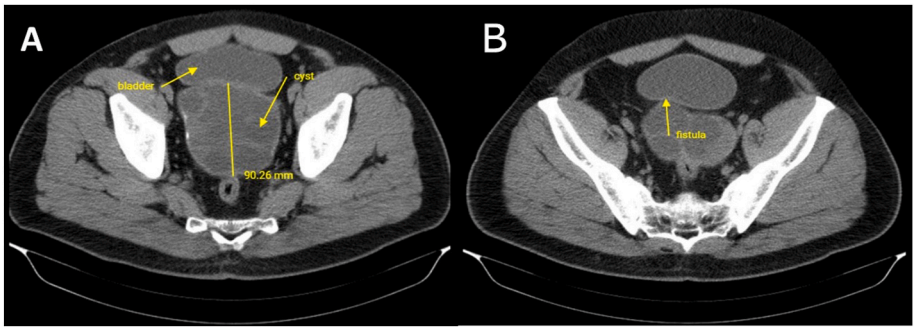

Fig. 2. Pelvic CT. A. Lobulated cystic lesion B. Connection between cyst and bladder.

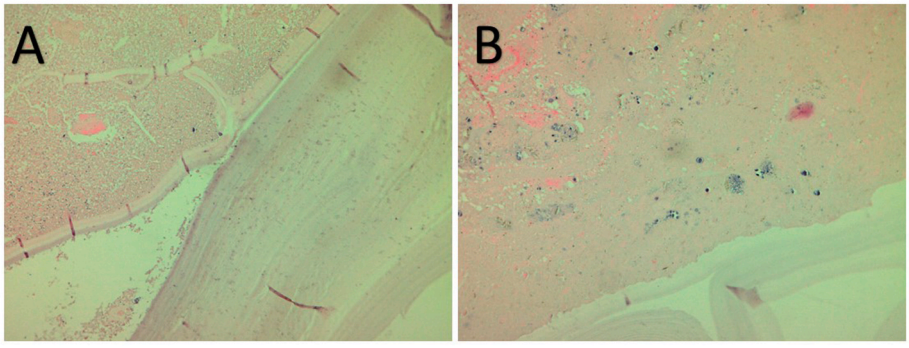

Fig. 3. Histology examination. A. The cyst wall is characterized by an acellular laminated membrane which is lined by germinal epithelium. B. The latter produces scoleces. (Haematoxylin-eosin. A, B x 100).

CRediT authorship contribution statement

Dimitar Delkov: Writing – original draft. **Stefan Zdravchev:** Visualization, Methodology. **Atanas Ivanov:** Writing – review & editing, Visualization, Validation, Resources. **Zhan Chitalov:** Supervision, Methodology, Investigation, Conceptualization. **Madzhid Kadim:** Supervision, Resources. **Petar Antonov:** Writing – review & editing, Validation, Project administration, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no competing interest.

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