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Case Report

Hydatid Cyst in Urine: A Case Report

Sweta Muni[1], Namrata Kumari[2], Deepak Pankaj[3], Amit Kumar[4], Deepak Kumar Pintu[5]

[1]Senior Resident, Department of Microbiology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India, [2]Additional Professor, Department of Microbiology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India, [3]Senior Resident, Department of General Surgery - Emergency, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India, [4]Senior Resident, Department of Pathology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India, [5]Junior Resident, Department of Microbiology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India

Abstract

Primary renal hydatid disease without liver and lung involvement is not found very often in clinical practice and expulsion of hydatid cyst in urine is a rare entity. Three main species of *Echinococcus* are responsible for causing hydatid disease. *Echinococcus granulosus* is the most common type, whereas *Echinococcus multilocularis* and *Echinococcus oligarthrus* account for a small number of cases. Here, we are reporting a case of echinococcosis, primarily involving the right kidney, presenting with a clinical history of hydatiduria, abdominal pain and discomfort. A combination of pre-operative and post-operative albendazole therapy and surgical excision in the form of right nephrectomy was effective in alleviating the symptoms and improving the renal function.

Key words: *Echinococcus granulosus*, Hematuria, Hydatiduria, Laparoscopic surgery

INTRODUCTION

Echinococcus, a tapeworm causes echinococcosis also called hydatid disease or hydatidosis, a parasitic infection which is caused by the larval stage of *Echinococcus* species.[1] Three main species of *Echinococcus* are responsible for causing hydatid disease. *Echinococcus granulosus* is the most common type, whereas *Echinococcus multilocularis* and *Echinococcus oligarthrus* account for a small number of cases.[1] Dog is the definitive host of *E. granulosus*, in which the adult tapeworm is attached to the villi of the ileum. Eggs are passed and deposited within the dog's feces. Sheep is the usual intermediate host, but humans are accidental intermediate hosts. In the human duodenum, the parasitic embryo penetrates the mucosa, allowing access to the blood stream, and enters the liver (most commonly) and the lungs.[1] Clinical features usually present late as it takes between 5 and 20 years for a cyst to become symptomatic. The most commonly affected region in the urogenital tract is kidney (2-4%), although hydatid cyst of the prostate, the seminal vesicles, and the testes have also been reported.[2] Renal failure is a very late complication in untreated and neglected cases.

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CASE REPORT

A 35-year-old female patient was admitted in urology department with pain abdomen and abdominal lump since 3 years. The patient had a history of dull aching type of diffuse abdominal pain more on the lower abdomen with on and off burning micturition. The pain was gradual in onset and progressive in nature. The patient also gave a history of incomplete bladder evacuation with increasing frequency of micturition. The patient used to complain of temporary retention of urine and severe pain in the pelvic region during micturition with a feeling of something coming out per urethra in urine and then the relief of pain after passing of the substance. In per abdominal examination, a firm, non-tender, ballotable mass was noted in right lumbar region. The blood pressure was 134/80 mmHg in right arm supine position and pulse was 72 beats/min at the time of presentation. Various biochemical, microbiological and radiological tests were done on the patients for further management. Her hemoglobin (Hb) % was 9.8%, total leukocyte count was 9700/cu mm, random blood sugar was 113 mg/dl. Her liver function and renal test was within normal limit.

Corresponding Author: Dr. Deepak Pankaj, Shanti Niwas, Amba Vihar Colony, Ambedkar Path, Near Mahima Mandir, Rukanpura, Patna - 800 014, Bihar, India. Phone: +91-9431060340. E-mail: drdeepakpankaj@gmail.com

Among viral markers, her hepatitis B surface antigen was positive as detected by enzyme-linked immunosorbent assay test, other viral markers were negative. Her blood group was A positive. Urine was taken for routine examination and culture. Ruptured hydatid cyst was seen in a urine sample with naked eye and then was examined microscopically which showed daughter cysts/brood capsules. The patient also had a computed tomography (CT) scan, intravenous and contrast of abdomen and pelvic region. CT showed large well defined thick wall complex cystic lesion of size 9.3 cm × 13.1 cm × 19 cm (AP × TRs × CC) in the right lumbar region replacing entire kidney with multiple variable size daughter cyst (largest measuring 5.2 cm × 5 cm) within along peripherally, central portion non-enhancing ISO to hyperdense content of attenuation. Focal defect of size 1.3 cm seen in the posterior wall with the complication of cyst with renal pelvis suggesting possibility of rupture of cyst in pelvicalyceal cistern, with resultant smaller cyst noted. Another cyst of size 2.3 cm × 9.1 cm × 10 cm was noted in the upper pole of right kidney. Possibility of renal hydatid cyst was considered. The patient underwent right nephrectomy, and cystic mass was sent for histopathological examination. Macroscopical examination of the surgical specimen revealed multiple daughter cysts, and the histopathological examination confirmed the diagnosis of a hydatid cyst (Figure 1). With one unit of blood transfusion done, post-operative period was uneventful. The patient was stable at the time of discharge and went home on oral medications.

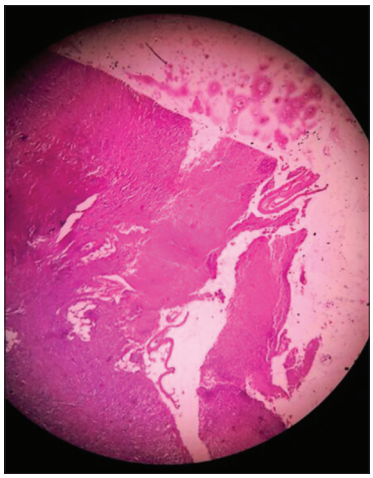

Figure 1: Histopathological slide examination showing hydatid cyst with normal kidney tissue

DISCUSSION

Human hydatid cyst or cystic echinococcosis is a global health problem worldwide, having variable geographical distribution particularly in the sheep-rearing regions of Australia, South America, North Africa, Russia, and China.[3] In developing country like India, hydatid cyst is an emerging disease with incidences being reported throughout the country.[4,5] In the small intestine (proximal small bowel), adult worm of *E. granulosus* lives attached with the help of hooklets to the mucosa. It releases eggs into the host's intestine and excreted in the feces. Human may become intermediate host through contact with a definitive host (usually a domesticated dog) or ingestion of contaminated water or vegetables. When embryo passes through the intestinal wall to reach the portal venous system or lymphatic system, the liver acts as the first line of defense and is, therefore, the most frequently involved organ.[6] Liver accounts for approximately 75% of cases of hydatid disease in humans and lung accounts for 15% of cases. Bloodborne dissemination may be seen in almost any anatomic location is leading to secondary involvement. Even in endemic areas, hydatid disease involving kidneys are extremely rare, which is prevalent in 2-3% of cases.[7] In cases of primary hydatid disease, mechanisms have not been clear that how the hydatid embryo reaches the kidney but it is postulated that it must have passed through the portal system into the liver and retroperitoneal lymphatics.[8] For many years, most of the renal hydatid cysts remain asymptomatic, and patients usually present late in the course of disease. The main complaints of the patients being dull aching abdominal (Flank) pain, hematuria, palpable flank mass, hypertension, and renal colic.[9] The only pathognomonic clinical sign of renal hydatid disease is hydatiduria, i.e. hydatid cyst in urine.[10] Along with parenchymal destruction, rupture of all the three layers of cysts resulting in free communication with the calyces and pelvis which is known as open or communicating cyst. Acute pain in the loin results as a consequence of the rupture of these cysts in the renal pelvis which is followed by voiding of scolices, hooklets or daughter cysts, with or without hematuria giving rise to gross or microscopic hydatiduria.[11,12] This hydatid cyst in urine is seen in few cases usually detected microscopically. The diagnosis can be confirmed with the help of serological tests. Microscopic (wet mount) examination may demonstrate daughter cysts in the sample. In this case, history of gross hydatiduria was present (Figure 2), and microscopic examination also showed scolices and daughter cysts (Figure 3). Ultrasound and CT scan of abdomen and pelvis (contrast enhanced) may help to determine the exact location and nature of a cystic pelvic mass, its relationship with adjoining structures, vascular invasion, resectability and also exclude hydatid disease elsewhere.[13] Following treatment with albendazole for longer periods, morphological changes in hydatid cysts have been seen. In most of the cases, complete disappearance of hydatid cyst is a reliable sign of response with albendazole.[14,15] Reduction in size of the cyst, decrease in cyst tension, increased echogenicity of the cyst contents and thickening or calcification of the cyst wall can occur in

Figure 2: Ruptured hydatid cyst in urine sample

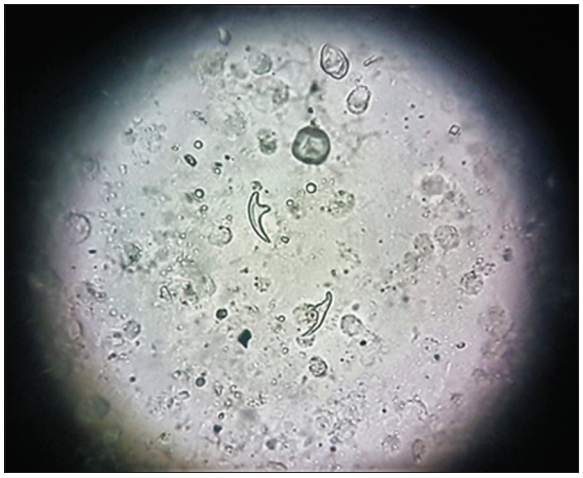

Figure 3: Microscopic (wet mount) examination showing daughter cysts

cases of partial response to treatment.[16] Surgery still remains the gold standard of treatment of hydatid cyst either in the conventional open techniques or by laparoscopic surgery[17] while some unilocular cysts are amendable to percutaneous drainage. Even medical treatment with albendazole has a definite role before and after surgery in reducing morbidity and chances of recurrence.[18]

CONCLUSION

Renal hydatid disease presenting as gross hydatiduria with ruptured and unruptured cysts in urine is a rare entity. Asymptomatic hydatid cyst of kidney becomes symptomatic when cyst enlarges in size giving rise to pain and urinary symptoms. There should be a multimodality approach, and the decision of treatment should be individualized for each patient, considering the size and number of cysts, its location, response to the previous treatment and patients factors with associated comorbidities.

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