Isolated renal hydatid cyst; A rarer infectious disease

Zahida Dar, Rohinton Mulla

Luton and Dunstable University hospital Luton Bedfordshire UK LU4 0DZ.

Abstract

Hydatid cyst disease caused by *Echinococcus granulosus* is commonly seen in the liver but rarely seen in the kidneys, in addition, the isolated renal occurrence is estimated to be about as low as 2–4% of all cases. A 38-year-old male presented with ambiguous left flank pain to the urology clinic. After examination and imaging, he was diagnosed with suspected renal cell carcinoma in the left kidney. Nephrectomy was done and ELISA suggested strongly positive for Hydatid cyst which was later confirmed by histopathological examination. Isolated renal hydatid cyst is an exceedingly rare condition and could possibly be misdiagnosed with other renal masses. The clinical history, laboratory tests, and thorough radiologic imaging are crucial, for accurate preoperative diagnosis as the disease may have no symptoms for years.

Keywords: Hydatid cyst, ELISA, *Echinococcus granulosus*, Haematuria

Introduction: Hydatid cyst disease is a parasitic disease caused by *Echinococcus granulosus*[1] and is endemic especially in Eastern Europe, the Middle East, Alaska, Canada, South America, Australia, and New Zealand [2]. The causative tapeworm lives in the small intestine of definitive hosts, such as dogs and other canids and farm animals [3]. After transmission to humans, it can affect various organs, including the liver, lungs, brain, and urinary tract [4]. The kidney is the most affected organ of the urinary tract, although this involvement is rare [5]. However, isolated renal involvement is even rarer (2–4% of all cases) [6] and reports of this condition are extremely limited. This benign disease can remain asymptomatic for many years, while hematuria and/or hydatiduria (presence of daughter vesicles in the urine) occurs in 10–20% of all cases [7]. Diagnosis is usually made by clinical and radiological findings. However, diagnostic steps and complete and exact pathophysiology elucidation of urinary tract hydatid cysts are needed to be performed. In this article, we present a case of a patient with a primary hydatid cyst in the left kidney diagnosed postoperatively by hydatid serology and histopathology.

Case History

A 36-year-old man working in a garage with no prior history of working with animals, presented to the Urology One Stop clinic following his recent admission to the hospital with left-sided flank pain. A CT scan showed a large mass arising from the lower pole of his left kidney and some lymph nodes in the para-aortic region and did not show any evidence of the spread of the disease, which was suspected to be renal cell carcinoma. The patient had an extremely limited knowledge of English and did not have an interpreter booked for this consultation. He denied any significant urinary symptoms. There also was doubtful history of blood in his urine (also known as haematuria) a few months ago. He was otherwise a fit and healthy person and on no regular medications. He was a non-smoker and had no history of any alcohol intake.

The patient was explained about the significance of these findings and the need for a nephrectomy to remove his kidney and the tumour. He was keen to continue with his treatment and therefore a left nephrectomy was planned for him. His renal functions were slightly deranged when he was admitted, with a serum creatinine of 113 units. He underwent a left nephrectomy, and the sample was sent for Histopathology. The patient was successfully diagnosed with Renal hydatid disease by ELISA positive hydatid serology with OD 1.181/0.250 and confirmed by Histopathology, which observed scolex bearing the hooklets from the cyst wall.

Discussion

Hydatid cyst disease is a zoonotic disease caused by the larval stage of the parasite *Echinococcus granulosus*, a member of the order *Cestoda* and family *Taeniidae*. The eggs of the parasite are

Address for Correspondence:

Dr Zahida Dar

Department of Microbiology, Luton and Dunstable University Hospital,
LUTON Bedfordshire, LU4 0DZ.
E – mail: Zahida.Dar@ldh.nhs.uk

excreted in the feces of the host (usually in canines such as dogs and ungulates such as cows). Humans get infected through contact with the definitive host or ingest contaminated soil, water, and vegetables[3]. The eggs transform to larvae in the human digestive system, the larvae migrate into the small bowel wall and the mesenteric circulation, getting filtered by the liver. This is the reason why hepatic infection is very common. The second site of filtration is the lung, which is involved in 15% of the cases[7]. However, almost every tissue of the body can be infected through hematogenous dissemination[8]. Kidney involvement represents 4% of all cases and is rare compared to that in the liver or lung, even more so as an isolated site of infection[5].

The symptoms and signs of hydatid cyst disease depend on the involved organ, the site, and the secondary spread, while a palpable mass is the most common clinical finding. Patients with renal hydatid cysts usually present with vague pain in the lumbar or flank region[9]. The rupture of the cyst into the urinary collecting system causes hydatiduria and is a pathognomonic sign of renal hydatidosis, a finding that is present in only 10-20% of the cases. Gross hydatiduria is uncommon but diagnostic of the condition[10]. Differential diagnosis of hydatid cysts of the kidney from other space-occupying renal masses can be challenging, which happened in this case as all imaging reports were suggestive of renal cell carcinoma[11].

Surgery is the usual treatment-of-choice through an open approach[12], whereas the retroperitoneal approach is preferred to avoid further contamination of the peritoneal cavity[13]. When possible, kidney sparing cyst removal is performed through cystectomy and pericystectomy. However, nephrectomy is needed when the hydatid cyst invades a major renal part or in cases of hydatiduria[14]. Perioperative chemotherapy with albendazole is considered useful for the prevention of further localizations[15]. Intraoperative use of hypertonic saline injected in the cyst can exterminate the infective daughter cysts[8].

Since the diagnosis (in this case) was made after surgical resection of the left kidney by ELISA and histopathology, no perioperative/intraoperative use of scolicidal agents nor the antiparasitic agent Albendazole was given. The patient had some post-operative complications that were dealt with by the surgical team. The Microbiology team suggested the referral of the patient for chemotherapeutic treatment and further follow up to University College London Hospital of Tropical Diseases Centre Head of Parasitology. Before referral, the patient was generally well with all the inflammatory markers within normal limits.

Conclusion

A limited number of isolated renal hydatid cysts are reported in literature, while the disease is often misdiagnosed as a simple lumbar pain or a malignant renal mass. Careful diagnosis and complete pathophysiology of urinary tract hydatidosis is required. The clinical history, laboratory tests, and thorough radiologic imaging are crucial for the accurate preoperative diagnosis.

References

1. *Adanur S, Koç E, Ziypak T, Yapanoglu T, Polat O. Giant isolated renal cyst hydatid: from diagnosis to treatment. Archivio Italiano di Urologia e Andrologia 2014; 86(20):144–5.*
2. *Gharde P, Patil A, Wagh D. Left renal hydatid cyst presenting as hematuria and macroscopic hydatiduria since last ten years. Tropical Parasitology 2012; 2910:58-60.*
3. *Eckert J, Deplazes P. Biological, epidemiological, and clinical aspects of echinococcosis, a zoonosis of increasing concern. Clinical Microbiology Reviews, vol. 17, no. 1, pp. 107–135, 2004.*
4. *Akkaya H, Akkaya B, Gönülcü S. Hydatid disease involving some rare sites in the body. Türkiye Parazitolojii Dergisi 2015; 39(1):78-82.*
5. *Garg R, Nahar U, Mandal AK. A rare case of primary renal hydatid cyst. Annals of Parasitology 2015; 61(2):129-131.*
6. *Kumar SA, Shetty A, Vijaya C, Geethamani V. Isolated primary renal echinococcosis: a rare entity. International Urology and Nephrology 2013; 45(3):613-16.*
7. *Bandyopadhyay A, Khatua S, Das S, Bose K, Konar K. A rare case of primary renal hydatid cyst presenting with hydatiduria. Journal of Parasitic Diseases 2015; 39(3):577-580.*
8. *Gupta M, Singh R, Singh Lehl S. Isolated renal hydatid cyst in a diabetic postmenopausal female, Journal of Mid-Life Health 2015; 6(3):134-6.*
9. *Qadri S, Sherwani RK, Ahmed M. Isolated cystic echinococcosis of kidney burlesquing as renal cell carcinoma: a diagnostic pitfall. Annals of Parasitology 2015; 61(1): 57-60. vol. 61, no. 1, pp. 57–60.*
10. *Amin MU, Siddique K, Aftab PA. Imaging features of renal hydatid cyst presenting with hydatiduria. Journal of Radiology Case Reports 2009; 3(3):6-11.*
11. *Kizildag B, Dagistan E, Gurel S, Alan C. CT and MRI findings of renal infestation by a huge active hydatid cyst. BMJ Case Rep. 2013 Jul 5; 2013:bcr2013010472. doi: 10.1136/bcr-2013-010472. PMID: 23833098; PMCID: PMC3736469.*
12. *Shahait M, Saoud R, El Hajj A. "Laparoscopic treatment of giant renal cystic echinococcosis. International Journal of Infectious Diseases 2016; 42:58-60.*
13. *Agarwal MM, Hemal AK. Surgical management of renal cystic disease. Current Urology Reports 2011; 12(1):03-10.*
14. *Hamidi Madani A, Enshaei A, Pourreza F, Esmaeili S, Hamidi Madani M. Macroscopic hydatiduria: an uncommon pathognomonic presentation of renal hydatid disease. Iranian Journal of Public Health 2015; 44(9):1283-87.*
15. *Lacetera V, Galosi AB, Quaresima L, Cantoro U, Conti A, Cantoro D, Catanzariti F, et al. Isolated hydatid cyst of the kidney. Urologia 2012; 79(9):67-71.*

Conflict of interest: Nil
Source of funding: Nil

Date received: Mar 06, 2022
Date accepted: Dec 24, 2022