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Renal Cysts in an Immigrant Patient: An Atypical Presentation of Echinococcosis

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Renal Cysts in an Immigrant Patient: An Atypical Presentation of Echinococcosis

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Abstract

Cystic echinococcosis (CE) is a parasitic infection that results in the creation of cystic structures within visceral organs. Though these cysts are typically found in the liver or lungs, they may arise in almost any organ and symptoms are often specific to the organ system affected. If left undiagnosed and untreated, mortality from the disease is estimated to be 90% by ten years. We report a patient who was diagnosed with cystic echinococcosis of primary renal involvement, a rare anatomic location.

Learning Objectives

1. To recognize an atypical presentation of cystic echinococcosis,
2. To understand the diagnostic work up for extrahepatic cystic echinococcosis,
3. To compare the utility of various imaging modalities in diagnosis of the disease, and
4. To understand the acute management of cystic echinococcosis.

Background

- Cystic echinococcosis (CE) is an infection caused by the *Echinococcus granulosus* tapeworm, resulting in the creation of cystic structures within a range of visceral organs
- Ninety percent of these cysts are in the liver or lungs
- The cysts can be filled with thousands of "brood" capsules that in definitive hosts evaginate and invade surrounding host tissues[1]
- The definitive host is most often canines with intermediate hosts being sheep, cattle and pigs
- Humans are incidental hosts for CE. They most frequently ingest eggs via the fecal-oral route from contaminated food or water.
- In the United States, cases are quite rare and most are found in immigrants from endemic countries
- It is estimated that these cysts enlarge by about 1-5 centimeters (cm) per year, although rates are highly variable[2,3]
- Patients may remain asymptomatic for years. Those that develop symptoms may go undiagnosed for a long period of time, especially given the low prevalence of CE in the United States and the nonspecific symptoms that arise.
- If left unidentified and untreated, mortality from CE is estimated to be 90% by 10 years[4]

Case Description

History of Present Illness

- A 34-year-old female with no past medical history presented with dysuria, suprapubic pain, generalized myalgias and subjective fever for one-day duration
- The patient denied recent travel, sick contacts or contact with animals, but she had immigrated from Yemen six years prior

Physical Exam and Lab Results

- On presentation, the patient was febrile to 38.8º Celsius and tachycardic to 133 beats per minute
- Complete blood count and lactic acid were within normal limits, and urinalysis was not consistent with a urinary tract infection

Imaging (Figure 1)

- Ultrasound revealed a complex cystic mass originating from the right upper renal pole (Image A)
- Computed tomography (CT) showed a large subcapsular multicystic mass with hyperdense internal septation on the right kidney suggestive of CE (Image B) and a hypoattenuating lesion in the right lobe of the liver
- Magnetic resonance imaging (MRI) confirmed the subscapular multicystic mass along the right kidney measuring 7 x 5.2 x 6.1 cm consistent with CE stage III (Image C) and a 1.7 cm cystic lesion in the right hepatic lobe also consistent with CE

The patient was diagnosed with echinococcal disease and initiated on albendazole 200 milligrams twice a day for 3-4 months with future plans for surgical intervention

Imaging

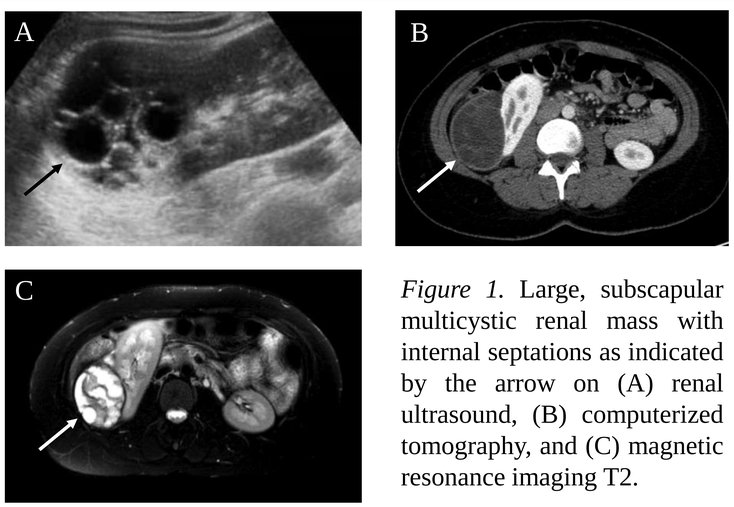

Figure 1. Large, subscapular multicystic renal mass with internal septations as indicated by the arrow on (A) renal ultrasound, (B) computerized tomography, and (C) magnetic resonance imaging T2.

Discussion

Clinical Presentation

- Presentation of CE is largely dependent on cyst location and size
- Small cysts may be asymptomatic whereas larger cysts may cause mass effect or appear toxic with rupture[5-7]
- Some cysts present with symptoms up to several decades after initial infection or remain asymptomatic indefinitely[5-7]
- Common sites of involvement are the liver (66%) and lungs (25%). Less common sites are the brain, kidneys, muscle, bone and heart.[5-7]

Diagnosis

- Diagnosis of CE is made with both imaging and serology
- Ultrasonography and CT are both ~95% sensitive, however, CT is superior to ultrasonography for evaluation of extrahepatic cysts.[8]
- MRI offers no major advantage over CT[8]
- When considering serology, antibody detection has greater sensitivity than antigen detection[9]

Management

- Management is based on the World Health Organization classification criteria and involves a combination of observation, albendazole, PAIR (percutaneous puncture, aspiration, injection, re-aspiration) and/or surgery[10]

Conclusions

- Consider CE in the differential for patients from endemic countries
- Though most cysts are found in the liver or lungs, they can be found in any organ and symptoms are often specific to the affected system
- Diagnosis of extrahepatic cysts is best by CT and antibody serology
- Most patients should be started on albendazole with definitive treatment often requiring evaluation by several subspecialists including Infectious Disease, Interventional Radiology and Surgery

References

1. Centers for Disease Control and Prevention. Parasites - Echinococcosis. 2012.
2. Frider B, et al. Long-term outcome of asymptomatic liver hydatidosis. *J Hepatol.* 1999;30(2):228-31.
3. Moro PL, et al. Human hydatidosis in the central Andes of Peru: evolution of the disease over 3 years. *Clin Infect Dis.* 1999;29:807-12.
4. Ammann RW, et. al. Cestodes. Echinococcus. *Gastroenterol Clin North Am.* 1996;25(3):655-89.
5. Gogus C, et al. Isolated renal hydatidosis: experience with 20 cases. *J Urol.* 2003;169(1):186-9.
6. Ali-Khan Z, et al. Demonstration of amyloid and immune complex deposits in renal and hepatic parenchyma of Alaskan alveolar hydatid disease patients. *Ann Trop Med Parasitol.* 1987;81(4):381-92.
7. Gelman R, et al. Minimal change glomerulonephritis associated with hydatid disease. *Clin Nephrol.* 2000;53(2):152-5.
8. El-Tahir MI, et al. Hydatid disease of the liver: evaluation of ultrasound and computed tomography. *Br J Radiol.* 1992;65(773):390-2.
9. McManus DP, et al. Echinococcosis. *Lancet.* 2003;362(9392):1295-304.
10. Brunetti E, et al. Expert consensus for the diagnosis and treatment of cystic and alveolar echinococcosis in humans. *Acta Trop.* 2010;114(1):1-16.