Primary Hydatid cyst of kidney- A case report

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Section: Uroradiology & genital male imaging
Area of Interest: Abdomen
Procedure: Diagnostic procedure
Procedure: Surgery
Procedure: Contrast agent-intravenous
Imaging Technique: Ultrasound
Imaging Technique: Experimental
Imaging Technique: CT
Special Focus: Cysts Case Type: Clinical Cases
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Patient: 40 years, male

Clinical History:

A 40-year-old male patient who was a shepherd by occupation presented with complaints of right-sided loin pain and burning micturation.

Imaging Findings:

On USG (Ultrasound), there was a large cystic lesion in relation to the upper pole of the right kidney with echoes, curled up membranes and wall calcification. Communication with calyces was seen and the cleavage with liver was well preserved.

On CECT (Contrast Enhanced Computed Tomography), the fluid density cystic lesion was located in relation to the upper pole of the right kidney. There was clear evidence of communication with calyces, suggestive of rupture into calyces. There was rupture of the cyst into localised sub diaphragmatic collection. Mild hydronephrosis was noted on the right side. No other similar characteristic lesions were seen in the abdomen and visualised thorax.

Discussion:

Background: Echinococcosis is produced at the larval stage of the Echinococcus tapeworm. Echinococcus(E.) belongs to the order Cestoda and the family Taenia. It is about 3-6 mm long [1]. There are two subtypes, E.granulosus being more common than E.multilocularis. Dogs are the definitive hosts where the adult E. granulosus worm resides. It resides in the large bowel of foxes and dogs. Sheep are the intermediate hosts. Man is the intermediate host (dead end host) and gets the disease by ingesting vegetables and water contaminated by the affected dogs.

Clinical features: A hydatid infection is commonly seen in people who come in close contact with animals. Age of infection is supposed to be in childhood, but symptoms develop in late adulthood [1]. The most common site is the liver (75%); the second most common site is lung (10-15 %) [2]. A hydatid infection can affect any organ of the body.
Kidneys are involved in 2-3% of cases [2]. Primary involvement of kidneys without involvement of the liver or lung is even rarer. Imaging findings: Ultrasonography helps in the diagnosis of hydatid cysts when the daughter cysts and hydatid sand are demonstrated. On changing the patient's posture, there is shifting of hydatid sand, giving rise to the "falling snowflake pattern" [1].

Ultrasound appearance: Gharbi classification of the Hydatid cyst demonstrates five stages [3]:
- CL: Simple cystic lesion, no cyst wall visible.
- CE 1: Unilocular simple cyst with visible cyst wall; may exhibit "hydatid sand" (i.e., snowflake sign)
- CE 2: Multivesicular, multiseptate cyst; daughter cysts.
- CE 3: Unilocular, anechoic content with detachment of the laminated membrane from the cyst wall, visible as a floating membrane (i.e., water lily sign)
- CE 4: Heterogeneous hypoechoic; no daughter cysts.
- CE 5: Cysts with a thick, calcified, arch-shaped wall.

The CT has an accuracy of 98% and sensitivity to demonstrate the daughter cysts. CECT demonstrates an expansile, hypo-attenuating cystic lesion with a well-defined wall and daughter cysts within the parent cyst. A thin hypochondriac rim is seen surrounding the lesion which represents the peri cyst. Wall calcifications are best identified on CECT. Detached germinal membrane can be seen on CT [4].

Treatment: Surgery is the treatment of choice. Kidney-sparing surgery (removal of hydatid cyst with pericystectomy) is possible in most cases (75%) [2]. Nephrectomy must be reserved for a destroyed kidney [2]. In our case, complete nephrectomy was performed to prevent the spillage of the Hydatid cyst into the peritoneal cavity.

Take home message: In a developing country, in any patient who presents with a cystic lesion, hydatid should be kept as differential diagnosis.

**Differential Diagnosis List:** Primary hydatid cyst of kidney ruptured into calyces, Cystic Nephroma, Haemorrhagic cyst, Infected cyst, Cystic renal cell carcinoma

**Final Diagnosis:** Primary hydatid cyst of kidney ruptured into calyces

**References:**

**Figure 1**

*Description:* The cystic lesion in relation to upper pole of kidney shows communication with upper calyx of kidney. **Origin:** Radiology Department, B.J. Medical College, Civil Hospital Ahmedabad, Gujarat, India.
Figure 2

Description: Nephrectomy specimen showing cystic lesion in upper pole which on histopathological examination was confirmed to be echinococcosis infection. Origin: Radiology Department, B.J. Medical College, Civil Hospital Ahmedabad, Gujarat, India.
**Figure 3**

**Description:** Ultrasound image showing cystic lesion with echoes and curled up membranes. **Origin:** Department of Radiodiagnosis, Civil Hospital Ahmedabad
Description: Sagittal images show that lesion shows cleavage plane with liver preserved, hence the lesion is primarily of kidney. Communication with calyces is also evident. Origin: Department of Radiodiagnosis, Civil Hospital Ahmedabad
Description: Cystic lesion in relation to upper pole of right kidney with sir foci within. Origin: Department of Radiodiagnosis, Civil Hospital Ahmedabad