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Original Research Paper

Radio Diagnosis

MULTIMODALITY IMAGING OF ISOLATED RENAL ECHINOCOCCOSIS PRESENTING AS ABDOMINAL MASS

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ABSTRACT

Renal echinococcosis or hydatid cyst of the kidney, is rare acquired disease caused by the parasite *Echinococcosis*. Kidney is the third commonest organ involved, after liver and lungs [1]. The kidneys are usually involved as a part of multiple organ hydatidosis. Isolated involvement of the kidney is extremely rare, seen in about 2–3% of all the cases of hydatid disease [2]. Echinococcosis is endemic in parts of the Middle East, South America, Australia, New Zealand, and Alaska [3]. Only few cases of isolated renal echinococcosis are reported in literature. Here, we report a case of isolated large renal echinococcosis presented with abdominal pain; diagnosed on Ultrasound and CT scan which was treated by nephrectomy.

KEYWORDS :

CASE REPORT

45 years old female with no co morbidity presented with complains of swelling in left side of abdomen and left flank pain. On examination a palpable lump was present on left side of abdomen with no other abnormality.

Chest X ray was within normal limits. However, on X ray KUB, large soft tissue mass with peripheral calcification was seen on left side of abdomen (Figure 1). On ultrasound, left kidney showed multi cystic lesion with internal thick septa involving upper and mid poles of left kidney (Figure 1).

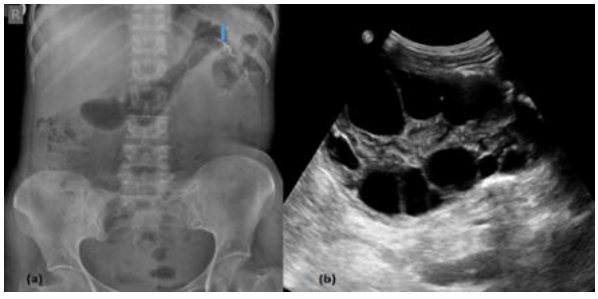

Figure 1: (a) Plain X ray KUB showing soft tissue mass with rim like calcification (arrow) in left renal region.

(b) Gray scale ultrasound image showing multi septated cystic lesion in left kidney

Rest of the abdomen showed no abnormality. Provisional diagnosis of isolated renal hydatid cyst was thought of and the patient was subjected to contrast enhanced CT scan for confirmation. CT scan showed non enhancing multi cystic lesion with peripheral calcification involving upper and mid poles of left kidney (Figure 2).

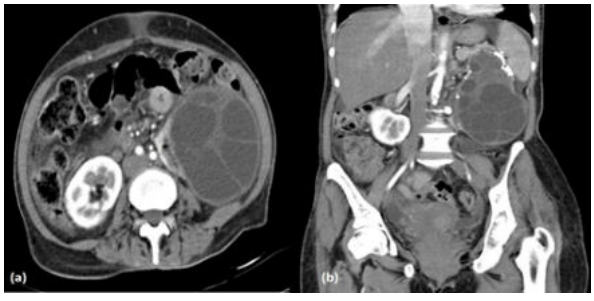

Figure 2: (a) Axial image of arterial phase of Contrast enhanced CT scan showing multi-locular cystic lesion with part of residual lower pole of left kidney (*)

(b) Coronal image of arterial phase of Contrast enhanced CT scan with peripheral rim like calcification in a multi locular cystic lesion

The mass also involved PC system. Remaining parenchyma at lower pole showed normal contrast excretion. No evidence of similar lesion was found in other organs on CT scan also. The diagnosis of isolated renal Echinococcosis was confirmed and the patient was treated with uneventful radical nephrectomy as the mass involved almost whole of the left kidney and no significant renal parenchyma was left. On follow up, the patient is doing well.

DISCUSSION

Hydatid disease is a cyclo-zoonotic parasitic infestation which is caused by the larvae of Cestode Echinococcus granulosus. The dog acts as the usual definitive host. The carcass or offal of the intermediate host, usually sheep or cattle harboring hydatid cysts, can spread the disease to dogs. Humans are accidental intermediate hosts [4]. The pathogenesis of primary renal hydatid disease postulates that causative embryo passes into the liver through the portal system and retroperitoneal lymphatics and lodges in to different organs. Formation of germinal and laminated membranes produce hydatid fluid which later organizes or calcifies [5]. If three layers of the hydatid cyst; pericyst, ectocyst and endocyst are present, the cyst is called closed cyst.

Diagnosis of renal echinococcosis is difficult even in endemic areas. It may remain asymptomatic for a long period or may present with flank pain, palpable mass, malaise, fever, hematuria and hydatiduria. Hydatiduria is a specific sign for the diagnosis of renal echinococcosis but it is seen in only 5%-25% of cases [6]. As none of the serologic or immunologic tests act as pathognomonic sign for diagnosis, only imaging studies are useful for diagnosis. There are no specific laboratory findings; however in 20% to 50% of cases, moderate eosinophilia may be seen. Due to little efficacy of the Casoni and Weinberg tests; they are nor routinely used [7]. Serological and heamagglutination tests have low reliability but when positive, they confirm the diagnosis. A highly specific test (79%) is counter immuno-electrophoresis against arch-5 [8].

Various imaging techniques which can help in diagnosis of renal echinococcosis are X-ray, Ultrasound and CT scan. A soft tissue mass or ring shaped calcification foci in renal region may be seen on plain X ray which can be due to renal echinococcosis. Excretory urography

gives idea about renal function. It may show calyceal distortion due to cystic lesions or caliectasis. If the cystic lesion is communicating with the pelvicalyceal system, leakage of contrast within the cysts may be seen in excretory urography [9]. On ultrasound, well defined anechoiec cystic lesions are seen. According to the classification of renal echinococcosis is done by Gharbi et al. [10], they are divided in to five types on the bases of their ultrasound findings.

Type I : Well defined cystic lesion with no internal echoes

Type II: Focal or diffuse detachment of the inner germinal layer resulting in a floating membrane within the cyst

Type III: Cyst with multi-septated daughter cysts

Type IV: Cysts contain coarse in-folded membranes and internal echoes.

Type V: Cystic lesions with ring like calcification pattern in the pericystic layer of The wall of cyst

On CT scan, the cyst shows a thick wall with a detached membrane; a mixed density multi-locular cystic lesion; and lower density daughter cysts [9]. The cyst wall is seen more precisely in contrast enhanced scans and the fluid is low attenuating in type I cysts. CT scan can help in distinguishing type III cysts from abscess and type IV cysts from tumors. Ring like calcification in type V cysts can be easily seen on CT scan. CT scan can also show other organ involvement if present.

Differential diagnosis of renal echinococcosis includes simple renal cysts, congenital polycystic kidneys, infected renal cysts, abscess or neoplasm [9]. History of living in endemic regions and association with sheep or cattle can get a clue for the diagnosis. Double contour thick wall favours the diagnosis in contrast to simple renal cysts with a thin wall. However, the "falling snowflakes" sign, showing multiple echogenic foci is a pathognomonic sign for hydatid sand. Diffuse and bilateral involvement in poly cystic kidneys can aid in differentiating it from echinococcosis cyst. The infective lesions are differentiated more precisely on CT scan which can show decreased contrast enhancement surrounding the abscess, thickening of Gerota's fascia and peri renal fat stranding. Linear layer of fluid between the membranes in echinococcosis cyst with no posterior shadow is called "spiral sign" that may be helpful to differentiate it from neoplasm [9].

Medical treatment includes benzimidazole agents which provides reduction in size and volume of the cysts and solidification of the contents. The process can be monitored by ultrasound. Partial or total nephrectomy are the treatment options when the renal parenchyma is significantly destroyed. Nephron sparing surgeries are nowadays an accepted alternative where possible [9]. However, close monitoring in post-operative period is also a challenge due to increased incidence of recurrence, reported to range between 10-30% [9]. Meticulous precaution are must during surgery as spillage of contents may cause anaphylaxis. Without precise preoperative diagnosis; devastating results may occur intra-operatively.

CONCLUSION

Although the isolated renal echinococcosis is very rare, it must be kept in mind while evaluating a cystic renal mass in a patient with history of living in endemic areas or positive history of contact with the definite hosts. However, typical imaging features are highly suggestive of the disease, non-specific heterogeneous appearances can cause a diagnostic dilemma. Detailed history and imaging work up can help the operating surgeon to avoid intraoperative devastating complications.

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