

## Clinical Image

# Rare Presentation of Multi-Organ Abdominal Hydatid Cysts: Acute Appendicitis

Hasni Bouraoui I<sup>1\*</sup>, Bouguila J<sup>2</sup>, Beltaifa M<sup>3</sup>, Beji O<sup>4</sup>, and Jemni H<sup>1</sup>

H<sup>1</sup>

<sup>1</sup>Department of Imaging, Sahloul Hospital, Tunisia

<sup>2</sup>Department of Paediatrics, Sahloul Hospital, Tunisia

<sup>3</sup>Department of General Surgery, Sahloul Hospital, Tunisia

<sup>4</sup>Intensive Care Unit, Sahloul Hospital, Tunisia

## CLINICAL IMAGE

A 9-year-old girl presented with acute right lower abdominal pain accompanied by nausea, vomiting and fever since six days. Abdominal examination revealed diffuse tenderness. Laboratory investigations revealed of neutrophilic leucocytosis (22,000 / mm<sup>3</sup>) and marked eosinophilia (18%).

The abdominal ultrasound revealed a multi-loculated hypo-echoic mass which measured 4x6 cm in size, which adhered to the caecum and the appendix and ascites. Others cystic masses are discovered in liver and pelvic cavity (Figure 1). Several echogenic small lymph nodes were observed throughout the abdominal cavity, with the larger of these nodes measuring approximately 0.7 cm at the narrowest point

Abdominal CT scan revealed cysts of various sizes distributed throughout the peritoneal cavity, the two largest adhered to the appendix wall, many pelvic cysts and one in the right liver lobe protruding from the liver surface. Multiple small vesicular structures were visible within the lesions, some with cyst walls of varying thickness, some with calcification (Figure 2).

We performed an exploratory laparotomy. After exposing the abdominal cavity via a midline incision, cystic masses were observed, in the right infraumbilical region in the mesoappendix and adhered to the appendicular wall and the caecum. Appendix was suppurated and inseparable from cysts, with purulent ascites secondary to the appendicular infection cysts. Many others cysts are discovered in pelvis and one in liver and none of these cysts were ruptured. No abnormalities were found in the other organs of the abdominal cavity. Appendicectomy carrying the appendicular cysts was performed and all intra abdominal and pelvic cysts were removed. There were 1 hepatic cyst, 2 appendicular cysts, and 6 pelvic cysts. The abdominal cavity was washed thoroughly with plenty of Metronidazole, and a drainage tube was placed in the right infrahepatic space and another in the pelvis to drain through the right abdominal wall. Final diagnosis was primary peritoneal hydatidosis complicated by appendicitis, hepatic and pelvic hydatidosis.

## \*Corresponding author

Hasni Bouraoui Ibtissem, Imaging Department, Sahloul Hospital, Century Round, Sousse, Tunisia, Email: ibtissemhasni@yahoo.fr

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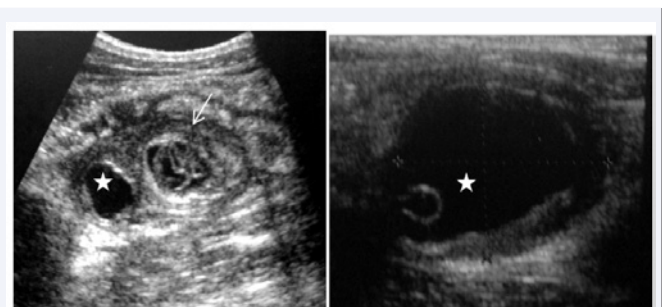
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After surgery, Albendazole was administered in addition to routine anti microbial treatment and fluid replacement. The post-operative course was uneventful and the patient was discharged on the 8th post-operative day. A therapy with Albendazole was administered for 4 weeks following the surgery.

## DISCUSSION

Hydatid disease is endemic in sheep farming and cattle farming areas of Asia, North and East Africa, South America, Australia, and the Middle East. Dogs and other carnivorous animals are definitive hosts, while sheep, cattle, horses, and goats are intermediate hosts. Humans are an accidental and dead-end intermediate host. More than 80-90% of hydatid cysts occur in the liver, lungs, or both. Abdominal hydatid cysts have been infrequently reported in the spleen, kidney, peritoneal cavity, and pancreas [1]. Multi-organ abdominal hydatid disease is the most serious form of hydatid disease and is potentially fatal [2].

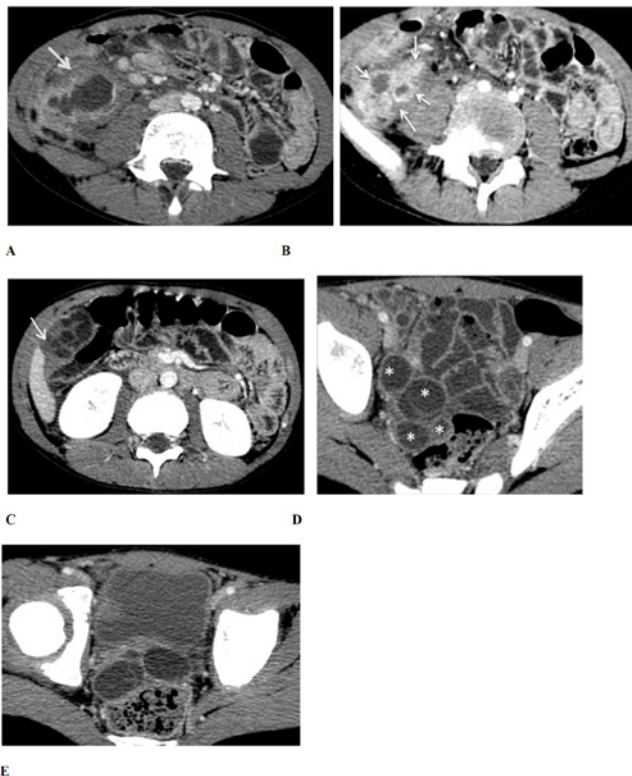
Intraperitoneal hydatid cysts usually develop after spontaneous or iatrogenic rupture of liver splenic or mesenteric cysts. Primary peritoneal hydatidosis is exceptional and is basically disseminated through the blood circulation. Acute intraperitoneal rupture of HC is often discovered intraoperatively during a



A

B

**Figure 1** Sonography showing in two cysts which adhere to the appendix wall, one contains a detached hydatid membrane (arrow) in A, and the other contains a vesicle daughter (\*) in A and B..



**Figure 2** CT scan with contrast showing in A and B, 2 hydatid cysts which adhere to the appendix. Appendix strongly enhanced with contrast and thickened (arrows). In C, CT showing hepatic mulvesicular cyst (arrow), in D, 4 multilocular and unilocular pelvic cysts (\*), and in E, 2 retrovesical cysts.

surgical intervention to explore an acute abdomen [1,3].

The hydatid cyst of the appendix is exceptional, and fewer than 10 cases have been reported worldwide. Most of the reported cases presented with acute appendicitis [3,4]

The appendix is generally involved in cases of extensive multiorgan-disseminated hydatidosis. De novo appendiceal invasion occurs infrequently. The cysts are localized within the appendicular wall, inside its lumen, mesoappendix, and sometimes even distort the appendix enough to make it almost nonexistent [5]. Passage of hydatid fluid from an incipient rupture of the liver cyst could be the likely cause. A hepatic hydatid cyst usually ruptures into the biliary system and only rarely ruptures within the peritoneal cavity [3]. Patients who suffer from a frank

rupture almost always present with severe abdominal symptoms and allergic reactions. In our case, the appendix was secondarily involved after disseminated through the blood circulation and peritoneal dissemination, because no rupture of the preexisting hepatic hydatid cyst was observed at surgery.

Symptoms due to peritoneal hydatidosis commonly arise from complications of enlarging abdominal cysts or rupture into the peritoneum, which may present as acute abdominal pain [2]. A hydatid cyst may be solitary or multiple. Sometimes, the cyst may resemble a multiloculated mass which fills the entire peritoneal cavity, which is referred to as peritoneal hydatidosis. For diagnostic purposes, ultrasonography is the first line of screening for abdominal hydatidosis, as it can detect the cystic membrane, the daughter cysts, the septa, and the hydatid sand. CT scan best demonstrates the cyst wall calcification, infection and peritoneal seedling and all hydatid cysts locations [2]. The serological tests for the diagnosis of hydatid disease include immunoelectrophoresis, enzyme – linked immunosorbent assay, and the indirect haemagglutination test [3,6].

Surgical excision followed by postoperative antimicrobial therapy using antihelmintics is the treatment of choice for hydatid disease [1]. An en-bloc resection without rupture and consequent spreading of daughter cysts is the recommended treatment strategy and it has been accepted as curative, which can avoid further recurrence [5] Surgical removal is the best treatment option. Basic education on personal hygiene and hand-washing is the most effective prevention [6].

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