Case report

A 35-year-old male patient complained of abdominal pain of 10 years' duration. He was apparently asymptomatic until 10 years ago, at which point he developed abdominal pain and vomiting. He was hospitalized at that time and confirmed to have hydatid cyst in the liver; he was treated with oral Albendazole for six months. For a few years, the patient felt better. After five years, however, abdominal pain and cough returned. He was treated with Albendazole and felt better again. The patient came to our hospital due to recurrence of the abdominal pain.

On examination, the abdomen was distended with mild diffuse tenderness. The liver was enlarged.

Ultrasound of the abdomen showed multiple cystic lesions throughout. Cystic lesions with internal echoes were seen in the left and right lobes of the liver. Multiple well-defined cystic lesions with internal echoes were seen in the peritoneal cavity anterior to the pylorus of the stomach (Fig. 1), omentum, and mesentery (Fig. 2), adjacent to bowel loops and in the rectovesical pouch. Few calcified lesions were seen, suggestive of healed lesions.

Computed tomography (CT) of the abdomen confirmed the ultrasound findings. Two cystic lesions were found in the right and left lobes of the liver. Multiple cystic lesions were seen in the mesentery, anterior to the pylorus of stomach (Fig. 3) and the rectovesical pouch (Fig. 4). This contiguous spread of the infection was through the peritoneal circulation pathway. Few calcified lesions were seen in the peritoneum. Such extensive spread of hydatid cysts was something we have rarely encountered.

CT of the thorax (Fig. 5) showed a well-defined, thin-walled cystic lesion in the left lower lobe (posterobasal segment), with fluid level along with traction bronchiectasis of the posterobasal segment of the left lower lobe.

Discussion

Hydatid disease (HD), a common parasitic disease that is caused by the larval stage of Echinococcus granulosus, has varied modes of presentation (1). In humans, hydatid disease involves the liver in approximately 75% of cases, the lung in 15%, and other anatomic locations in 10% (2-6). It rarely involves the brain, heart, bone, or other organs (3). There have been reports of rare areas of hydatid cyst in-
volvement in the body (7). There have also been reports of disseminated peritoneal hydatid cysts, but they have been attributed to a previous history of blunt trauma or liver surgery for hydatid cyst disease (8). This case involved a rare spontaneous dissemination of HD in the lungs, liver, and the peritoneal cavity, with no previous history of trauma or surgery (9, 10).

The adult Echinococcus granulosus resides in the small bowel of the definitive hosts (dogs or other carnivores).

Gravid proglottids release eggs that are passed in the feces. After ingestion by a suitable intermediate host (under natural conditions, these would be sheep, goats, swine, cattle, horses, and camels), the egg hatches in the small bowel and releases an oncosphere that penetrates the intestinal wall and migrates through the circulatory system into various organs, especially the liver and lungs. In these organs, the oncosphere develops into a cyst that enlarges gradually, producing protoscolices and daughter cysts that fill the cyst interior. The definitive host becomes infected by ingesting the cyst-containing organs of the infected intermediate host. After ingestion, the protoscolices evaginate, attach to the intestinal mucosa, and develop into their adult stages in 32 to 80 days. The hydatid cyst has three layers: outer pericyst, middle ectocyst, and inner germinal layer (the endocyst), where the scolices (larval stage of the parasite) and the laminated membrane are produced. Daughter vesicles (brood capsules), small spheres that contain the protoscolices, are formed from the germinal layer.

The appearance of the cysts on ultrasound and CT varies based on the stage of the life cycle. On ultrasound, they are classified as follows:

A) Cystic lesion: a simple cyst in the affected organ. This appearance is not diagnostic for echinococcosis.

B) Active cysts: multiple cysts or septae are present in the parent cyst.

C) Transitional stage: daughter cysts may be present in the parent cyst, with hydatid sand or debris within the cyst. (The case described here is in the transitional stage.)

D) Inactive stage: the cysts are echogenic and may be partially or completely collapsed on themselves. On CT their appearance varies: they may show a "spoke wheel" pattern or a water lily sign (where membranes appear

Figure 2. 35-year-old male with complaints of abdominal distention. Ultrasound of abdomen using 5 MHz curvilinear probe shows multiple cystic lesions in the mesentry and omentum.

Figure 3. 35-year-old male with complaints of abdominal distention. Axial noncontrast-enhanced CT of the abdomen shows multiple cystic lesions in the omentum and liver (kvp:120 mas:100 5mm thickness).

Figure 4. 35-year-old male with complaints of abdominal distention. Axial noncontrast-enhanced CT of the abdomen shows multiple cystic lesions in the pelvis in the mesentery and near the bladder (Kvp:120 mas:100 5mm thickness).
Compartments enable the peritoneal cavity to have a normal circulation of peritoneal fluid. In the normal abdomen without intraperitoneal disease, a small amount of peritoneal fluid continuously circulates. The movement of fluid in this circulatory pathway is produced by the movement of the diaphragm and peristalsis of bowel. It predominantly flows up the right paracolic gutter, which is deeper and wider than the left and is partially cleared by the subphrenic lymphatics.

These watershed regions in the peritoneal cavity are areas of fluid stasis: the ileocolic region, the root of the sigmoid mesentery, and the Pouch of Douglas. The spread of hydatid disease in this case was along the areas of peritoneal fluid circulation. Hence we attribute the spread of disease to possible spontaneous intraperitoneal seeding.

References

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Figure 5. 35-year-old male with complaints of abdominal distention. Axial noncontrast-enhanced CT of the thorax in mediastinal (A) and lung window (B) shows a large cyst in the left posterobasal segment of the left lobe with broncheiectatic changes in the right lower lobe. Another cyst seen adjacent to the spleen. (Kvp: 120 mas:100 5 mm thickness).