Unusual Presentation of Hydatid Cyst: A Case Series With Review of Literature
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Citation

Abstract
Objective: The aim of this study was to evaluate the different presentations of hydatid cyst. The purpose of this article is to emphasize the fact that this disease should be suspected in cystic lesions affecting any organ in the body, especially in endemic areas of the world.

Introduction: Hydatid cyst is the larval form of Echinococcus granulosus. Hydatid disease is endemic in India, as well as other parts of the world, including, Middle East, Africa, South America, New Zealand, Australia, Turkey and Southern Europe. Even though hydatid cysts can occur in any organ, it is very rare to see the disease in the sites reported in this article. In few cases though the sites are common, the way of presentation is very uncommon. Musculoskeletal hydatidosis is very rare.

Material and methods:
Twelve cases of Hydatid cyst at rare sites are being discussed. Case 1: A 60-year-old male patient presented with chronic distension of abdomen. On Computerised Tomography (CT), a cyst occupying the whole peritoneal cavity was present. Case 2: A 35-year-old man presented with two cystic lesions in the liver. Case 3: A 50-year-old male came with pain in abdomen since 10 days over right hypochondrium that aggravated on eating and had 2-3 episodes of vomiting. Ultrasonography (USG) and CT (Plain and Contrast) revealed a hydatid cyst in the liver with multiple daughter cysts. There was minimal hydatid fluid. Case 4: A 50-year-old male presented with pain in abdomen. On USG, there was a cystic lesion in the liver. Case 5: A 60-year-old man presented with pain in the right hypochondrium. USG and CT (Plain and Contrast) revealed a hydatid cyst in the liver. Case 6: A 30-year-old female presented with complaint of left hypochondriac pain. CT showed multiple lobulated cystic mass in the inferior mediastinum and retroperitoneum. Case 7: A 53-year-old female presented with a swelling in the right loin region since 1 year. USG revealed a cystic lesion in the right kidney. Case 8: A 38-year-old man presented with an abdominal lump since 6 months. USG revealed a cystic lesion in the peritoneum. Case 9: A 75-year-old man admitted with painless swelling in the posterior aspect of the left thigh since 2 years. It was an intermuscular hydatid cyst. Case 10: A 35-year-old female presented with swelling in the posteromedial aspect of the thigh which radiologically revealed multiple cystic lesions. Case 11: A 43-year-old man presented with a swelling in the right supraclavicular region. Case 12: A 28-year-old female presented with a swelling in the right side of back. Radiology findings revealed a cystic lesion in the intramuscular plane. All the 12 cases were diagnosed histopathologically as hydatid cysts of respective sites.

Results: A total of 12 cases were managed surgically. Out of 12 cases, 8 (66.66%) were male and 4 (33.33%) were female. The mean age of patients was 46 years. Incidence of hydatid cysts at various sites was: Five patients had hydatid cyst in the liver (41.66%), 2 patients in the thigh (16.66%), 1 patient each in the kidney, peritoneum, mediastinum, paraspinal and supraclavicular region (each 8.33%).

Conclusion: Hydatid cyst of liver and lung is not uncommon, but it may present in an unusual manner in these usual sites. The possibility of hydatid cyst in any patient presenting as a soft tissue swelling should be kept as differential diagnosis as it can affect any organ of the body such as extremities and mediastinum.

INTRODUCTION
Hydatid disease has been known since the time of Hippocrates, and it still represents a major health problem in endemic regions.[1] Echinococcosis is endemic in the Mediterranean countries. Hydatid cyst is the larval form of cestode tapeworm Echinococcus granulosus.[2] Hydatid disease is endemic in India, as well as other parts of the world, including, Middle East, Africa, South America, New Zealand, Australia, Turkey and Southern Europe. Infestation by hydatid disease in humans most commonly occurs in the
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Liver (55—70%) followed by the lung (18—35%); the two organs can be affected simultaneously in about 5-13% of cases. It may present in an unusual manner in this usual sites.

The other rare sites reported to be involved by hydatid cyst are peritoneal cavity, spleen (5.1%), pancreas, thyroid, breast, gallbladder, thigh, kidney, brain, supraclavicular region, pericardium, diaphragm and pleural cavity.²

Even though hydatid cysts can occur in any organ,³ it is very rare to see the disease in the sites reported in this article. Musculoskeletal hydatidosis is very rare and represents 0.5% - 4.7% of all cases of Echinococcosis.⁴

MATERIAL AND METHODS

Twelve cases of Hydatid cyst at rare sites are being discussed. In all the 12 cases formalin-fixed tissue sections were stained with Hematoxylin and eosin.

CASE STUDIES

Case 1: A 60-year-old male patient presented with chronic distension of abdomen, loss of appetite, loss of weight and disturbed bowel habits. There was uniform distension of the abdomen from xiphisternum to symphysis pubis (Figure 1).

Figure 1
Figure 1: Showing Hydatid cyst leading to huge uniform abdominal distension extending from xiphisternum to symphysis pubis

On CT, a cyst occupying the whole peritoneal cavity was present (Figure 2).

Figure 2
Figure 2: CT scan showing giant hepatic Hydatid cyst (45 x 35 x 25 cm) occupying the whole peritoneal cavity.

He had a giant hydatid cyst, arising from the left lobe of liver, of dimensions 45 x 35 x 25 cm (Figure 3).

Figure 3
Figure 3: Showing Giant hepatic Hydatid cyst.

On gross, it was a cystic mass measuring 45 x 35 x 25 cm. On cut surface, the mass showed multiple, pearly white translucent cysts with gelatinous material. Microscopic examination revealed features of hydatid cyst, exhibiting the cyst wall consisting of, outer fibrous layer with fibrovascular collagenous tissue and mild to moderate chronic mononuclear inflammatory infiltrate, middle lamellated cuticle layer and the inner germinal layer with brood capsules.

Case 2: A 35-year-old male presented with pain in abdomen. On USG, there were two cystic lesions in the liver (Figure 4). Partial cystectomy was done and the excised mass sent
for histopathology.

**Figure 4**
Figure 4: Showing two Hydatid cysts in the liver (Indicated by artery forceps).

On gross examination, the excised masses were already cut open. The larger measured 15 x 10 cm and other small cyst measured 12 x 8 cm. It was microscopically diagnosed as Hydatid cyst.

Case 3: A 50-year-old male came with complaint of pain in abdomen since 10 days over right hypochondrium that aggravated on eating and had 2-3 episodes of vomiting. Ultrasongraphy, showed a large hydatid cyst in liver. CT (Plain and Contrast) revealed a hydatid cyst in the liver with multiple daughter cysts, filled with stroma. There was minimal hydatid fluid (Figure 5). Provisional diagnosis was Hydatid cyst of liver.

**Figure 5**
Figure 5: CT scan showing hydatid cyst in the right lobe of liver with multiple daughter cysts, filled with stroma and not containing any fluid.

Partial cystectomy with cholescytectomy was performed. On peroperative findings, there was a huge Hydatid cyst measuring about 15 x 12 cm seen on inferior and diaphragmatic surface of right lobe of liver. No hydatid fluid was seen, only stroma and daughter cysts were present. Hydatid cyst was densely adherent with gall bladder and anterior abdominal wall.

**Figure 6**
Figure 6: Dense adhesions present between hydatid cyst (white arrow) and gall bladder (Blue arrow).

Partial cystectomy was done after removing all daughter cysts and specimen was sent for histopathology. On microscopic examination, the cyst showed a chitinous wall
with covered fibrocollagenous tissue. Inner chitinous wall surface showed attached daughter cysts with invaginated morphology having scolex and germinal lining (Figure 7, 8, 9). It was diagnosed as Hydatid cyst of liver.

**Figure 7**
Figure 7: Photomicrograph revealing fibrous and chitinous wall and attached daughter cyst with invaginated morphology having scolex and germinal lining. (40X)

**Figure 8**
Figure 8: Photomicrograph revealing lamellated fibrous and chitinous wall and attached daughter cysts with invaginated morphology having scolex and germinal lining. (10X)

**Case 4:** A 50-year-old male presented with pain in abdomen. On USG, there was a cystic lesion in the liver measuring 8 x 5 cm. On gross examination, it was a cystic mass measuring 8 x 5 cm. On cut surface, the mass showed multiple, pearly white translucent cysts with gelatinous material. Microscopic examination revealed features of hydatid cyst, exhibiting the cyst wall consisting of, outer fibrous layer with fibrovascular collagenous tissue and mild to moderate chronic mononuclear inflammatory infiltrate, middle lamellated cuticle layer and the inner germinal layer with brood capsules.

**Case 5:** A 60-year-old man presented with pain in the right hypochondrium. USG and CT (Plain and Contrast) revealed a calcified wall of hydatid cyst in the seventh segment of liver. On gross examination, there were multiple grey white friable tissue bits varying in size from 0.5-3 cm. Histopathology revealed a lamellated membrane with evidence of granular layer and proteinaceous material along with chronic inflammatory infiltrate.

**Case 6:** A 30-year-old female presented with complaint of pain in left loin since two days. On local examination, there was tenderness present over left hypochondriac region and there was also renal angle tenderness. A mass was palpable in the left hypochondrium. USG abdomen revealed 10.6 x 6 cm multiloculated cystic lesion located posterior to spleen and arising from left suprarenal area. Features were suggestive of Hydatid cyst or Adrenal mass. CT showed multiloculated cystic mass in the inferior mediastinum and retroperitoneum. Peroperatively hydatid cyst was seen behind the diaphragm.
& pleura, on left side. Diaphragm and pleura were opened and hydatid cyst along with 8 daughter cysts were taken out and sent for histopathology. On gross examination, there were multiple grey white collapsed cystic mass varying in size from 0.5-3 cm and weighing 114 gm. On microscopic examination, the sections showed fibrous and chitinous wall with chronic mononuclear inflammatory infiltrate composed of lymphocytes and plasma cells. No scolex or germinal epithelium was seen (Figure 10, 11).

**Figure 10**
Figure 10: Photomicrograph revealing fibrous and chitinous wall. (10X)

It was diagnosed as Hydatid cyst. Follow up for 36 months after surgery, showed that the patient was symptom free.

Case 7: A 53-year-old female presented with a swelling in the right loin region since 1 year. USG revealed a cystic lesion in the right kidney. On gross examination, there was a cystic mass measuring 9 x 7 x 5 cm. On cutting open the cyst, the cyst contained gelatinous material. Microscopic examination revealed features of hydatid cyst, exhibiting the cyst wall consisting of, outer fibrous layer with fibrovascular collagenous tissue and mild to moderate chronic mononuclear inflammatory infiltrate, middle lamellated cuticle layer and the inner germinal layer with brood capsules. It was diagnosed as Hydatid cyst.

**Case 8:** A 38-year-old man presented with an abdominal lump since 6 months. USG revealed a cystic lesion in the peritoneum. On gross examination there were multiple cysts varying in size from 1 cm to 5 cm in diameter. On microscopy, sections revealed, features of hydatid cyst exhibiting the cyst wall consisting of, outer fibrous layer with fibrovascular collagenous tissue & mild to moderate chronic mononuclear inflammatory infiltrate. Middle lamellated cuticle layer and inner germinal layer with brood capsules were observed.

Case 9: A 75-year-old man presented with a painless swelling in the posterior aspect of the left thigh since 2 years. Initially the swelling was small which gradually progressed to attain the present size of 30 x 20 cm (Figure 12).

**Figure 12**
Figure 12: Showing Hydatid cyst presenting as a swelling (30 x 20 cm) in the posterior aspect of left thigh.

Skin over the swelling was pinchable. Swelling was soft lobulated with well-defined borders. On USG, it was reported as lipoma of the thigh or soft tissue sarcoma of the thigh. On fine needle aspiration cytology (FNAC), the aspirated material showed a lamellated chitinous material against the eosinophilic background, and the probable diagnosis was hydatid cyst of thigh (Figure 13).
Liver function tests were normal. On surgery, it was found to be intermuscular hydatid cyst. Total removal was done and sent for histopathology. On gross examination, there were two soft tissue masses each measuring, 16 x 8 x 5 cm & 13 x 6 x 4 cm along with multiple pearly white translucent daughter cysts of varying sizes (Figure 14, 15).

**Figure 14**
Figure 14: Showing two soft hydatid cysts (16 x 8 x 5 cm & 13 x 6 x 4 cm) along with multiple pearly white translucent daughter cysts of varying size.

Cut surface of masses showed multiple, pearly white translucent cysts with gelatinous material. On microscopy, sections revealed features of hydatid cyst exhibiting the cyst wall consisting of outer fibrous layer with fibrovascular collagenous tissue & mild to moderate chronic mononuclear inflammatory infiltrate. Middle lamellated cuticle layer and inner germinal layer with brood capsules were observed.

Case 10: A 35-year-old female presented with an ovoid, well-defined, firm, nontender, immobile 10 x 4 cm swelling in posteromedial aspect of the left thigh. Swelling had no hydatid thrill. Radiological features revealed a multiple cystic lesion measuring 6.5 x 5.5 cm in the posteromedial aspect of left thigh. On gross examination, the cystic mass with attached muscle measured 12 x 6 x 4.5 cm. The cut section showed multiple daughter cysts varying in size from 2-0.5 cm in diameter. On microscopic examination, the cyst showed a chitinous wall with covered fibrocollagenous tissue and muscle bundles on the outer aspect. Inner chitinous wall surface showed attached daughter cysts with invaginated morphology having scolex and germinal lining (Figure 16). It was diagnosed as Hydatid cyst in the thigh.
Figure 16
Figure 16: Photomicrograph showing inner chitinous wall with attached daughter cysts having invaginated morphology along with scolex and germinal lining. (40X)

Case 11: A 43-year-old male presented with a swelling in the right supraclavicular region. On gross examination, an irregular, grey white cyst measured 5 x 3 cm. The cut section showed very few tiny daughter cysts. On microscopic examination, the cyst showed a chitinous wall with covered fibrocollagenous tissue. Inner chitinous wall surface showed attached daughter cysts with invaginated morphology having scolex and germinal lining. It was diagnosed as Hydatid cyst.

Case 12: A 28-year-old female presented with a swelling in the right side of back. Radiology findings revealed a cystic lesion in the intramuscular plane. On gross examination, it was a soft, grey white mass of tissue measuring 6 x 3.5 x 1.5 cm. Cut section showed solid, homogeneous, grey white area along with a cystic area. On histopathology, sections revealed features of hydatid cyst exhibiting the cyst wall consisting of, outer fibrous layer with fibrovascular collagenous tissue & mild to moderate chronic mononuclear inflammatory infiltrate. Middle lamellated cuticle layer and inner germinal layer with brood capsules were observed. It was diagnosed as Hydatid cyst.

RESULTS
A total of 12 cases were managed surgically. Out of 12 cases, 8 (66.66%) were male and 4 (33.33%) were female. The mean age of patients was 46 years. Incidence of hydatid cysts at various sites was: Five patients had hydatid cyst in the liver (41.66%), 2 patients in the thigh (16.66%), 1 patient each in the kidney, peritoneum, mediastinum, paraspinal and supraclavicular region (each 8.33%).

Table 1 summarizes the different modes of presentation with the age and sex of our cases.

Table 1: Details of age, sex, and site of twelve cases of Hydatid cyst

<table>
<thead>
<tr>
<th>Case no.</th>
<th>Age</th>
<th>Sex</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>60</td>
<td>Male</td>
<td>Left lobe of liver</td>
</tr>
<tr>
<td>2.</td>
<td>35</td>
<td>Male</td>
<td>Liver</td>
</tr>
<tr>
<td>3.</td>
<td>50</td>
<td>Male</td>
<td>Inferior and diaphragmatic surface of right lobe of liver</td>
</tr>
<tr>
<td>4.</td>
<td>50</td>
<td>Male</td>
<td>Liver</td>
</tr>
<tr>
<td>5.</td>
<td>49</td>
<td>Male</td>
<td>Liver</td>
</tr>
<tr>
<td>6.</td>
<td>30</td>
<td>Female</td>
<td>Inferior mediastinum &amp; Retroperitoneum</td>
</tr>
<tr>
<td>7.</td>
<td>58</td>
<td>Female</td>
<td>Right kidney</td>
</tr>
<tr>
<td>8.</td>
<td>38</td>
<td>Female</td>
<td>Peritoneum</td>
</tr>
<tr>
<td>9.</td>
<td>75</td>
<td>Female</td>
<td>Left thigh (Posterior aspect)</td>
</tr>
<tr>
<td>10.</td>
<td>35</td>
<td>Female</td>
<td>Left thigh (Posterior aspect)</td>
</tr>
<tr>
<td>11.</td>
<td>43</td>
<td>Male</td>
<td>Right supraclavicular region</td>
</tr>
<tr>
<td>12.</td>
<td>28</td>
<td>Male</td>
<td>Back (Paraspinal region-right)</td>
</tr>
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</table>

LIFE CYCLE OF ECHINOCOCCUS GRANULOSUS

Hydatid disease is a zoonotic infection caused by adult or larval stages of the cestode Echinococcus granulosus, which is a small, 5-mm-long tapeworm. Human infection by Echinococcus granulosus occurs most commonly in sheep- and cattle-raising areas where dogs assist in herding.[5] Human beings are usually infected as intermediate hosts when they ingest egg-contaminated food or water. Hydatid cysts grow at a rate of about 1–5 cm/year and a long latent period is typical.[6]

Two types of Echinococcus granulosus life cycle patterns have been described in Europe, Asia, and North America: domestic and sylvatic. The former involves domestic ungulates, mainly sheep, as intermediate hosts and dogs as definitive hosts. The latter life cycle involves wolves, dogs, and cervids, such as moose and reindeer, and occurs in higher latitudes. Adult tapeworm grows in the small bowel of its definitive host, the dog, attached to the mucosa by hooklets. Humans become infected via ingestion of eggs as a result of direct contact with infected dogs that shed proglottids or through the ingestion of vegetables spoiled.
with dog faeces containing eggs. When ingested, the eggs liberate their larvae in the duodenum of the intermediate host (sheep or human). The larvae cross the intestinal wall and via the portal system migrate to the liver, where they are transformed into cysts. Thus, the liver is the organ most frequently infected by this parasite (50%-90%). Larvae may pass through the liver and settle in the lungs and other organs (central nervous system, bones).\[^5\]

Once in the human liver, cysts grow as much as 1 cm during the first 6 months and 2-3 cm every year thereafter, depending on the host’s physical resistance. The liver cysts may be asymptomatic for years, and occasionally spontaneous regression has been noted. More commonly the disease is slowly progressive and symptoms as well as complications may arise. Without treatment, the cysts grow and may form fistulas into adjacent organs or rupture into the peritoneal cavity. Older cysts tend to form exogenous daughter cysts, a significant factor for recurrence of the disease after surgery.\[^5\] In most patients, a single cyst develops in one organ. The natural course of the infection varies. Some cysts spontaneously collapse and may disappear or calcify, while the other cysts steadily increase in size, displace or compress healthy tissue and organs, and may become complicated.

**DISCUSSION**

Human Echinococcosis is a zoonotic infection caused by the tapeworm of the genus Echinococcus. Incidence in endemic areas ranges from 1-220 cases per 100,000 inhabitants.\[^5,7\] Infestation by hydatid disease in humans most commonly occurs in the liver (55—70%) followed by the lung (18—35%). It may present in an unusual manner in this usual sites.

Uncommon hydatid cyst locations include, the peritoneal cavity (10-16%), spleen (3%), brain (3%), musculoskeletal system (0.5-4%), heart (2 %), kidney (1.5-4%), retroperitoneum (1%), and supraclavicular region. Primary hydatid cysts of the diaphragm are extremely rare,\[^11\] as in our case 6. Although any organ in the body may be involved, a hydatid cyst in the muscle is extremely rare as in our cases 9 and 10. In our case 7, hydatid cyst was in the kidney and in case 8, in the peritoneum; both of them are the uncommon sites for the hydatid cyst to occur. Our case 11 had hydatid cyst in the supraclavicular region, another rare site for hydatid cyst to occur.

Incidence of musculoskeletal hydatidosis is not clear. Some authors report an incidence of musculoskeletal echinococcosis including involvement of subcutaneous tissue as 0.5%–4.7% among all cases of hydatid disease.\[^8\] Soft-tissue hydatid cysts occur in 2.3% of cases reported from endemic areas. They are usually associated with involvement of other solid organs.\[^9\] Echinococcosis of the musculoskeletal system is found in 0.5-4% of the patients suffering from hydatid disease.\[^9\] Our cases 9 and 10 were the primary hydatid cysts of the posterior thigh but there was no involvement of the other solid organs.

The causes for primary muscular localization of the disease are unknown. In a series of 272 cases of hydatid cyst, thigh is reported to be involved in only 0.37 % cases. Although hydatid disease is not uncommon in India, there are very few reports of thigh involvement. Primary hydatidosis of thigh muscles is very rare as in our cases 9 and 10. The important differential diagnoses are soft tissue tumor, traumatic and development lesions. “Water lily sign” has been described recently on MRI of intramuscular hydatid cyst of thigh, which is almost confirmatory of the diagnosis.\[^21\] Although the disease is asymptomatic for many years because of the slow growth of the cyst, it is progressive, may cause life-threatening complications, and has the tendency to recur.\[^10\]

Hepatic hydatid disease causes highly variable symptoms and signs, and can be found incidentally in an asymptomatic patient. The symptoms and signs may be caused by a toxic reaction to the parasite or by local and mechanical effects, depending on the location and nature of the cysts and the presence of complications. Early diagnosis and proper treatment will help to reduce the complication rate and prevent recurrence.\[^11\]

The hydatid cyst gradually enlarges in the liver parenchyma and may cause symptoms such as dull pain in the right upper quadrant, hepatomegaly, and formation of a palpable mass. Daughter cyst formation may develop from the inner germinal layer in the cyst cavity or exogenously. This may explain why there are 2 or more cysts in the livers of certain patients. The cyst may also rupture into the bile ducts and release daughter cysts, resulting in biliary colic and jaundice; Infection is another complication, which occurs when both the pericyst and the endocyst perforate, allowing bacteria to pass easily into the cyst. Infection usually manifests as a hepatic abscess. Rarely, the cyst ruptures into the bronchial tree causing hydatidemesis. The presence of intraperitoneal hydatidosis accompanying hepatic disease is usually due to microperforations or contamination during previous surgery. However, direct perforation of a liver cyst into the peritoneal
cavity may occur, resulting in acute abdominal pain and systemic anaphylactic reactions. Thoracic involvement occurs in 0.6% to 16% of cases of hepatic hydatid disease.\(^5\)

Our case 1 had giant hydatid cyst of the liver which was larger than the largest ever reported. Its dimensions were 45 x 35 x 25 cm. Review of English literature indicated that the largest hydatid cyst recorded earlier was of dimensions 37 x 14.88 x 15 cm.\(^6\)

The path of hydatid larvae reaching the diaphragm appears puzzling. They can affect the diaphragm primarily or secondarily. Primary Hydatid cyst of the diaphragm (HCD) may be explained by the hydatid embryo's evolution. After ingestion of the ova, the gastric acid dissolves their membranes; embryos are released and enter the portal blood through the intestinal mucosa. The first to barriers to arrest embryos are the liver and lungs. If they fail, embryos reach the systemic circulation. Potential targets include any tissue except the hair, nails, and teeth.

HCDs resulting from visceral hydatid cyst rupture in either the abdominal or thoracic cavities, represent a secondary route of spread. A rupture may be spontaneous (also called direct), or iatrogenic. Secondary HCDs have been described to occur after hydatid cyst rupture into blood or lymphatic vessels.\(^1\)

**DIAGNOSIS**

Diagnosis of uncomplicated hepatic hydatid disease is based on clinical suspicion and epidemiologic data, but is often made difficult by the variable signs and symptoms. USG is important for the classification of hydatid cysts.\(^11\) Hepatic hydatids may remain silent for many years. In some, symptoms of right upper quadrant dull aching pain, the presence of a palpable mass or, mass effect of the slowly enlarging cyst: from the stretching hepatic capsule, jaundice from compression of the bile duct, or portal hypertension from portal vein obstruction may be present. In some, these symptoms have either been absent, or have been ignored until the parasite has eroded into a bile duct, through the hepatic capsule into the free peritoneal cavity, or into adherent viscera, or through the diaphragm into the pleural cavity or lung.\(^6,12\)

CT and USG are very useful for revealing well-defined cysts with thick or thin walls.\(^6\) Large cystic lobulated structures containing multiple daughter vesicles or membranes, septa, and hydatid sand can be visualised.\(^5\) The visualization of daughter cysts within the larger cyst and the mural calcification helps to distinguish Echinococcus granulosus infection from carcinomas, bacterial or amoebic liver abscesses, or haemangiomas.\(^6\) The cyst wall may appear partially or heavily calcified. Partial calcification of the cyst does not always indicate death of the parasite, whereas densely calcified cysts are considered inactive. However, even without calcification, a hydatid cyst usually demonstrates a high attenuated wall on unenhanced computed tomography.\(^1,14\) CT and USG have a sensitivity of more than 90%.\(^3\)

Laboratory tests include the hematological tests such as the complete blood picture showing eosinophilia but have very low sensitivity. Considering the biochemical liver function tests, the elevation of serum alkaline phosphatase is the most common finding. Both these laboratory tests are considered less sensitive. The Casoni skin test has been abandoned as a diagnostic tool since 1980, because of its low diagnostic value and the allergic reactions that it occasionally caused. Among the serological tests, counter immunoelectrophoresis has a high sensitivity (92%).\(^3\)

The disease is confirmed by a high antibody titer to hydatid antigen using the counter immunoelectrophoresis test. Enzyme-linked immunosorbent assay has 56.7%-70% sensitivity.\(^15\) It is highly specific for diagnosis of human echinococcosis, especially when used for locations other than the liver or the lung, or for calcified cysts.\(^18\) The other tests include the latex agglutination and indirect haemagglutination (IHA) test.\(^3\)

It is not rare to discover a cyst during a prophylactic x-ray examination and the plain chest x-ray may give a clue to the diagnosis: an impaired hemidiaphragm mobility or elevation, pleural effusion, or calcifications have been described as relatively specific radiologic Hydatid cyst of diaphragm signs. A pulmonary basal shadow with erased diaphragm borders also raises suspicion for a Hydatid cyst lesion but has been considered non-specific HCD. CT is sensitive in detecting HC calcifications but does not distinguish between HCDs and hydatid cysts adjacent to the diaphragm. MRI is important when imaging Hydatid cyst with atypical CT appearance. The method's advantage is based on the superior chest wall and diaphragm delineation. Other radiologic procedures such as radionuclide scintigraphy and diagnostic pneumothorax or pneumoperitoneum, widely used in the past, are currently ignored as CT and USG are more sensitive.\(^3\)

FNAC is also a useful diagnostic method, as it does not
cause any complications and can help in the diagnosis.\textsuperscript{[5]}

While some authors discourage FNAC for the diagnosis of hydatid cyst, but it has been reported to be useful sometimes when serology is negative.\textsuperscript{[2]}

\section*{CONCLUSION}

Hydatid cyst of liver and lung is not uncommon. Although the disease is asymptomatic for many years because of slow growth of the cyst, it is progressive, may cause life threatening complications and has the tendency to recur. When the cyst is present in the rare site such as in extremities and clinically presents as benign soft tissue tumour, the suspicion of hydatid cyst is unlikely. This is further confusing when the patient does not have any primary hydatid cyst in lung or liver. The possibility of hydatid cyst in any patient presenting as a soft tissue swelling should be kept as differential diagnosis as it can affect any organ of the body such as thigh, mediastinum and kidney.

\section*{References}

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