

THE HYDATID TIMES

Hydatid disease: Here, there & everywhere

Introduction -

Hydatid disease is a worldwide zoonosis affecting humans and other mammals. It is caused by a tapeworm of the genus *Echinococcus*. There are two main types of *Echinococcus* infections namely *E. granulosus* and *E. multilocularis*. The most common form found in humans is caused by *E. granulosus*.

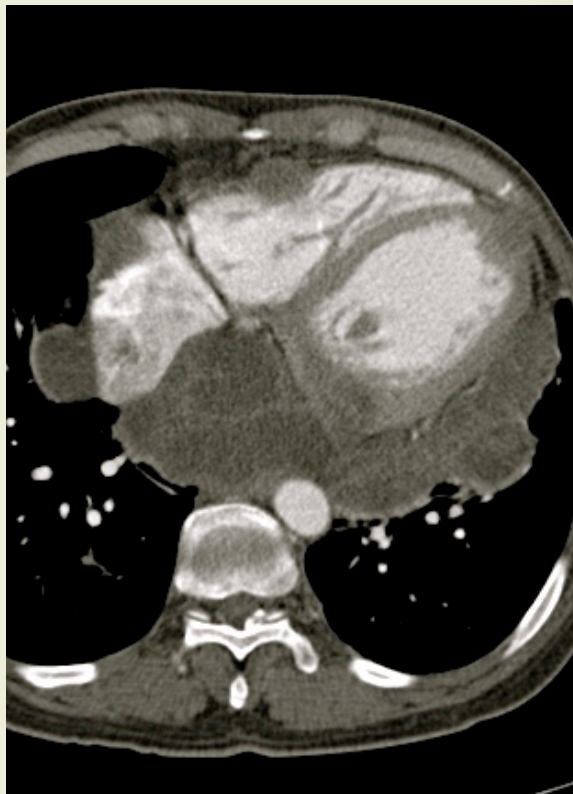
This type of infection is endemic to South Africa, but is also commonly seen in other great grazing regions of the world such as the rest of Africa, Australia, New Zealand, the Middle East and parts of South America. The incidence in endemic areas ranges from 1-220 cases per 100 000 inhabitants. ■



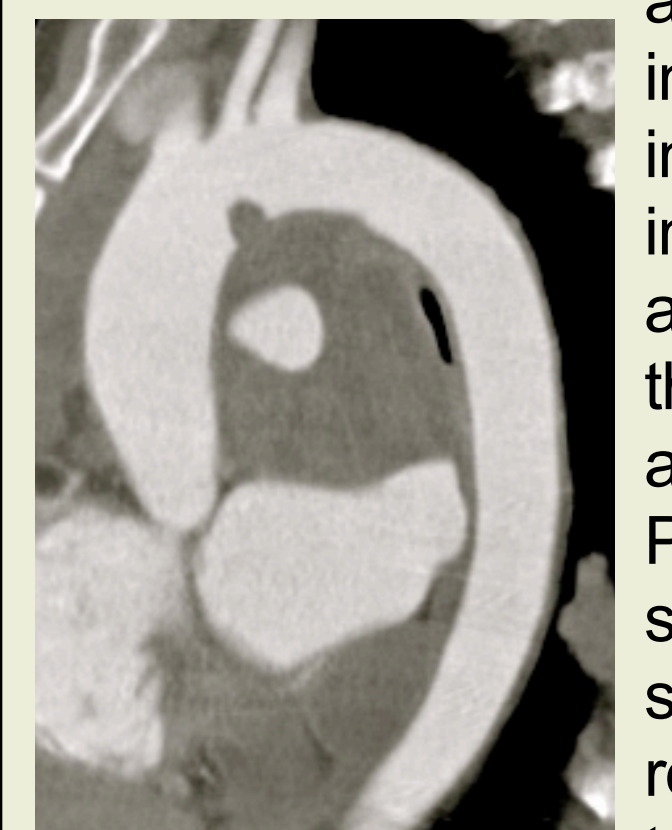
The usual victims - when will the suffering end?

Doctors surprised by rare find

Pericardium - Cardiac hydatid disease is a very rare entity and only 10 - 15 % of disease at this site involves the pericardium. Chest radiography will demonstrate deformation of the cardiac borders. Echocardiography may be used in the investigation, but may be inadequate to demonstrate the extent of the disease. "Mr. P" presented with chest pain and the axial CT demonstrated near circumferential involvement of the pericardium by low density, multicystic lesions. The sagittal reformatted image showed the extensive mediastinal involvement



"Mr. P" - CT: axial

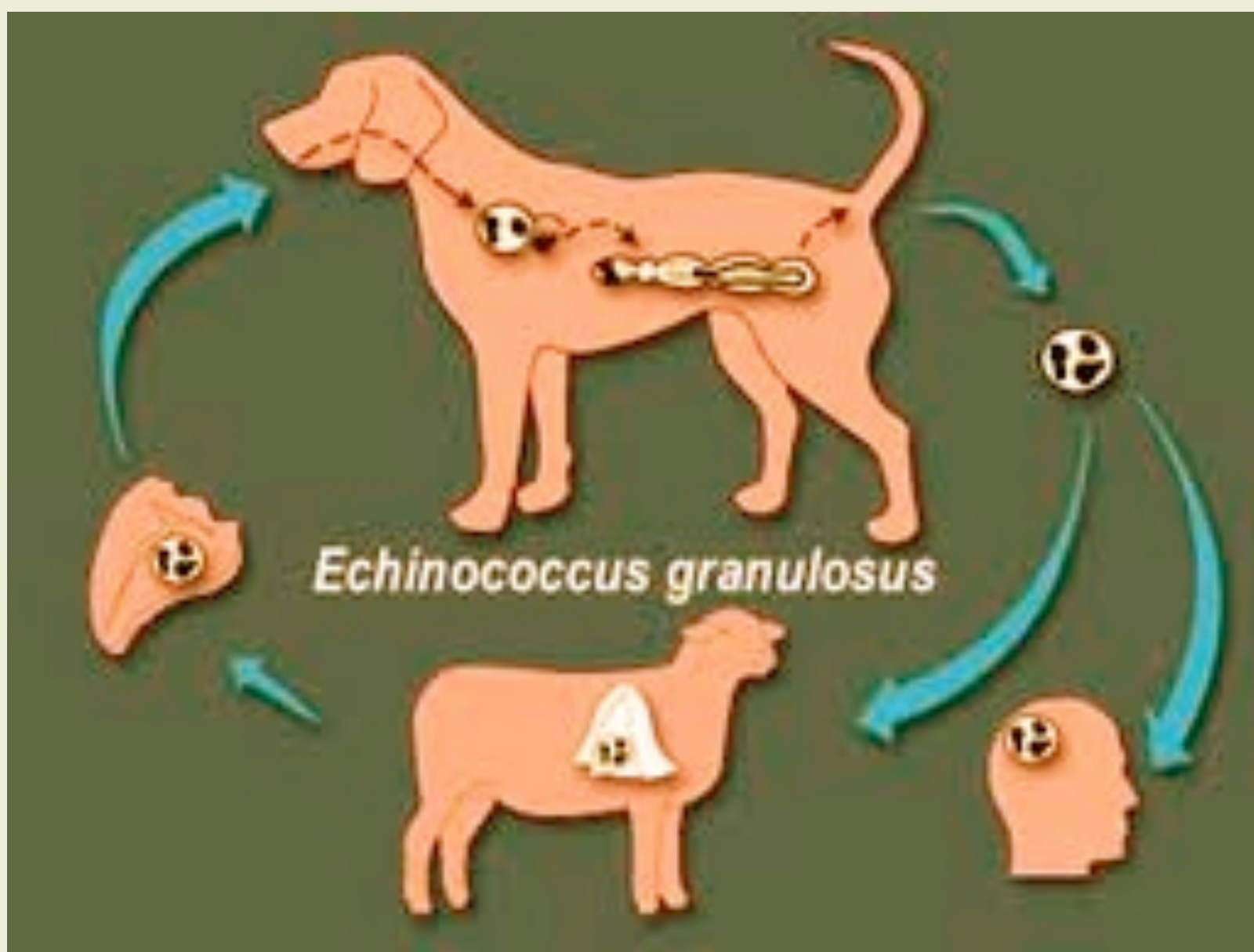


"Mr. P" - CT: sagittal MPR

as well as infiltration into the inferior aspect of the aortic arch. "Mr. P" has not shown significant response to treatment. Cardiac gated cross sectional imaging will be required for future monitoring of his disease. ■

The life and times of HD

The definitive host in the life cycle of *E. granulosus* is usually the dog or some other carnivore. The proximal small bowel is the site where the adult worm resides and eggs are released into the intestine to be excreted via feces. This can contaminate the ground where sheep graze. They act as the intermediate hosts and ingest the eggs which then pass through the intestinal wall to enter

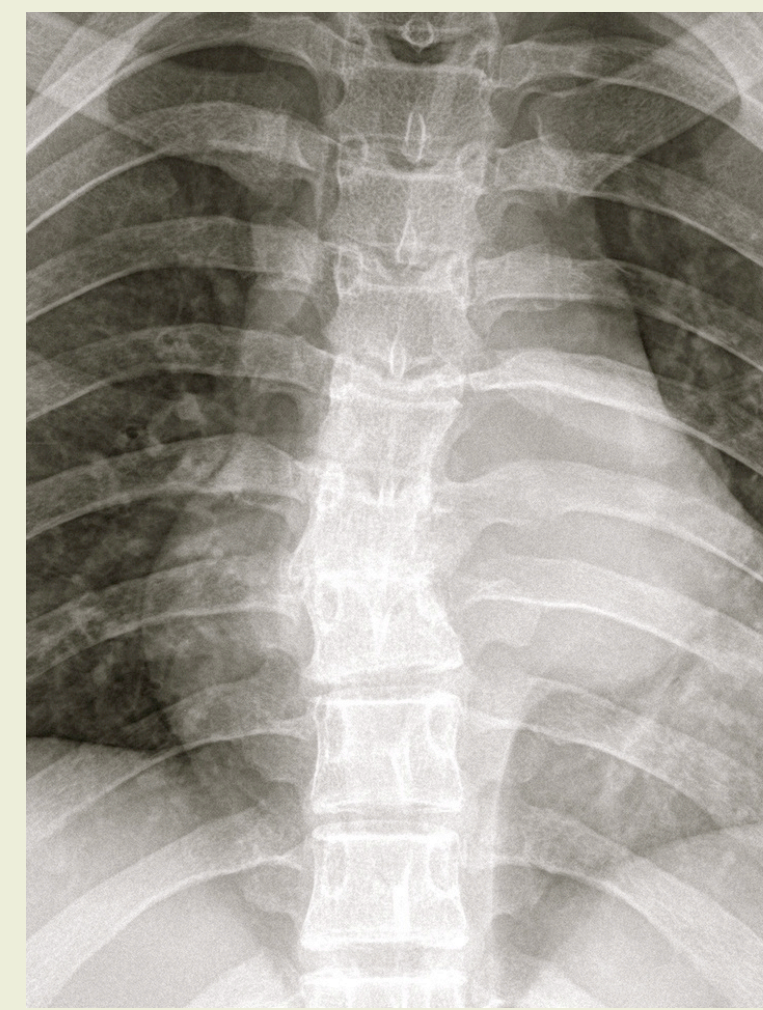


the portal circulation. Within the liver it develops into cysts. The cycle is completed when the definitive host eats the viscera of the intermediate host. Humans can also become

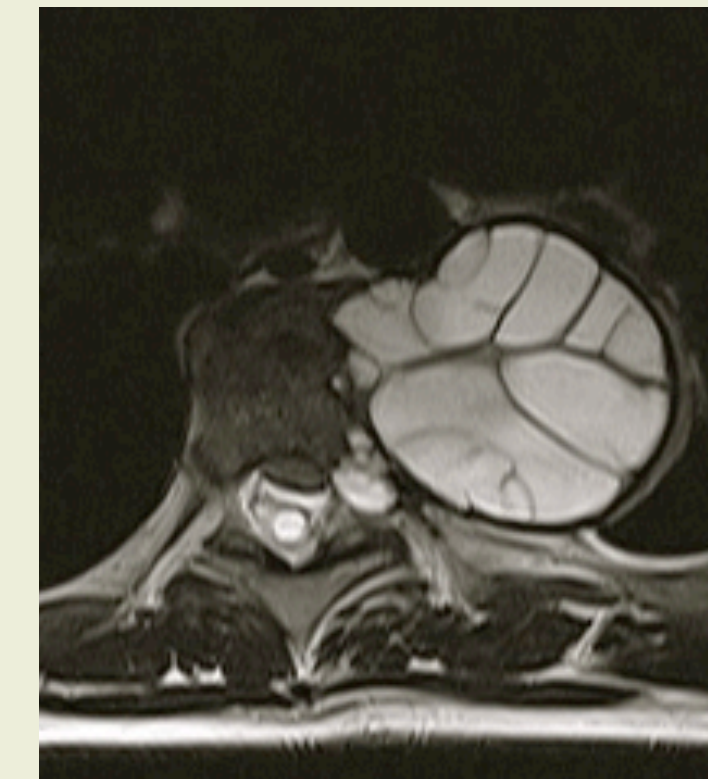
intermediate hosts through ingestion of contaminated material or contact with a definitive host. Hydatid disease can affect almost any organ system in the human body. ■

Mother shocked as MRI shows daughter's cysts

Spine - Hydatid disease involves the spine in less than 1% of cases. Half of the cases involve the thoracic spine and there are typically multiple cysts which only rarely calcify. The disease may be intramedullary, intradural (extramedullary), extradural, vertebral or paravertebral. "Girl S" presented with acute onset of lower limb weakness. The CXR showed a left paraspinal mass with lateral scalloping of the vertebral bodies. At MRI a large multicystic lesion was shown. This extended into the spinal canal with mass effect on the spinal cord. "Girl S" is steadily recovering following surgical removal of the lesion and spinal fixation. ■



"Girl S" - CXR



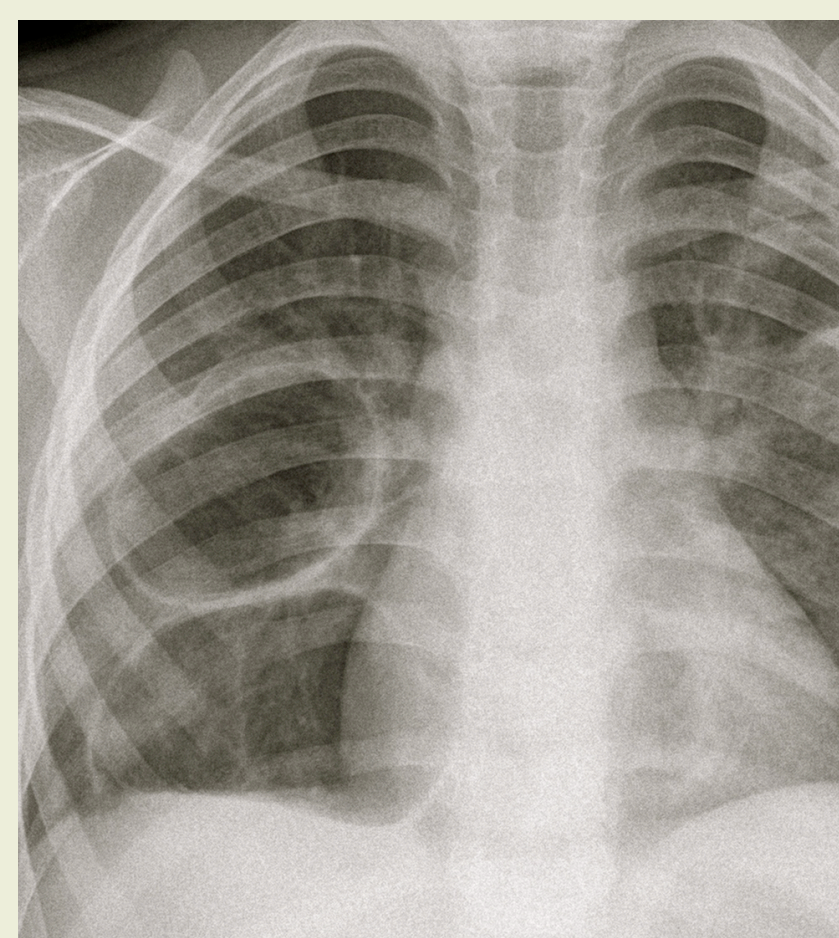
"Girl S" - MRI: T2 axial



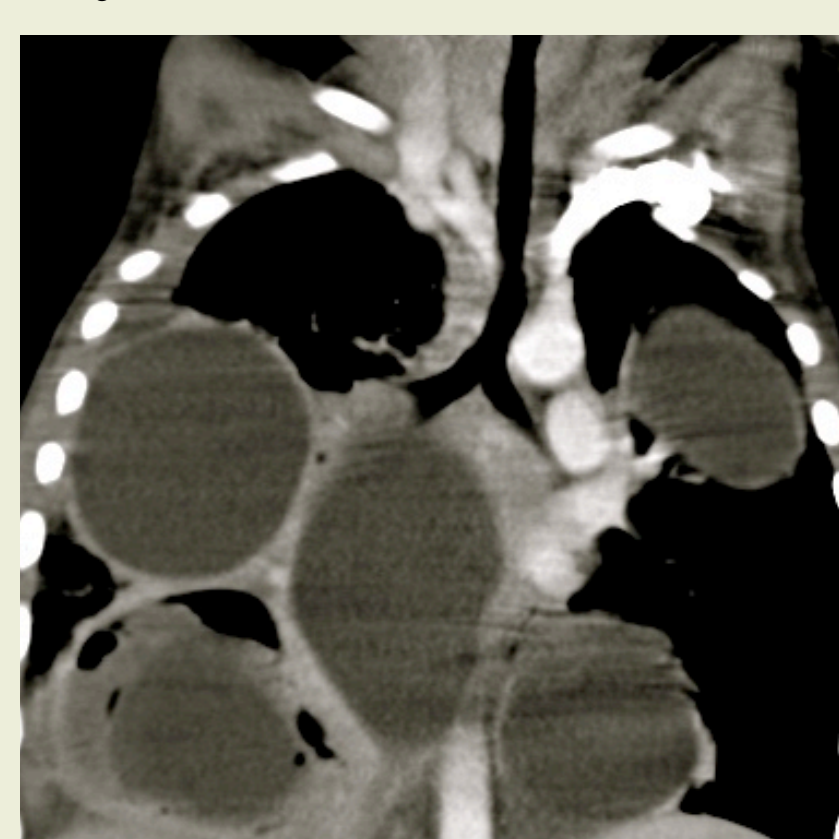
"Girl S" - MRI: T2 sagittal

Very little resistance offered

Lungs - This is the second most common site of involvement by hydatid disease. The number of cysts can vary from just a few to more than 50, with the lower lobes affected more than the upper lobes. One in five cases is bilateral. Lung involvement can be the solitary site of disease or in combination with other organ involvement (most commonly the liver). Due to its compressibility the lung is the organ system in which the cysts can become the largest, with cyst ranging in size from 1-20 cm. Calcification of pulmonary hydatid disease is rare. "Boy L" presented with shortness of breath and the CXR demonstrated multiple circumscribed lucent lesions. The coronal reformatted CT showed multiple cystic lesions of various sizes involving both hemithoraces. Some of the lesions contained air. "Boy L" underwent a number of surgical procedures to remove the cysts and is recovering steadily. ■



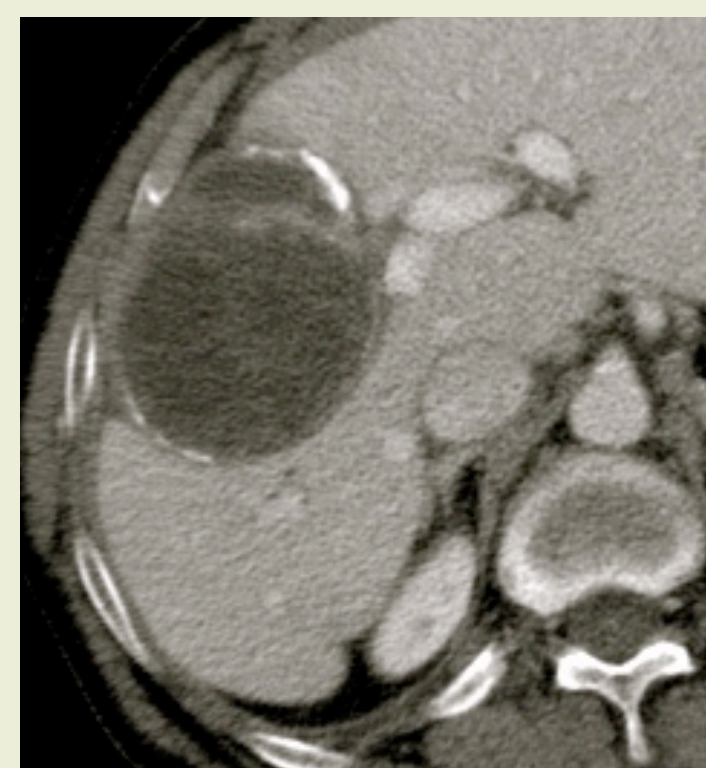
"Boy L" - CXR



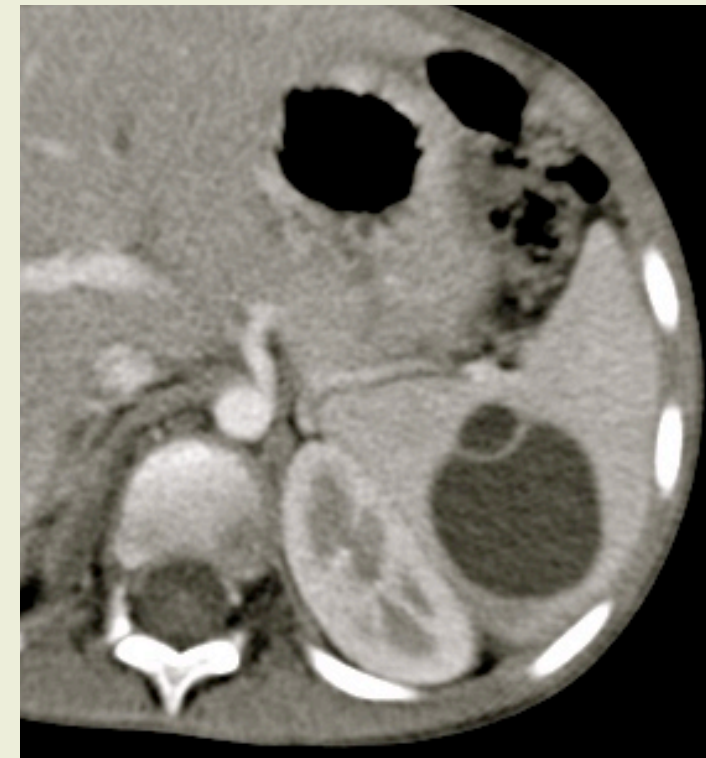
"Boy L" - CT: coronal MPR

Hydatid found in favourite hangout

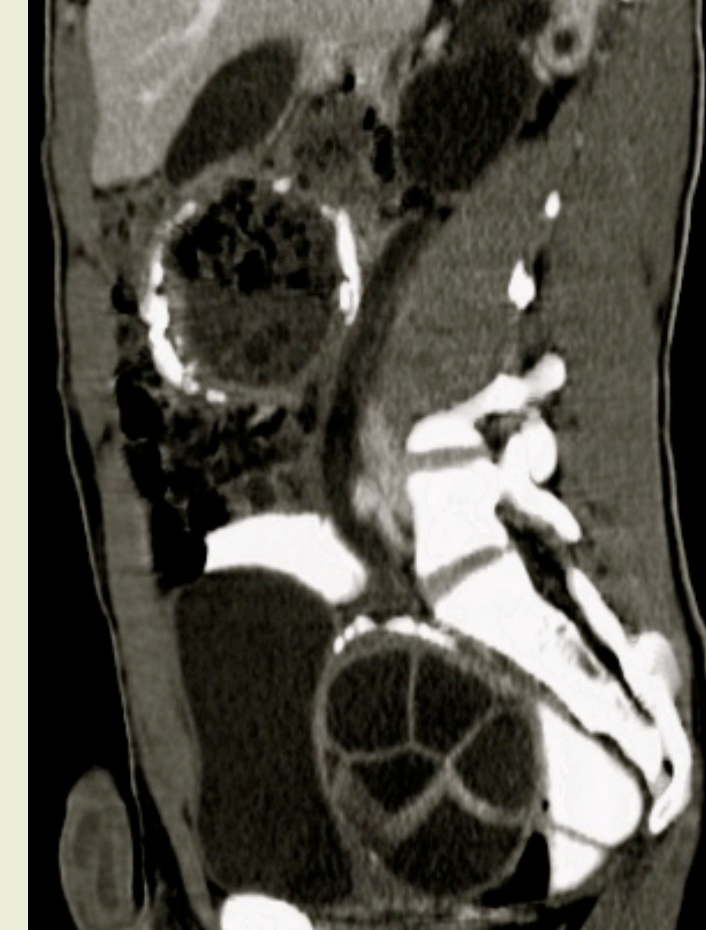
Abdomen - The liver is the most frequently involved organ in the body. The imaging features will depend on the stage of disease and the presence or absence of complications. Cysts can be single or multiple, simple or complicated. Calcifications tend to be curvilinear or ringlike, with dense calcification indicating death of the organism. Up to 90% of hepatic hydatid cysts will perforate into the biliary tree. Hepatic hydatid disease can also migrate across the diaphragm resulting in thoracic involvement. "Mr A-L" presented with abdominal pain and the CT shows a large hypodense lesion in the right lobe of the liver. The lesion contains multiple septa as well as peripheral calcification. Splenic involvement by hydatid disease is rare. In general it develops following systemic dissemination or intraperitoneal spread of a ruptured liver cyst. The cysts are usually solitary, but can be multiple. Imaging features are similar to those seen in hepatic hydatid disease.



"Mr. A-L" - CT: axial



"Mr. A-S" - CT: axial



"Mr. A-P" - CT: sagittal MPR

"Mr A-S" presented with left upper quadrant pain and the CT showed a hypodense splenic lesion with a peripheral daughter cyst. No calcifications were present in this case, but these lesions tend to calcify in a manner similar to hepatic cysts.

Peritoneal disease is usually secondary to hepatic disease, but cases of primary disease have been described. "Mr A-P" presented with longstanding abdominal pain. Following an abdominal x-ray he had a CT which showed a partially calcified low density lesion just inferior to the liver and gallbladder. The lesion contained feculent material and a connection with the hepatic flexure could be identified. There was also a large multicystic low density lesion in the pelvis. The connection with the colon was confirmed at surgery.

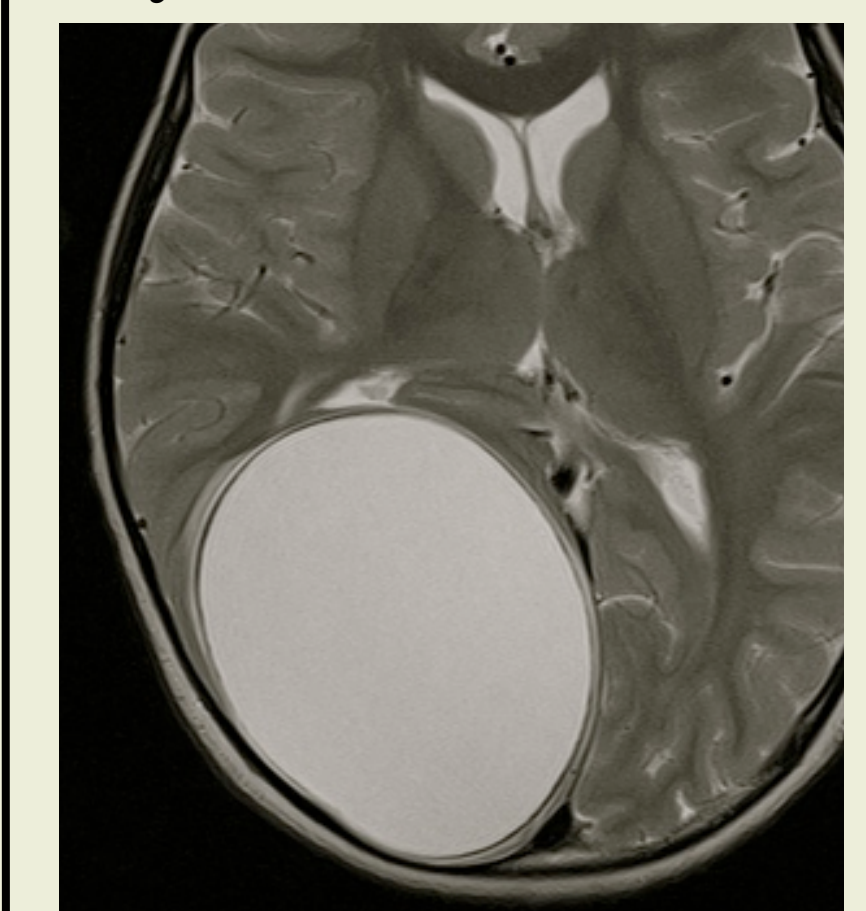
Other sites of abdominal hydatid are rare. These include the pancreas, kidneys, adrenals, bladder and retroperitoneum. ■

Unusual cause for headache identified

Brain - Only 2% of intracranial masses are caused by hydatid disease. Any part of the brain can be affected, but supratentorial disease is more common than infratentorial disease. Children are affected more commonly than adults. Cysts tend to be unilocular with the content iso to CSF at CT and MRI. Large lesions cause marked mass effect but lacks surrounding edema.



"Boy B" - CT

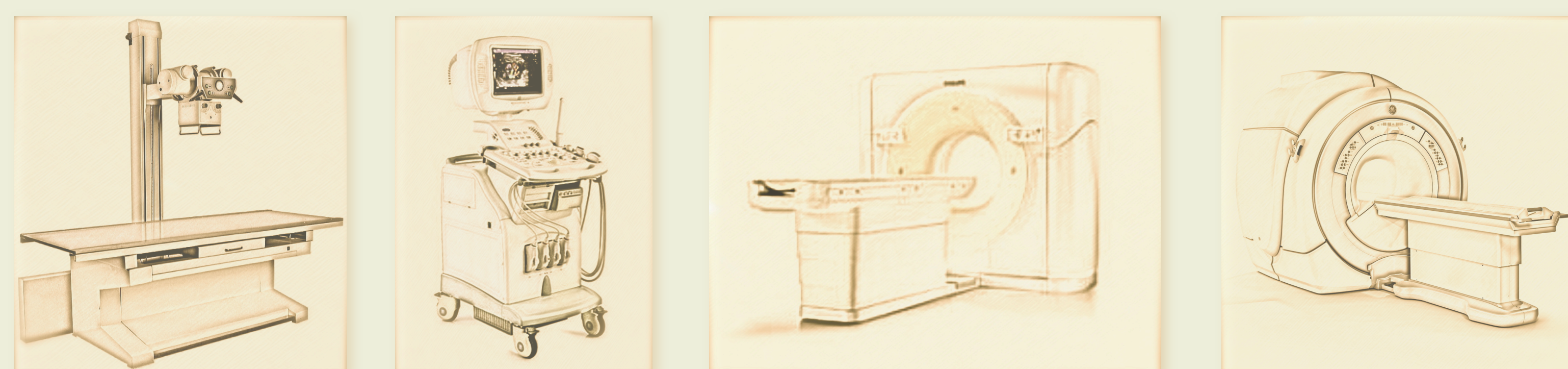


"Boy B" - MRI: T2 axial

This feature helps to differentiate hydatid cysts from cystic neoplastic lesions or abscesses. "Boy B" presented with headaches and CT showed a large, well circumscribed low density cyst right parieto-occipital. MRI show the mass effect and lack of edema in more detail.

The cyst is unilocular with T2 hyperintense content and a characteristic T2 low intensity rim. ■

Modality Advertisement



All imaging modalities play a potential role in the assessment of hydatid disease. The modality used will often depend on the organ system affected. Conventional radiography and computed tomography is often used in the imaging for hydatid disease of the chest and abdomen. Even though calcifications can be shown with conventional radiography, computed tomography is more sensitive for detecting calcifications. Ultrasonography best demonstrates hydatid sand, membranes and daughter cysts. Magnetic resonance imaging is the modality of choice for imaging disease of the central nervous system.

Sources:

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