Primary splenic hydatidosis
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Section: Abdominal imaging
Area of Interest: Abdomen Spleen
Procedure: Diagnostic procedure
Imaging Technique: CT
Imaging Technique: MR
Special Focus: Infection Case Type: Clinical Cases
Authors: Cortis K, Azzopardi C
Patient: 45 years, female

Clinical History:

42-year-old female patient referred for imaging by a gynaecologist, with the indication being a moderately elevated CA 19-9. No relevant past medical or surgical history was elicited.

Imaging Findings:

No findings were seen on the plain chest radiograph – except for possibly calcific foci beneath the left hemidiaphragm (Figure 1). Further imaging by CT revealed a large cyst with discontinuous clumpy mural calcification arising from the spleen (Figures 2-6). This cyst had an internal mean attenuation of 16 Hounsfield units and measured 12.66 cm in the antero-posterior direction, 11.25 cm in the transverse direction, and 13.48 cm in the cranio-caudal direction. The large size of this cystic lesion was resulting in displacement of the related organs (pancreatic tail and left kidney) and also of the descending and transverse colon at the splenic flexure. No enhancement was seen within this cyst on the pre and post contrast series. No further findings were noted in the chest, abdomen, and pelvis. MRI confirmed the absence of complex internal features, with no mural or intra-cystic enhancement (Figure 7).

Discussion:

A. Background
The involvement of the spleen in hydatid disease is rare, and isolated splenic involvement is even less common (reported prevalence varies from 0.9% to 8%) [1]. There are two types of Echinococcus infections. E. granulosis is the more common type, whereas E. multilocularis is less common but more invasive, mimicking a malignancy [2]. The adult worm lives in the intestine of the definitive host, which includes dogs and other carnivorous animals. Sheep, cattle and humans act as the intermediate host. Man becomes infected through contact with a definitive host or by consuming contaminated water or vegetables.

B. Clinical Perspective
The clinical manifestations of splenic hydatid disease are nonspecific. Abdominal pain, enlarged spleen, and fever are the most frequently encountered symptoms. However, secondary infection, cyst rupture, and anaphylactic shock may also occur [3]. Our patient had spent 10 days on holiday in a region where hydatid disease is endemic – this was presumed to have caused isolated splenic hydatidosis.

C. Imaging Perspective
Hydatid cysts can be classified on the basis of their radiological appearance – simple cysts with no internal architecture, cyst with daughter cysts and an internal matrix, or completely calcified (inactive) cyst.

Hydatid cysts can be solitary or multiple. Ultrasound usually demonstrates a lesion with dependent highly echogenic...
content (‘snowstorm appearance’). The cyst wall is seen as two hyperechoic layers separated by a hypoechoic layer. If the endocyst detaches from the pericyst, floating membranes may be seen within the cyst and complete detachment results in a ‘sonographic water lily sign’ (named after the ‘water lily sign’ that is seen on plain chest radiography when the same process occurs in pulmonary hydatid disease). However, sonographic evaluation might be hindered in dense mural calcification [4].

In such cases, CT is the best modality to characterise the mural calcification and internal cystic structure. The intracystic attenuation value is variable, and depends on the presence of intracystic debris, hydatid sand, and internal calcification (when present).

D. Outcome
Treatment options considered were percutaneous drainage followed by instillation of alcohol or/hypertonic saline, or splenectomy. In the end, the patient opted for a splenectomy.

E. Take Home Message and Teaching Points
Splenic hydatid cysts generally develop by means of systemic dissemination or intraperitoneal spread from a ruptured liver cyst. Splenic hydatid cysts are usually solitary, and their imaging characteristics are similar to those of hepatic hydatid cysts. Any type of hydatid cyst can be seen in the spleen.

Differential Diagnosis List: Primary splenic hydatidosis., Post-traumatic calcified pseudocyst, Congenital cystic lesion (including epidermoid cyst), Intrasplenic pancreatic pseudocyst

Final Diagnosis: Primary splenic hydatidosis.

References:
Description: The CT planning/scout view shows a calcified structure in the left upper quadrant, with peripheral curvilinear calcifications. Origin: Medical Imaging Department, Mater Dei Hospital, MALTA.
Figure 2

a  
**Description:** Coronal reformatted non-contrast CT image shows a well marginated cystic lesion with no complex internal features, and with discontinuous peripheral curvilinear mural calcification. **Origin:** Medical Imaging Department, Mater Dei Hospital, MALTA.

b  
**Description:** Coronal reformatted post-IV contrast CT image shows a well marginated cystic lesion with no complex internal features, and with discontinuous peripheral curvilinear mural calcification. **Origin:** Medical Imaging Department, Mater Dei Hospital, MALTA.
Figure 3

Description: MIP and 3D volumetric image showing the full extent of this cystic lesion, and the patchy mural calcification. Origin: Medical Imaging Department, Mater Dei Hospital, MALTA.

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Description: A large cyst (16HU) with discontinuous clumpy mural calcification is arising from the spleen and displacing the related organs (pancreatic tail and left kidney and splenic flexure). It measured 12.66 cm x 11.25 cm x 13.48 cm. Origin: Medical Imaging Department, Mater Dei Hospital, MALTA.
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Figure 6

Description: T2W Coronal MRI image. MRI confirms that the unilocular cyst arising from within the spleen has no internal complex features. **Origin:** Medical Imaging Department, Mater Dei Hospital, MALTA.
Description: T2W Axial MRI image. MRI confirms that the unilocular cyst arising from within the spleen has no internal complex features. Origin: Medical Imaging Department, Mater Dei Hospital, MALTA.
Description: T1W Axial MRI image. MRI confirms that the unilocular cyst arising from within the spleen has no internal complex features. Origin: Medical Imaging Department, Mater Dei Hospital, MALTA.
Description: T1W post-Gadolinium Axial MRI image with fat saturation. MRI confirms that the unilocular cyst arising from within the spleen has no internal complex features. Origin: Medical Imaging Department, Mater Dei Hospital, MALTA.
Description: Plain chest radiograph shows subtle calcific foci beneath the left hemidiaphragm. These are rendered more evident upon magnification and proper windowing, as seen in Figure 1b. Origin: Medical Imaging Department, Mater Dei Hospital, MALTA.
Description: Plain chest radiograph shows subtle calcific foci beneath the left hemidiaphragm. These are rendered more evident upon magnification and proper windowing. Origin: Medical Imaging Department, Mater Dei Hospital, MALTA.