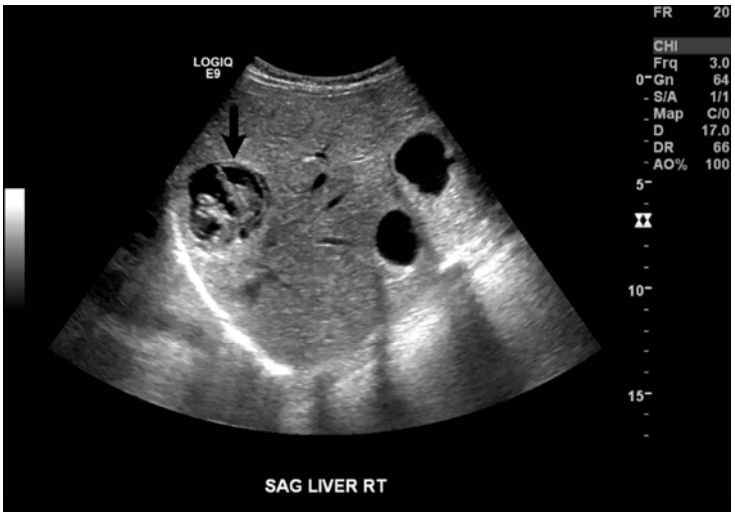
Society of Radiologists in Ultrasound
2011 Toshiba Resident Teaching Case

Qian Li, MD
Department of Radiology, Division of Abdominal Imaging & Intervention
Massachusetts General Hospital
Boston, MA

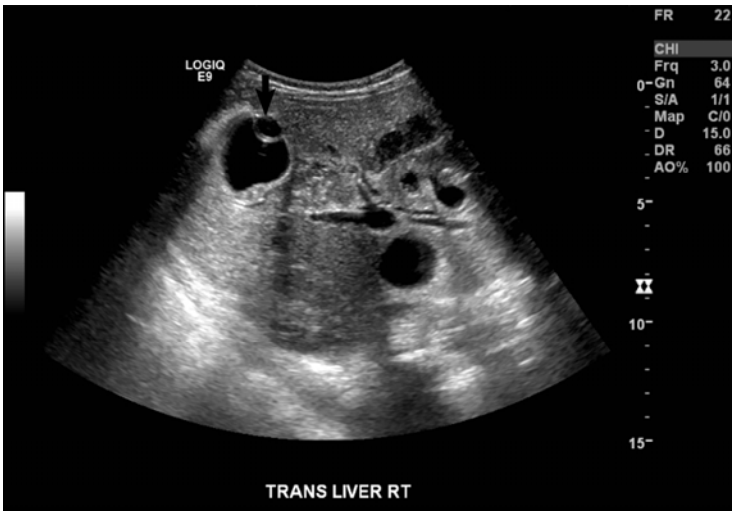
Complex Hepatic and Splenic Cystic Lesions

Clinical History

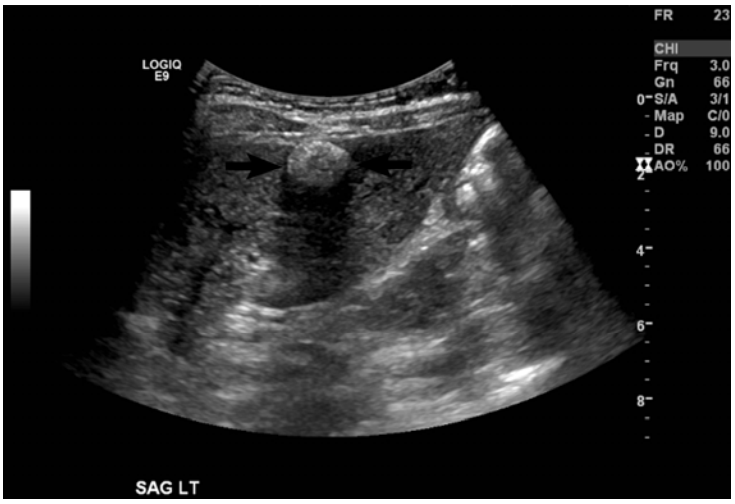
A seven-year-old female Moroccan child presented with acute abdominal pain. Her primary care physician referred the patient for sonographic evaluation of the abdomen.



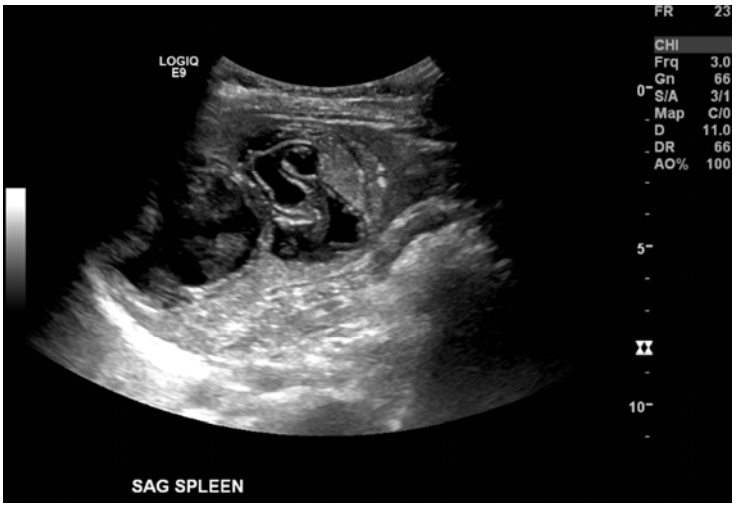
A



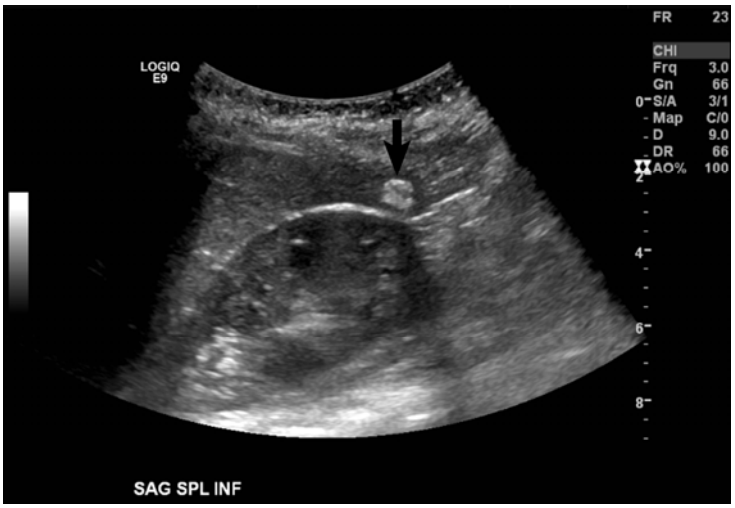
B


LOGIQ
E9
FR 23
CHI
Frq 3.0
Gn 66
S/A 3/1
Map C/0
D 9.0
DR 66
AO% 100
SAG LT

C


LOGIQ
E9
FR 23
CHI
Frq 3.0
Gn 66
S/A 3/1
Map C/0
D 11.0
DR 66
AO% 100
SAG SPLEEN

D


LOGIQ
E9
FR 23
CHI
Frq 3.0
Gn 66
S/A 3/1
Map C/0
D 9.0
DR 66
AO% 100
SAG SPL INF

E

Figure 1: Abdominal ultrasound: B mode images of the liver demonstrate multiple complex cystic and solid structures in the hepatic parenchyma. Some of these lesions contain an internal undulating membrane (arrow; A) consistent with a detached endocyst (arrow; B). Solid-appearing hyperechoic foci are also identified (arrow; C). A splenic heterogeneous cystic lesion also contains internal undulating membranes (D). Within the inferior aspect of the spleen there is a round hyperechoic focus that demonstrates posterior acoustic shadowing (arrow; E).

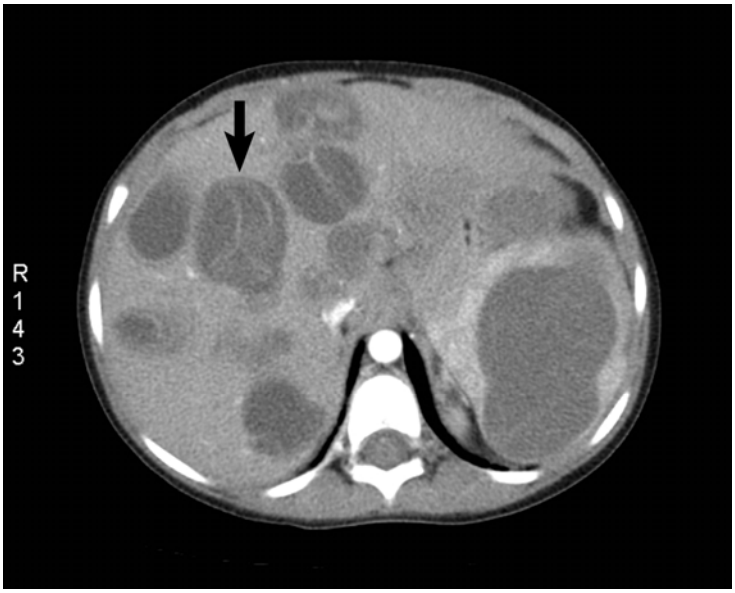
Final Diagnosis:
Echinococcal cysts of the liver and spleen.

Discussion:
Cystic echinococcosis (CE) is a zoonosis caused by the larval stage of Echinococcus granulosis, and is still widespread in communities where agriculture is dominant. The prevalence of CE varies widely among different countries and in different areas, ranging from 1 to 220 per 100,000 [1]. CE typically tends to infect the liver or lung, but other organs of the body such as the spleen and brain may also be involved. Clinical history allows the identification of patients at risk for CE, and imaging then permits the detection and recognition of typical lesions [2]. The diagnosis is then usually confirmed by immunodiagnostic tests on the hydatid cyst fluid [3]

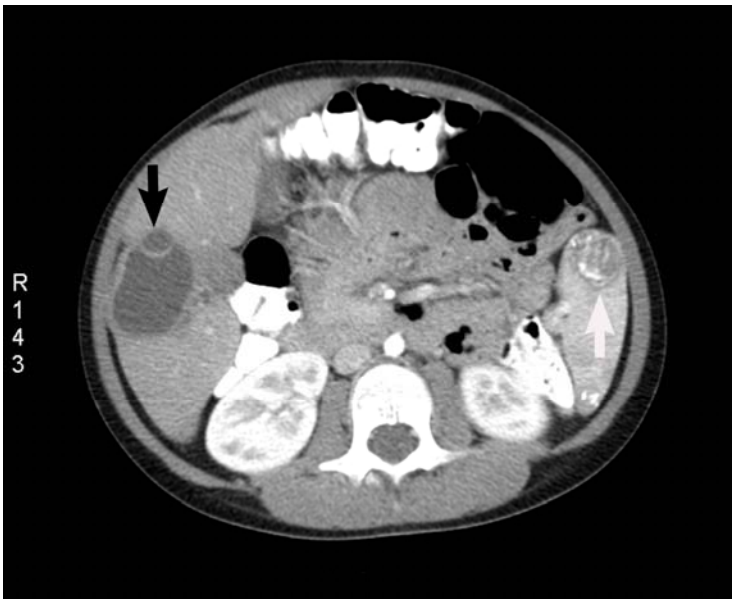
In the United States, the majority of echinococcosis cases are seen in the immigrant population [1]. This patient, a recent US immigrant from a village in central Morocco, with a history of contact with wild dogs and grazing animals is typical.

US is highly valuable for the early diagnosis, staging and follow-up of patients with CE [4]. The US findings in this case (**Figure 1**) are typical: a thick cyst wall, multiple septa, an undulating endocyst, and debris, termed “hydatid sand” representing free-floating protoscoleces. Involvement of the spleen in hydatid disease is uncommon, occurring in 1-8% of cases.

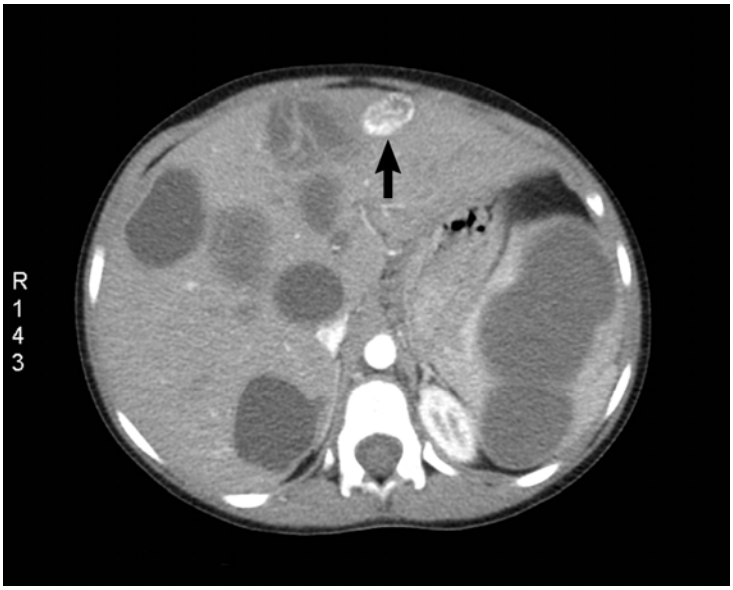
This patient’s presentation symptom of acute pain is not explained by the imaging findings. CE is usually asymptomatic. Symptoms occur largely when complications develop. One of the most common and serious complications is cyst rupture [5]. In this patient, contrast enhanced CT (CECT) performed on the same day as sonography did not demonstrate any evidence of cyst rupture (**Figure 2**). CECT findings were concordant with US findings, demonstrating complex cystic hepatic and splenic lesions with no free fluid.



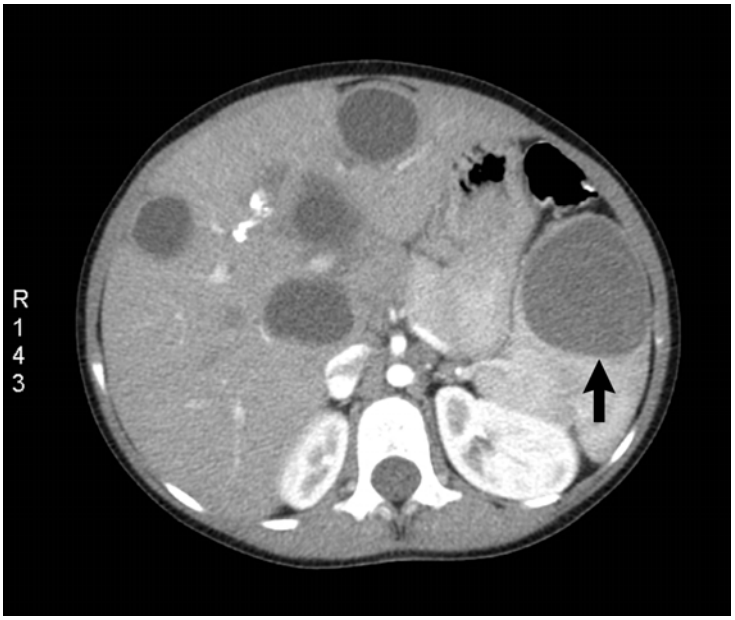
A



B



C



D

Figure 2: CECT findings. Large complex cystic liver lesions. Some are homogenously low density, while others demonstrate detached membranes floating within the fluid (arrow; A) and/or daughter cysts (black arrow; B). Some lesions are partially calcified (arrow; C). There are also numerous large cystic splenic lesions (arrow; D), some of which are partially calcified or contain linear debris (white arrow; B).

Authors:
Qian Li, MD. Anthony E. Samir, MD.

Institution:
Department of Radiology, Division of Abdominal Imaging & Intervention
Massachusetts General Hospital,

55 Fruit Street, White 270, Boston, MA 02114.

References:

1. Scherer K, Gupta N, Caine WP, et al. Differential Diagnosis and Management of a Recurrent Hepatic Cyst: A Case Report and Review of Literature. J Gen Intern Med, 24: 1161–1165.
2. Turgut AT, Akhan O, Bhatt S, et al. Sonographic Spectrum of Hydatid Disease. Ultrasound Quarterly, 2008, 24: 17-29.
3. Aslan M, Yüksel P, Polat E, et al. The diagnostic value of Western blot method in patients with cystic echinococcosis. New Microbiologica, 2011, 34: 173-177.
4. Brunettia E, Junghanssb T. Update on cystic hydatid disease. Current Opinion in Infectious Diseases, 2009, 22: 497–502.
5. Wen H, Aji T, Shao YM. Diagnosis and management against the complications of human cystic echinococcosis. Front Med China, 2010, 4: 394–398.