Thrombosed portal vein aneurysm
Published on 03.02.2006

DOI: 10.1594/EURORAD/CASE.3822
ISSN: 1563-4086
Section: Abdominal imaging
Case Type: Clinical Cases
Patient: 74 years, female

Clinical History:
A 74-year-old woman, previously healthy, presented with right upper quadrant pain. She had no history of trauma, surgery, biopsy, or known hepatic disease. On physical examination she had mild tenderness in the right upper quadrant, without hepatosplenomegaly or palpable abdominal masses. Laboratory analyses including liver-associated enzymes were within normal limits.

Imaging Findings:
A 74-year-old woman, previously healthy, presented with right upper quadrant pain. She had no history of trauma, surgery, biopsy, or known hepatic disease. On physical examination she had mild tenderness in the right upper quadrant, without hepatosplenomegaly or palpable abdominal masses. Laboratory analyses including liver-associated enzymes were within normal limits. A work-up was initiated with an abdominal ultrasound that identified a mass, measuring 5.3x4.3cm, near the hilum of the liver, with posterior acoustic enhancement compatible with cystic areas within the lesion. Colour Doppler ultrasound examination revealed absence of flow within this mass. Normal continuous nonpulsatile monophasic wave-form, with hepatopetal flow, was detected at the left and right portal vein. No portal vein trunk was identified. An ecoendoscopy suggested that the cystic lesion was probably in the head of the pancreas. The abdominal helical computed tomography examination confirmed the presence of the mass at the hepatic hilum, and the contrast enhanced images showed a beaded appearance at the porta hepatitis, compatible with a cavernomatous transformation of the portal vein. In the records of the patient there was a previous CT examination, done six months earlier that showed an aneurismal dilatation of the main portal vein showing homogeneous enhancement equal to the left and right portal vein, thus confirming the diagnosis of a thrombosed portal vein aneurysm with cavernomatous transformation. Attending to the patient's age and the lack of major complications the patient was submitted to conservative management with close follow-up.

Discussion:
Portal vein aneurysm (PVA) is defined as a focal dilatation of the portal venous system that assumes a fusiform or saccular configuration. The first report of an extrahepatic portal vein aneurysm was done in 1956 by Barzilai e Kleckner. For a long time PVA was considered to be a rare lesion. However, this opinion has largely been altered by the increasing number of new cases published in recent years. The main explanation for this renewed appears to be the increasing availability and use of non-invasive imaging modalities. In particular the more widespread use of ultrasonography and Doppler ultrasound might have increased the diagnosis rate of this entity. The origin of PVA remains unclear and has widely been discussed. Some authors have suggested that portal hypertension causes PVA secondary to the increased intraluminal pressure on the relatively thin portal vein wall. Histological examination reveals a decrease in the number and size of muscle and elastic fibers within the vessel wall, and fragmentation of the internal elastic lamella with replacement by fibrous connective tissue. Other conditions which have been proposed as possible etiologies include trauma and pancreatitis. In recent years the role of congenital factors has been gaining popularity. The clinical significance of PVA is related to their size: small aneurysms commonly are
asymptomatic; large aneurysms have been found to cause duodenal compression, common bile duct obstruction, chronic portal hypertension, and complete occlusion of the portal vein by recurrent thrombosis, symptoms of acute portal hypertension, rupture, and recurrent or cramping abdominal pain. The prevalence of serious complications appears to be low. The PVA is frequently identified with ultrasound or Doppler ultrasound and confirmed with computed tomography. On sonography, PVA appear as an anechoic, fusiform, or saccular structure. Colour Doppler ultrasound has been considered a very accurate tool for the diagnosis of PVA, which shows colour flow within the lesion unless it contains thrombus. Computed tomography shows a well-circumscribed, markedly enhancing mass communicating with the portal vein. At magnetic resonance PVA is hypointense on T1-weighted images and hyperintense or with heterogeneous signal intensity on T2-weighted images. Portography or contrast angiography is considered a complementary procedure necessary only when surgical intervention is planned. There is some controversy about treatment, because some complications have been reported. In asymptomatic patients without evidence of portal hypertension or cirrhosis, an aneurysm is expected not to grow and conservative management with close follow-up is recommended. Surgical treatment of PVA depends on the size, symptoms, complications, and clinical condition of the patient. Surgical interventions include aneurysmorrhaphy, or portocaval shunt. In summary, PVA is being diagnosed more frequently. Patients are likely to present with right upper quadrant pain. However, PVA can be discovered during evaluation of other abdominal processes. Non-invasive diagnostic modalities such as ultrasound colour Doppler ultrasound, computed tomography, and magnetic resonance can enable the diagnosis of this entity due to its vascular nature. Treatment should be based primarily on the clinical presentation of the patient.

**Differential Diagnosis List:** Thrombosed portal vein aneurysm

**Final Diagnosis:** Thrombosed portal vein aneurysm

**References:**


**Figure 1**

*Description:* ultrasonography showing a hypoechoic mass near the hilum of the liver, with posterior acoustic enhancement compatible with cystic areas within the lesion.

*Origin:*
Figure 2

**Description:** ultrasonography showing a hypoechoic mass, measuring 5.3x4.3cm, near the hilum of the liver, with posterior acoustic enhancement compatible with cystic areas within **Origin:**
Description: Colour Doppler ultrasound examination showing absent flow within this mass

Origin:
Figure 4

Description: Spectral Doppler ultrasound showing no pulses within the mass
Origin:
Description: Spectral Doppler ultrasound showing normal continuous nonpulsatile monophasic wave-form at the left and right portal vein Origin:
Description: Eccoendoscopy showing the cystic nature of the mass Origin:
Description: Unenhanced abdominal CT showing a mass in the right upper quadrant near the hepatic hilum (arrow) Origin:
**Description:** Contrast enhanced abdominal CT, portal phase, showing the thrombosed portal vein aneurysm (arrow), with a cavernomatous transformation of the portal vein (small arrows). The thrombus is nicely demonstrated in the splenic vein, near the confluence (arrowhead).**Origin:**
Description: Contrast enhanced abdominal CT, portal phase, done six months earlier showing an aneurismal dilatation of the main portal vein (arrow) showing homogeneous enhancement equal to the left and right portal vein branches Origin:
**Description:** Contrast enhanced abdominal CT, portal phase, done six months earlier showing an aneurismal dilatation of the main portal vein (arrow) showing homogeneous enhancement equal to the left and right portal vein branches **Origin:**