Cavernous transformation of the portal vein.
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Patient: 82 years, male

Clinical History:

We report a case of an elderly gentleman with a primary diagnosis of colonic carcinoma who on the staging CT scan was found to have a cavernous transformation of the portal vein. We discuss the causes and CT appearances of this finding.

Imaging Findings:

An 82 year old gentleman presented with a two month history of weight loss, malaise, and a palpable left lower abdominal mass. On ultrasound examination, this mass was suspicious of an annular colonic carcinoma and hence a CT scan of the thorax, abdomen, and pelvis were done for diagnosis and staging. The CT abdomen revealed in addition a cavernous transformation of the portal vein. There was no past medical history of chronic liver disease. It is believed that the prothrombotic tendency associated with malignancy has predisposed the patient into developing this new finding.

Discussion:

Cavernous transformation of the portal vein (CTPV), also known as 'portal cavernoma', is defined as formation of venous channels within, or around, a previously thrombosed portal vein. A leash of fine or markedly enlarged, serpiginous vessels is seen in place of the portal vein. Intrahepatic extension of the cavernous transformation can also be seen. Studies on the natural history of CTPV suggest that this abnormality develops in days to months following thrombosis of the portal vein. The cavernous transformation can develop as early as 6-20 days of the acute thrombus formation. The acute thrombotic event may be associated with abdominal pain and fever but often goes unnoticed. Therefore, the diagnosis of portal vein thrombosis is usually not established until patients present with symptoms of portal hypertension. Two types of collateral circulation can be observed: portosystemic, mainly through the left gastric, and the perisplenic veins (the caput medusae, i.e. the paraumbilical-to-abdominal venous route, is never seen); and portoportal, from the periportal or pericholecystic venous channels to the intrahepatic portal veins [1]. CTPV occurs in approximately 3% of patients with portal hypertension [2]. The cause of this entity may be congenital or acquired, but frequently it is idiopathic. In adults, the main causes include pancreatitis, pancreatic carcinoma, alcoholic cirrhosis, extrinsic compression, and direct invasion by periportal tumours and hepatoma. Other causes include hypercoagulable states, intrabdominal inflammatory disease, severe dehydration, shock, sepsis, and complications of abdominal surgical procedures, including liver transplantation. The long history and follow-up of these patients also suggest that some will develop adequate collaterals and not experience extensive complications, whereas others develop varices and life-threatening hemorrhage. A study has shown that fifty percent of patients developed significant hemorrhage and required surgical intervention. A review of CTPV in both adults and children shows the mortality rate from hemorrhage is 5% and the overall mortality rate is 10% [3]. CTPV is reported as having the appearance of a subhepatic spongelike mass. This appearance has also been
reported in cases of pancreatic hemangiosarcoma. Bile duct varices are occasionally observed in patients with portal hypertension. The terms “portal biliopathy” and the “pseudo-cholangiocarcinoma sign” have been used to describe the radiographic changes in the bile duct due to these varices, which may in turn cause variable degrees of bile duct obstruction [2]

**Differential Diagnosis List:** Cavernous transformation of the portal vein secondary to thrombosis.

**Final Diagnosis:** Cavernous transformation of the portal vein secondary to thrombosis.

**References:**


Figure 1

Description: A leash of serpiginous vessels, representing the cavernous transformation of the portal vein and the formation of collaterals. Origin:
Description: Axial CT images showing the gallbladder surrounded by dilatated cystic wall veins, which are the main collaterals to the right intra hepatic portal radicles. Origin:
Description: The primary diagnosis for this patient was a colonic carcinoma of the splenic flexure.
Origin: