Extrasplenic Pseudoaneurysm **The Role of Color Flow Doppler Ultrasound in Diagnosis**

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SUMMARY

Pseudoaneurysm of the splenic artery has been rarely reported and the Doppler echocardiographic finding seldom described. Herein we report a rare case of huge extrasplenic pseudoaneurysm, which was detected by color flow Doppler ultrasonography and successfully treated by ligation of the splenic artery and resection of the pseudoaneurysm. (*Jpn Heart J* 1999; 40: 365–368)

Key words: Splenic artery, Pseudoaneurysm, Doppler echocardiography

SPLENIC artery pseudoaneurysm is uncommon and its diagnosis is often difficult. We report a case of huge extrasplenic pseudoaneurysm, which was diagnosed by color flow Doppler ultrasonography and confirmed by angiography.

CASE REPORT

A 66-year-old male retired farmer had been in good health until 1 year before admission, when he had noted a small right upper quadrant mass, to which at first he paid little attention. The mass became progressively enlarged beginning 1 month before admission. Poor appetite and abdominal fullness sensation ensued. No history of trauma, pancreatitis or liver disease could be traced. Laboratory data on admission showed normal biochemistry and liver function but mild anemia and thrombocytopenia. On physical examination, a huge abdominal mass (10 × 10 cm) in the right upper quadrant was palpable but without tenderness. Bruit was heard over the mass. A double contrast computerized tomography scan of the abdomen revealed a 12 × 11 cm enhancing cystic lesion containing large thrombus, contiguous to the left lobe of the liver and the pancreas neck. It was compatible with an aneurysm or hypervascular pancreatic

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Figure 1. CT scan of the abdomen revealing a 12×11 cm enhanced cystic lesion (S) containing large thrombus (T) in the midline upper abdomen.

Figure 2. **A:** Color Doppler ultrasonogram showing a huge pseudoaneurysm (S) containing a large thrombus (T). **B:** Color Doppler (right upper image) showing a jet (arrow) entering the pseudoaneurysm with pulsed wave Doppler (lower tracing) showing a maximum velocity of 2.0 m/sec during systole, suggesting communication with an artery.

tumor (Figure 1). Color Doppler ultrasonography showed a huge pseudoaneurysm, containing a large thrombus, which was deemed to be connected with the abdominal aorta (Figure 2). Aortic angiography performed to delineate the location of the pseudoaneurysm revealed a huge pseudoaneurysm 12 cm in diameter from the splenic artery pointing downwards and displacing the second portion of the duodenum laterally (Figure 3). After diagnosis, the patient underwent an operation which disclosed a huge extrasplenic pseudoaneurysm, located close to the common hepatic artery (Figure 4). Liver cirrhosis, splenomegaly and a saccular type aneurysm of the splenic artery were noted incidentally. Resection of the pseudoaneurysm, ligation of splenic artery and splenectomy were performed. The postoperative course was smooth and the

Figure 3. Angiogram revealing a huge pseudoaneurysm (S) originating from the splenic artery (arrow).

Figure 4. A huge pseudoaneurysm (S) originating from the splenic artery (arrow) was demonstrated during surgery.

patient has been doing well up to the submission of this paper.

DISCUSSION

Splenic artery pseudoaneurysm can be caused by trauma, iatrogenic injury, or chronic pancreatitis.¹⁻⁴⁾ In our case, it is interesting that the patient had no pancreatitis, trauma, or history of abdominal surgery. The cause of splenic artery pseudoaneurysm in our patient is possibly due to spontaneous rupture of the saccular aneurysm of the splenic artery. Most cases of splenic artery pseudoaneurysm are intrasplenic.⁵⁻⁷⁾ Extrasplenic pseudoaneurysm is rare. Splenic artery pseudoaneurysm can progress slowly, as demonstrated in our patient whose pseudoaneurysm was diagnosed 1 year after the appearance of an abdominal mass. Clinically, asymptomatic pseudoaneurysm is hard to discover

until rupture occurs or a palpable mass appears. With the advent of modern imaging techniques, splenic artery aneurysms and pseudoaneurysms are being diagnosed with increasing frequency.

The most simple and noninvasive method for diagnosis of splenic artery pseudoaneurysm is Doppler ultrasound. Ultrasound detection of a pseudoaneurysm requires the application of color Doppler when imaging a cystic lesion. A jet of arterial flow into the pseudoaneurysm and turbulent flow within the pseudoaneurysm are diagnostic.⁸⁾ If a pseudoaneurysm is detected, then angiography is recommended for delineation of the origin of the pseudoaneurysm.

The management of a splenic artery pseudoaneurysm depends on its location. For intrasplenic pseudoaneurysms, treatment options include simple observation, angiographic embolization, splenectomy, or operation with splenic preservation.⁵⁾ For extrasplenic pseudoaneurysms, surgery or angiographic embolization is recommended. The management of these lesions must be individualized according to the clinical condition. In our case, surgery was performed to remove the huge extrasplenic pseudoaneurysm and splenectomy conducted due to splenomegaly with thrombocytopenia.

In conclusion, splenic artery pseudoaneurysm is a rare clinical entity but can be life-threatening. It is usually difficult to diagnosis in the early stage. However, color Doppler echocardiography can make the diagnosis easily and noninvasively.

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