Portal Hypertension with Intra- and Extrasplenic Arterial Aneurysms and Large Venous Varices

Jun Ueda, Satoru Takahashi, Tomoaki Furukawa, Yutaka Araki

Abstract

Imaging studies of two women with portal hypertension demonstrated multiple splenic artery aneurysms, splenomegaly, and large splenic vein varices with a spontaneous splenorenal shunt. In each case, a large splenic hilar, as well as intrasplenic aneurysms were found along with portal vein pressures of about 15 mmHg. Portal hypertension with splenomegaly might be an important factor in the pathogenesis of intra- and extraparenchymal splenic artery aneurysms.

Key words: Spleen, aneurysm—Hypertension, portal

Case Reports

Case 1

A 37-year-old woman presented with fatigue and recurrent episodes of jaundice. On admission, her spleen was palpable 4 cm below the costal margin. Blood analysis showed anemia. Precontrast, enhanced computed tomography (CT) revealed an enlarged spleen and a round mass in the splenic hilum (Fig. 1A) which enhanced early after contrast (Fig. 1B). In addition, a tortuous enhancing mass was seen adjacent to the spleen that communicated with the left renal vein. A celiac arteriogram showed a small intrasplenic aneurysm and a large aneurysm in the splenic hilum (Fig. 1C). An indirect, superior, mesenteric venogram revealed reflux into the splenic vein and a tortuous and dilated vein, originating from the distal splenic vein (Fig. 1D). The diagnosis of splenic artery aneurysms coexisting with splenic venous varix was made in a patient suspected of having portal hypertension.

Before splenectomy, the venous varix was confirmed and the portal vein pressure was measured at 14.7 mmHg. The hilar aneurysm measured 5.5 cm in its greatest dimension. The large varix ran from the splenic hilum to the posterior aspect of the pancreatic tail. The spleen weighed 700 g. Liver biopsy showed chronic hepatitis and cirrhosis.

Discussion

Splenic artery aneurysms may be extra- or intrasplenic, in our two patients they were both. It has been reported that intrasplenic aneurysms are located at or near bifurcations and that there is a tendency for aneurysms...
to decrease in size toward the periphery of the spleen [2–4]. In our second patient, however, there were multiple aneurysms and one of the large aneurysms was located intrasplenically. Many of the intrasplenic aneurysms are found in patients with both splenomegaly and portal hypertension [2, 3, 5–7]. Manenti and Williams [8] found that in 50% of patients with cirrhosis, small splenic artery aneurysms were present on microangiograms.

Etiologic factors underlying splenic artery aneurysms include arteriosclerosis, arterial dysplasia, focal arterial inflammatory processes, hormonal and hemodynamic events in parous women, and portal hypertension with splenomegaly [1]. Although both of our patients were women, one of them had no gestation and another only one. In addition, neither arteriosclerotic changes nor any features suspect of arterial dysplasia were seen on the angiograms in our two patients. Both had portal hypertension and splenomegaly. For the reasons stated above, the etiology of the splenic artery aneurysms in our patients is assumed to be portal hypertension with splenomegaly. Splenic blood flow increases in portal hypertension [6]. As collateral circulation develops, the resistance against the portal system decreases. As a result, the splenic circulation increases further [6]. Gonzales et al. [9] found that creation of a distal splenorenal shunt for hepatic cirrhosis and portal hypertension resulted in the development of splenic artery aneurysms. Dilatation of the gastric or coronary vein as collateral circulation has been demonstrated in cases of splenic artery aneurysm [6, 7]. As small splenic artery aneurysms were observed in half of the cases of splenomegaly reported by Manenti and Williams [8], the development of collateral circulation in portal hypertension may be the most important factor in the development of splenic artery aneurysms.

Fig. 1. A Precontrast CT at the level of the left renal vein shows splenomegaly and a low density mass (arrowheads) in the splenic hilum. B Postcontrast CT at the same level shows the mass in the splenic hilum well enhanced. Additionally, there are other enhancing structures (curved arrows) connecting with the left renal vein (arrows). C Celiac arteriogram, shows a large splenic artery aneurysm in the hilum (A) and a small intrasplenic aneurysm (arrow). D Indirect superior mesenteric venogram shows a tortuous and greatly dilated vein arising from the splenic vein (arrows).