Case Report

A Case of Aneurysm of the Splenic Artery with Gastric Carcinoma

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Abstract: Aneurysm of the splenic artery was thought to be an infrequent lesion in Japan, however with the availability of CT examination the number of reports of this lesion has increased. We report here, a splenic artery aneurysm with gastric carcinoma. A 64-year-old woman with epigastralgia and nausea was admitted for surgical treatment of gastric carcinoma. During the pre-operative examination, abdominal plain X-ray showed a small rounded calcification in the left upper quadrant, endoscopic examination indicated a small elevated lesion-like submucosal tumor on the posterior wall of the upper gastric body, and CT scan showed a round 2 cm calcification of the splenic hilus as a splenic artery aneurysm. Total gastrectomy with splenectomy was performed. On the resected specimen, a hard calcified round mass of the splenic hilus was detected as, coexisting gastric carcinoma. Microscopically, a section from the aneurysmal firm nodule had an extensively dilated hyalinized thickened arterial wall with fibrosis. The clinical circumstance of the calcification as revealed by plain X-ray, the typical finding of the CT scan, and the elevated lesion-like submucosal tumor of the stomach added special interest to the diagnosis of splenic artery aneurysm.

Key words: splenic artery, aneurysm, gastric carcinoma

Introduction

Aneurysm of the splenic artery has been thought to be an infrequent lesion in Japan^{1,2)}, although recently due to CT examination, the number of reports has increased²⁾. However, it still remains a subject of continued interest and controversy. In a preoperative examination for gastric carcinoma, we encountered an aneurysm of the splenic artery detected by CT examination.

Case Report

A 64-year-old, postmenopausal housewife with epigastralgia and nausea for approximately two months, was admitted for surgical treatment of gastric carcinoma.

Past history: She had received medical treatment for hypertension for 10 years. She married at age 22, gravida V, para IV.

Physical examination: On admission, her blood pressure was 162/100 mmHg. The pulse rate was 72/min and regular. The lungs and heart revealed no particular findings. There was slight anemia on her conj. palpebrae. There were no findings in the abdomen.

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Fig. 1. Abdominal plain X-ray examination. The arrows show a small rounded calcification.

Fig. 2. X-ray examination of the upper GI tract. A gastric cancerous lesion indicated by arrows.

Laboratory examination: Blood examination showed an Hb value of 10.2 g/dl. Other examinations revealed no significant findings.

On abdominal plain X-ray examination, there was a small rounded calcification in the left upper quadrant (Fig. 1, arrowheads). On X-ray examination of the upper GI tract, there was a gastric cancerous lesion with a small depression and thickened surrounding folds on the anterior greater curvature of the lower gastric body (Fig. 2). Endoscopic examination of the stomach revealed a cancerous lesion similar to the X-ray examination finding. The biopsy specimen was Group V adenocarcinoma. In the oral side of the gastric cancerous lesion, a small elevated lesion-like submucosal tumor was revealed on the posterior wall of

Fig. 3.

Fig. 4.

Fig. 3. Endoscopic picture showing the elevated lesion-like submucosal tumor on the posterior wall of the upper gastric body (arrow).

Fig. 4. CT scan showing a round calcification of the splenic hilus (arrowhead).

Fig. 5.

Fig. 6.

Fig. 5. CT scan showing diffuse calcification of the splenic artery (arrows) and calcification of the abdominal aorta.

Fig. 6. Resected stomach showing 5×3 cm sized Borrmann type 3 gastric carcinoma on the anterior wall of the middle gastric body (arrow).

the upper gastric body (Fig. 3). On CT examination, a round 2 cm calcification of the splenic hilus (Fig. 4) and diffuse calcification of the splenic artery (Fig. 5) were revealed.

Total gastrectomy with splenectomy including the aneurysm of the splenic artery and node dissection, R₂ was performed. There was a 5×3 cm, Borrmann type 3 gastric carcinoma on the anterior wall of the middle gastric body of the opened stomach (Fig. 6). At the hilus of the spleen, a hard calcified round mass, measuring 15 mm in diameter covered

Fig. 7.

Fig. 8.

Fig. 7. Resected spleen and splenic artery aneurysm. Aneurysm of the splenic artery at the hilum of the spleen (arrow) measuring 15 mm in diameter.

Fig. 8. Histopathological finding shows a dilated extensively hyalinized, thickened arterial wall with severe calcification.

with a tough gray membrane was detected (Fig. 7). In the histological findings, the gastric carcinoma was found to be an advanced carcinoma with a depth of invasion of ssy; the histological type was a poorly differentiated adenocarcinoma. Microscopically, the spleen was normal, but the section from the firm nodule showed a dilated, extensively hyalinized endothelial thickening of the arterial wall with severe calcification and fibrosis (Fig. 8).

Discussion

Aneurysms of the splenic artery are the third most common intraabdominal type following aneurysms of the infrarenal aorta and iliac arteries³⁾. The precise incidence of the splenic artery aneurysm is unknown. In compilations of many autopsy series, the incidence of splenic artery aneurysms was from 0.038 to 0.16%⁴⁻⁶⁾. In more selected groups of patients, Gunther⁷⁾ reported a 1% postmortem incidence in 500 hypertensive patients, Bedford and Lodge⁸⁾ found an incidence of 10.4% in a geriatric unit, and Boijesen and Efsing⁹⁾ discovered an incidence of 19% in a group of 18 patients with portal hypertension. In a series of abdominal angiography, Stanly and Fry⁵⁾ showed an incidence of splenic artery aneurysm of 0.78%. Aneurysm of the splenic artery occurs two to three times as often in females as in males¹⁰⁾. Other aneurysms occur more frequently in males by a ratio of four or five to one^{3,4)}. The average ages range from 48 to 58 years^{4,11)}. Trastek et al.¹¹⁾ described that 87% of his patients were women, and 92% had been pregnant an average of 4.5 times, 24% had been pregnant six or more times, and this is in marked contrast to aneurysms in every other location.

Owens⁴⁾ showed the following etiology of the splenic artery aneurysm: arteriosclerosis, embolus, congenital defect of internal elastic membrane of the intima or fibrotic area in the media, syphilis, trauma, infection, portal hypertension and pregnancy. He then described the incidence of etiology of splenic artery aneurysm: 60%, arteriosclerosis; 23%, embolus; 20%, portal hypertension; 10%, congenital defect; 6% syphilis; 3%, trauma; and 2%, infection. In reports of splenic artery aneurysm from western countries, arteriosclerosis is

the most common pathogenic factor. In Japan, portal hypertension is the most common factor (51%)¹²⁾. However, Trastek et al.¹¹⁾ described circumstantial evidence that indicated the atherosclerotic and portal hypertensive features to be secondary. For example, splenic artery aneurysms are the most common in multiparous women, many of whom have no other evidence of atherosclerosis. Pregnancy is thought to alter the connective tissue within the arterial wall^{5,13)}. Stanley and Fry⁵⁾ have demonstrated internal elastic lamina disruption and elastic fiber fragmentation in these patients. Repeated pregnancies may produce irreversible wall damage, which, when combined with the increases in vascular volume and portal congestion that occur during pregnancy, may promote aneurysmal development.

Signs and symptoms of splenic artery aneurysms are rare. Calcification of the upper left quadrant is an important index for splenic artery aneurysm. Recently, CT and US examinations pick up asymptomatic splenic artery aneurysm.

Among our patients, an aged woman with five pregnancies had severe arteriosclerosis. Repeated pregnancies and severe arteriosclerosis are suggested etiology of splenic artery aneurysm. She had no complaints for the splenic artery aneurysm, and during the examination for gastric cancer, the splenic artery aneurysm was diagnosed incidentally. Trastek et al.¹¹⁾ also mentioned that in 27 patients aneurysms were discovered incidentally during laparotomy for other intra-abdominal disease. During upper GI examination, an elevated lesion-like submucosal tumor was detected. Retrospective study showed such a lesion to be due to extragastric compression by the splenic artery aneurysm. In the Japanese literature, several cases with the same finding have been reported^{14,15)}.

Even now, surgical resection is the best choice of treatment for splenic artery aneurysm, is not so rare, being 22.4% in Japanese literature¹²⁾. The indication of surgical operation varies among several reports¹¹⁾, but Stanley and Fry⁵⁾ described that all splenic artery aneurysmal patients had an indication of surgical therapy, if the surgical risk was low. Concerning our patients, the splenic artery aneurysm was removed with total gastrectomy. If the abdominal survey by X-ray, CT and US examination detects a small sized splenic artery aneurysm, the choice of management is difficult (operation or follow up). In the near future, since we can detect smaller sized aneurysms with recent equipment like CT, MRI, and US examination, we should reconsider the management of splenic artery aneurysm.

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