CASE REPORT

Damage control surgery in patient with delayed rupture of pseudoaneurysm after blunt abdominal trauma

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Delayed rupture of post-traumatic pseudoaneurysms of the visceral arteries, especially the pancreaticoduodenal artery, is uncommon. Here, we describe a 55-year-old man hemorrhaging from a pseudoaneurysm of the inferior pancreaticoduodenal artery (IPDA). Computed tomography of the abdomen showed active bleeding in the IPDA and large amounts of hemoperitoneum and hemoretroperitoneum. Selective mesenteric angiography showed that the pseudoaneurysm arose from the IPDA, and treatment by angioembolization failed because the involved artery was too tortuous to fit with a catheter. Damage control surgery with surgical ligation and pad packing was successfully performed. The patient had an uncomplicated postoperative course and was discharged 19 days after the operation. To our knowledge, this is the first report of ruptured pseudoaneurysm of an IPDA after blunt abdominal trauma from Korea.

Key Words: Pseudoaneurysm, Inferior pancreaticoduodenal artery, Blunt abdominal trauma

INTRODUCTION

True and pseudoaneurysms of the visceral arteries are uncommon, accounting for 0.1 to 0.2% of all vascular aneurysms. Visceral pseudoaneurysms may be developed as a complication to blunt abdominal trauma. The arteries mainly involved including the splenic artery, hepatic artery, and renal artery [1]. Visceral artery aneurysms should be treated because of their propensity to rupture and their associated high rates of mortality. Reports regarding ruptured aneurysms of the pancreaticoduodenal artery are extremely rare, especially after abdominal trauma, and few cases have been reported to date [2,3]. Here, we present a case of ruptured pseudoaneurysm of the inferior pancreaticoduodenal artery (IPDA) after abdominal blunt trauma.

CASE REPORT

A 55-year-old man presented to the emergency department for investigation of abdominal pain following abdominal trauma 1 month previously. On presentation, he had progressive epigastric pain, which became more severe...
vere over a period of two days. He had a laparotomy 20 years ago for appendicitis. He did not have a history of acute or chronic pancreatitis. The patient was receiving medication for high blood pressure and non-insulin-dependent diabetes mellitus. Computed tomography (CT) of the abdomen showed a pseudoaneurysm of the IPDA from the superior mesenteric artery (SMA) (Fig. 1) and large amounts of hemoperitoneum and hemothorax. The results of liver function tests and amylase test were within normal limits. Selective mesenteric angiography was performed. Angiography through the celiac axis showed no active extravasation from the gastroduodenal artery. Selective SMA angiography revealed a pseudoaneurysm and active extravasation of contrast material from the IPDA (Fig. 2). Transcatheter arterial embolization was attempted, but we could not select the extravasated branch because it was tortuous and slender. Initial hemoglobin level was 11.9 g/dL and decreased to 9.8 g/dL 7 hours later, after angiography. Blood pressure was 70/40 mmHg and body temperature was 36.0°C. Laboratory findings showed lactate 2.3 mmol/L (normal range, 0.7 to 2.2), fibrinogen 80.7 mg/dL (normal range, 180 to 350), fibrinogen degradation product 99.5 mg/mL (normal range, 0 to 5), D-dimer 2.73 mg/L (normal range, 0 to 0.3), prothrombin time 1.40 international normalized ratio, activated partial thromboplastin time 51.2 seconds (normal range, 26.5 to 41), antithrombin III 15.5 (normal range, 19 to 31), platelet $63 \times 10^3$/mm$^3$ (normal range, 130 to 450). Acidosis was not seen on arterial blood gas. The patient was brought to the operating room, and operative findings showed about 2 L of fresh blood in abdominal cavity and severe diffuse woozing from the retroperitoneum. We approached the lesion near the head of pancreas using the Kocher maneuver. Damage control surgery with blind surgical ligation on suspicious lesion and pad packing was performed. Eight units of packed red blood cells (PRBC) were transfused in the operating room. After operation, blood pressure was stabilized and hemodynamic drug was not needed. Pad was removed 3 days later and there was no active bleeding or diffuse woozing. And laboratory findings were improved well. Patient was stayed in the intensive care unit for 10 days and ventilator management was needed for 7 days. The patient showed good recovery and was discharged 19 days after the operation.

**DISCUSSION**

A pseudoaneurysm is a localized arterial disruption of the intimal and medial layers, which is lined with adventitia or perivascular tissue. There are many possible causes of visceral artery pseudoaneurysm, such as pancreatitis, blunt or penetrating abdominal trauma, anastomotic pseudoaneurysm, percutaneous intervention of the bili-