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Case Report
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Endovascular Treatment of Ruptured Splenicartery Pseudo-Aneurysm Clogged by Necrosis Castings Complicating Acute Pancreatitis

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Abstract

The formation of pseudo-aneurysm of visceral arteries is a rare vascular complication of acute pancreatitis and the most commonly involved artery is the splenic artery. Bleeding pseudoaneurysms are associated with a high mortality. We report the clinical case of a patient with a ruptured splenic artery pseudo-aneurysm clogged by necrosis castings complicating acute pancreatitis. After stabilization of the hemodynamic state and transfusion by red blood cells, the pseudo-aneurysm was treated emergency with transarterial coil embolization and the control angiography confirmed the absence of residual flow. Our case represents an example of successful management of pseudoaneurysm of the splenic artery treated with endovascular coiling without the need for surgery.

Keywords: Pseudoaneurysm; Splenic artery; Acute pancreatitis; Endovascular treatment

Introduction

The formation of pseudoaneurysm of visceral arteries is a rare vascular complication of acute pancreatitis and the most commonly involved artery is the splenic artery (60% to 65%) following by gastroduodenal (20% to 25%) [1]. Pseudoaneurysm of the splenic artery is generally symptomatic and is often associated with hemodynamic instability. Mortality can be 12.5% in treated patients and higher than 90% in untreated patients [2]. Traditionally, surgery was the treatment of choice but with the advancement of endovascular techniques, endovascular treatment has become the first-line treatment [1]. We report the clinical case of a patient with a ruptured splenic artery pseudo-aneurysm clogged by necrosis castings complicating acute pancreatitis and presents its successful therapeutic management by coil embolization to prevent critical bleeding.

Case Presentation

A 40-year-old Caucasian man, without past history, presented to the emergency department with epigastric pain. Initially, he was conscious, apyretic, with normal heart sounds (80 beats per minute) and a normal arterial pressure (125/75 mmHg). Two weeks prior to this evaluation he had 10 days hospitalization for acute biliary pancreatitis. Examination of the abdomen revealed a particularly tenderness in the left upper epigastric area which increased with palpation, without rigidity or hepato-splenomegaly. Laboratory tests revealed the following data: lenkocystosis at 19000/µL, hemoglobin (7.2 g/dL), platelets count of 185000/µL, amylase (750 U/L), lactate dehydrogenase of 350 U/L and his blood gas analysis was normal. We performed abdominal Computed Tomography (CT) which showed a necrotic-hemorrhagic acute lithiasic pancreatitis in addition to a fissured pseudoaneurysm of splenic artery which was clogged by necrosis castings, with moderate hemoperitoneum and splenic hematoma (Figure 1 and 2).

After that, he was transferred to the intensive care unit where he required fluid and oxygen resuscitation in order to restore haemodynamic balance, in addition to transfusion of packed red cells. A multi-disciplinary meeting between doctors in intensive care, radiology, general and vascular surgery has held in order to decide the definite treatment in this case between surgical or endovascular approach. However, due to the high risk of hemorrhagic complication, embolization of the pseudoaneurysm and of the upper polar branch of splenic artery was done in emergency and the control angiography didn't show any residual flow (Figure 3).

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Figure 1: Contrast-enhanced CT scan of abdomen. CT scan showed an acute peri-pancreatic necrotic collections complicating an acute necrotico-haemorrhagic pancreatitis.

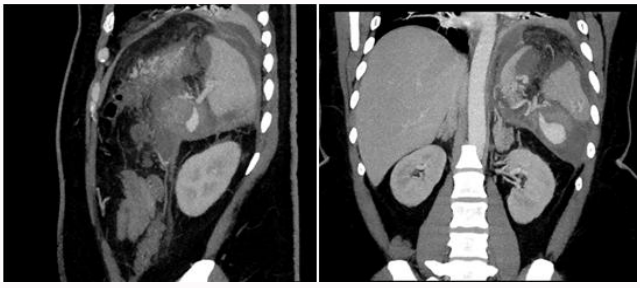

Figure 2: Contrast-enhanced CT scan of abdomen. CT scan showed Pseudoaneurysm image with a collar connects to the lower polar splenic artery.

The clinical course was acceptable with progressive hemoglobin recovery. Although, wide spectrum antibiotics were administrated as a prevention of infectious complications, in addition of controlling pain by a good analgesia. Some days after the embolization, CT scan was done and confirmed the complete exclusion of the splenic pseudoaneurysm and that most of the splenic parenchyma vascularization was present without any ischemic damage. Our patient was discharged in a stable condition.

Discussion

In this case report, we described the rare situation of a ruptured pseudoaneurysm of the splenic artery which was clogged by the necrosis in a patient suffering from acute pancreatitis and report on its successful therapy with percutaneous embolization to prevent critical bleeding.

Hemorrhage is an uncommon but fatal complication in pancreatitis which occur in 7% to 10% of patients with chronic disease and 1% to 6% with acute disease, however the main causes is vascular complication which is rare with an incidence between 1% to 23% [1,3]. That is why, it is important to detect the arterial complication on time in order to treat it due to the high risk o mortality which is between 34% and 52% [4]. Sixty percent of all visceral aneurysms are represented by splenic aneurysms in the presence of pancreatitis, which if they are not effectively managed go on to rupture in 3% to 10% of cases [5].

Concerning the detection of this type of vascular complication due to acute pancreatitis, which must be done rapidly, abdominal-CT and less frequently ultrasonography represent the first line modalities. Ultrasound has less sensibility than CT scan in identifying such complication, but it may be indicated in those allergic to iodine or in certain case of renal insufficiency [6-8]. When the pseudo-aneurysm

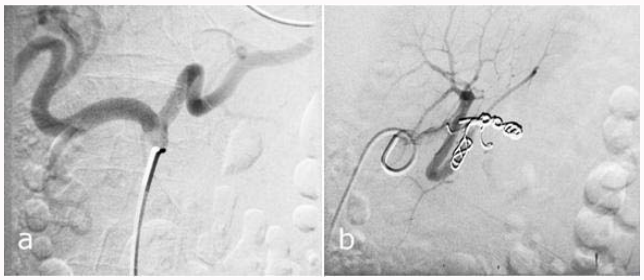

Figure 3: Image of angiography. (a) Pseudoaneurysm arising from an inferior polar splenic artery branch. (b) Successful embolization with micro coils positioned in the pseudoaneurysm.

is confirmed and especially if an endovascular treatment is indicated, angiography is considered as the diagnostic gold standard because of its high sensitivity in detecting arterial bleeding [9].

Because of the unpredictable evolution of the pseudo-aneurysm, suitable treatment must be done rapidly, however in order to stabilize the situation many factors must be managed including coagulation status, hemodynamic stability and source of bleeding. Historically, the treatment of choice was surgery by arterial and pseudo-aneurysm ligation, but it is known to be associated with significant morbidity and mortality increasing by acute hemorrhage [1]. With the improvements of interventional radiology over the past two decades, endovascular ligature has become the first line treatment in cases of hemodynamic instability and hemorrhagic shock. This technique reduces the need for transfusion and the length of hospital stay compared with open surgery. Transarterial catheter embolization is considered as a safe and effective modality to treat arterial pseudo-aneurysm [11-12]. Kim et al., [13] conducted a retrospective study of 37 patients with pseudoaneurysms of visceral arteries that were treated by transcatheter embolization. Successful hemostasis without rebleeding was achieved in 34 patients (91.9%). Endovascular-directed therapy is associated with rare complications such as rupture of the pseudoaneurysm during embolization, splenic infarction and coil migration.

Conclusion

Patients with visceral pseudoaneurysms secondary to pancreatitis are a difficult to manage patients with high mortality rates. Our case represents an example of successful management of pseudoaneurysm of the splenic artery treated with endovascular coiling without the need for surgery.

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