Case Report

Atraumatic splenic rupture in chronic pancreatitis with successful embolization

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Abstract

Atraumatic splenic rupture is uncommon but it is a life threatening condition because of hypovolemic shock. Early recognition and treatment are the keys to a successful outcome. We report a case of atraumatic splenic rupture secondary to chronic pancreatitis treated successfully by splenic artery embolization.

Keywords: Atraumatic splenic rupture, Chronic pancreatitis, Embolization.

Introduction

Atraumatic splenic rupture (ASR) is an uncommon and rarely reported complication of chronic pancreatitis. It is often overlooked in a patient with known history of pancreatitis (chronic or acute), secondary to alcohol consumption. In case of splenic complications associated with pancreatitis, the morbidity rates range from 39% to 79% and mortality rates range from 3.5% to 0.8%[1]. We discuss here a case of acute exacerbation of chronic pancreatitis complicated by splenic rupture.

Case report

A 56-year-old male was admitted with 2 weeks of worsening epigastric pain that suddenly became very severe in the left upper quadrant for 24 hours.

This is on background of chronic pancreatitis, secondary to chronic alcohol abuse treated with Pancrelipase (Creon) tablets. There was no history of trauma reported. His other comorbidities included severe chronic obstructive pulmonary disease, large bilateral apical bullae, recent ICU admission for spontaneous pneumothorax secondary to burst bulla, and chronic alcoholism.

An initial examination showed normal blood pressure, mild tachycardia and a distended abdomen that was painful to palpation but with no signs of peritonitis. The laboratory results revealed an elevated lipase of 4580 U/L and the patient was assessed to have acute exacerbation of chronic pancreatitis and was admitted for conservative management under the surgical team. Few hours later, the patient became unstable (the pulse rate of 135/min, the respiratory rate of 35/min and the blood pressure at 70/40 mmHg), with a rising lactate and worsening acidosis despite intravenous therapy, and a haemoglobin drop from 130 to 87 g/L.

A Computed Tomography (CT) scan of the abdomen (Figure 1) demonstrated a splenic rupture with a large volume of perisplenic hematoma extending into the peritoneal cavity to the pelvis, without any active bleeding. It also demonstrated changes consistent with chronic pancreatitis.

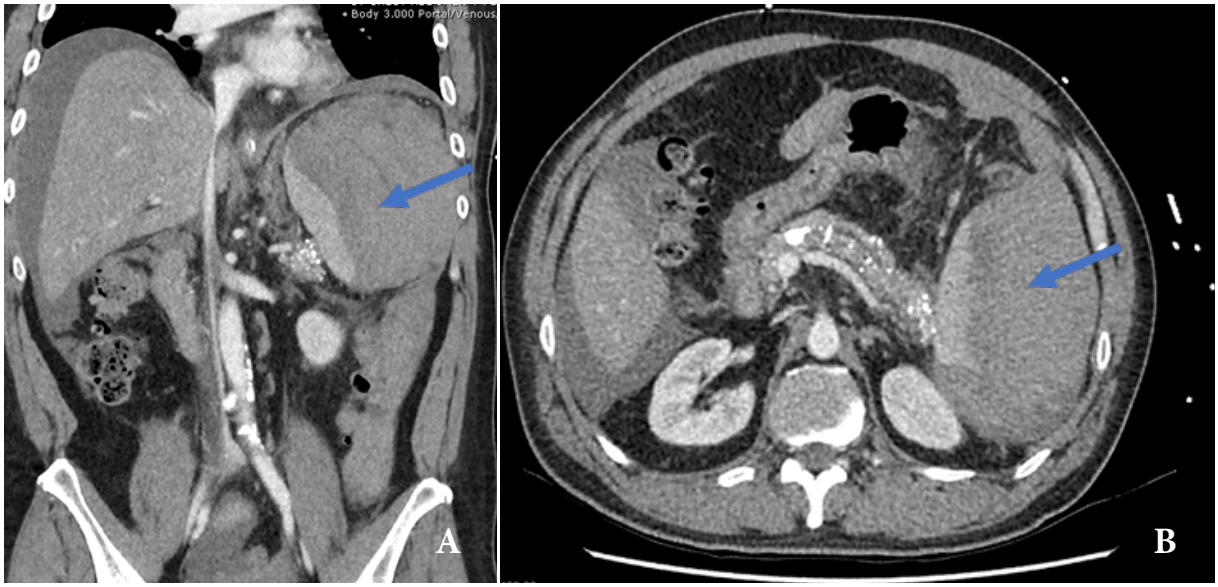

Figure 1. *Computed tomographic image (A. coronal and B. axial views) in the portovenous phase demonstrating the splenic hematoma (arrow) with hemoperitoneum.*

The patient was assessed to be unfit for laparotomy due to his multiple comorbidities. The decision was then made to proceed with splenic artery embolization after the discussion among the surgical and anaesthetic team since the patient was hemodynamically unstable and there was a likelihood of ongoing bleeding which could have been missed in the CT scan. The patient was transferred urgently to the theatre where he underwent an angiogram with a splenic artery embolization. The procedure was done under sedation and local anaesthesia. The right common femoral artery was accessed with 5 French vascular sheathes. The angiogram demonstrated an abnormal blood vessel with possible bleeding (Figure 2A). A Cobra head catheter and a progreat microcatheter were used to access splenic artery. Embolization was done with tornado and Nester microcoils and gelfoam slurry (Figure 2B). Satisfactory embolization was achieved successfully with no immediate complications noted.

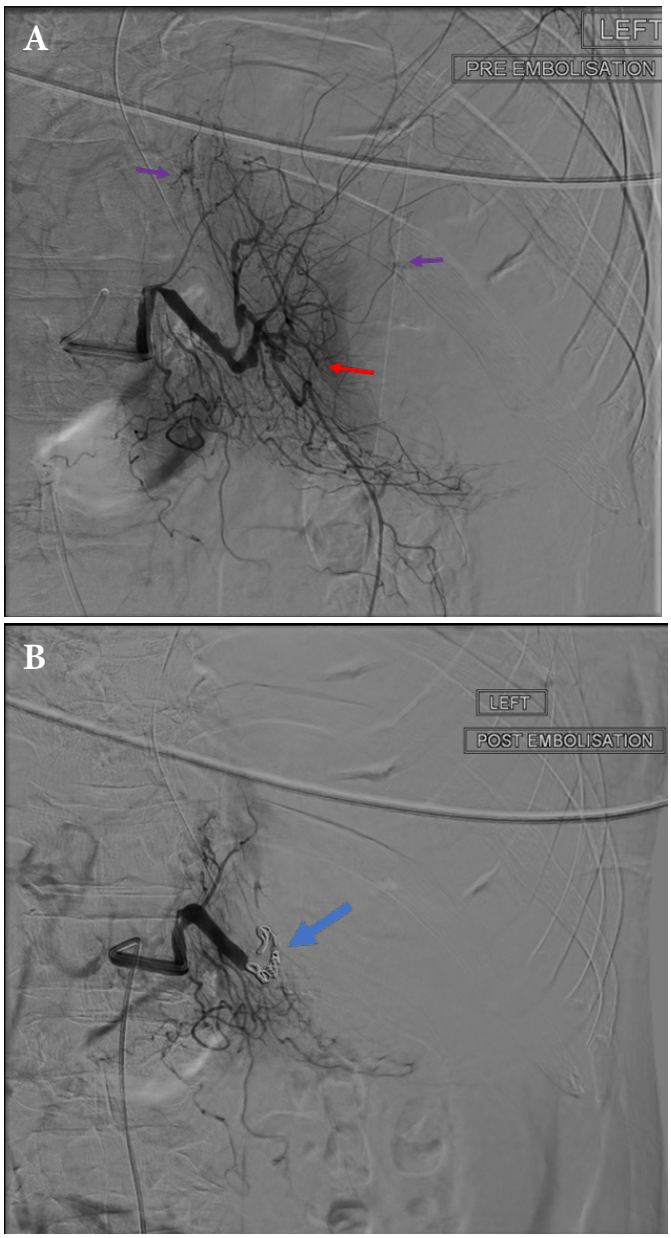

Figure 2. *Pre embolization image (A) Red arrow - shows artery disruption, dissection in keeping with acute bleeding. Purple arrow – shows minor blush - slow bleeding. Post embolization image (B) showing successful coil embolization (arrow) of the splenic artery.*

The patient was stable after the procedure and was transferred to the intensive care unit for further management. The follow-up CT scan (Figure 3) 4 days later showed no evidence of ongoing bleeding. The coil in the splenic artery was in a stable location and satisfactory perfusion of more than 50% of the splenic parenchyma was noted. The patient gradually recovered and was discharged home ten days later. He is currently being reviewed regularly as an outpatient.

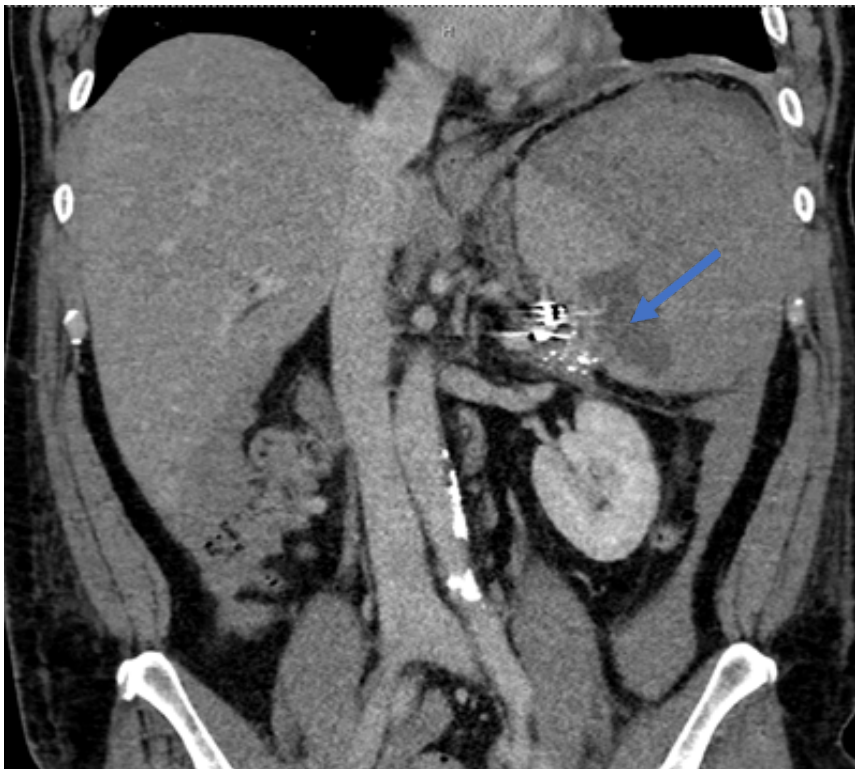

Figure 3. *Post embolization axial CT showing no evidence of ongoing bleeding. There is a reduction in the volume of perisplenic, perihepatic and intraperitoneal blood volume. The wedge shaped area of hypodensity involving the anterior aspect of the spleen is in keeping with the splenic infarct (arrow).*

Discussion

Chronic pancreatitis accounts for about 8.27% of the ASR cases, the commonest aetiology being local inflammatory processes[1, 2]. Other conditions associated with ASR are leukaemia, malaria, sarcoidosis, tuberculosis, sepsis, infectious mononucleosis and viral hepatitis[2]. The pancreas and spleen are closely related; as a result, an inflammatory process at the tail of the pancreas may disrupt the spleen resulting in several complications[1, 3].

The treatment of ASR depends upon the hemodynamic stability of the patient[1]. In case of a stable patient; a conservative treatment, angiogram with embolization or even surgery is considered[1]. However, for a hemodynamically unstable patient surgical approach is the mainstay of management[1]. The major disadvantages of splenectomy are the increased risk of susceptibility to infections which can manifest as overwhelming post splenectomy sepsis (OPSI) which has a mortality rate of >80% and also a compromised immunological function[5].

The criteria for non-operative management include being a readily stabilizable patient, a lack of rebound tenderness and guarding, blood transfusions ≤ 4 units, no loss of consciousness, age <55 years, and a radiologically confirmed splenic injury[5]. While selecting patients for conservative management, it is important to identify patients with hemorrhagic lesions that clot spontaneously[5]. For example, longitudinal lesions that parallel the long axis of the spleen might cross larger segmental vessels, thus, reducing the likelihood of spontaneous hemostasis[5]. The benefits of non-operative management are lower rates of morbidity and mortality, lower infection risk and prevention of OPSI, prevention of a non-therapeutic laparotomy and associated complications, minimal blood transfusions, decreased hospital stay, preserving an immunological function[5].

Some of the major complications (19% - 28.5%) associated with splenic artery embolization are bleeding which is the most common complication, overlooked injuries in trauma patients (diaphragmatic, pancreatic), splenic abscess, sepsis, splenic atrophy, iatrogenic arterial damage, acute renal failure after contrast administration.

Other minor complications (23%-61.9 %) include splenic infarction (significant in case of >25% of splenic parenchyma devascularization), migration of embolic material, angiographic vascular dissection, vascular damage when inserting the catheter (arterio-venous fistula), ongoing pain or hematoma at the puncture site, post-embolization syndrome (self-limiting), pulmonary complications and an allergic reaction to contrast.

Splenic injuries heal as a result of early accumulation of myofibroblasts at the lesion site[5]. This accelerated healing occurs via a regeneration process rather than collagen scarring assisting in successful management via a non-operative approach[5].

A table showing a list of publications with the outcome data of ASR managed by splenic artery embolization is given below.

Table 1. *List of publications showing the outcomes of splenic artery embolization in atraumatic splenic rupture.*

Case reports and articles on ASR and management	Outcomes
Effraemidou E, Souftas V, Kofina K, Karanikas M, Lyratzopoulos N[6].	ASR secondary to ruptured splenic artery aneurysm with haemodynamic instability treated successfully with coil embolization.
Kamalanathan KC, Barnacle AM, Holbrook C, Rees C [7].	ASR secondary to Ehler Danlos syndrome treated successfully with coil embolization.
Kim NH, Lee KH, Jeon YS, Cho SG, Kim JH [8].	ASR secondary to malaria treated successfully with Transcatheter Coil Embolization of the Splenic Artery.
Bellingham GA, Kribs S, Kornecki A, Scott L, Leaker M, Fraser DD[9].	ASR secondary to acute lymphoblastic leukemia in an 8 year old boy treated successfully with proximal splenic artery embolization.
Gaba RC, Katz JR, Parvinian A, Reich S, Omene BO, Yap FY. et al[10].	Single centre trial involving 50 patients showing splenic artery embolizations were highly successful technically with 90% procedure efficacy.

In the case discussed here, the CT scan was urgently done after hours, when patient showed signs of hemodynamic instability. This assisted in an early diagnosis of the splenic hematoma. Our patient was not fit for surgical management. Hence, we proceeded to treat him with embolization. Due to excellent teamwork and prompt recognition of the condition, we could successfully treat him by splenic artery embolization and the patient recovered well without any complications.

Conclusion

Even though there are many cases of ASR reported previously in the literature, it still remains an uncommon phenomenon; hence, this diagnosis is often overlooked.

Early recognition and prompt treatment are essential to reduce the morbidity and mortality in these patients. From this case, it is evident that we could successfully manage a hemodynamically unstable patient with embolization if a surgical option is not ideal for the patient.

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