Case Report

Rupture of pseudoaneurysm of a digiunal artery in the pancreatic duct✩

Carlo Bova, MDa,* , Tommaso De Bartolo, MDB, Mario Verta, MDC

a Unit of Internal Medicine, Azienda Ospedaliera, Via Migliore 1, Cosenza 87100, Italy
b Interventional Radiology Unit, Azienda Ospedaliera, Via Migliore 1, Cosenza 87100, Italy
C Gastroenterology Unit, Azienda Ospedaliera, Via Migliore 1, Cosenza 87100, Italy

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ABSTRACT

Visceral arterial pseudoaneurysms are uncommon vascular abnormalities affecting renal or splanchnic arteries. They can be complications of chronic pancreatitis, blunt or penetrating abdominal trauma, or surgical, endoscopic and interventional radiological procedures. Visceral arterial pseudoaneurysms can be life-threatening because of hemorrhagic shock secondary to rupture and massive bleeding. We report an unusual case of rupture of a pseudoaneurysm of a digiunal artery in the pancreatic duct.

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Introduction

Visceral arterial pseudoaneurysms (VAPs) are uncommon vascular abnormalities affecting renal or splanchnic arteries, that are characterized by a tear in the vessel wall with subsequent formation of a peri-artery hematoma [1]. VAPs can be complications of chronic pancreatitis, blunt or penetrating abdominal trauma, or surgical, endoscopic and interventional radiological procedures [2]. Although sometimes VAPs are incidentally detected, they can be life-threatening because of hemorrhagic shock secondary to rupture and massive bleeding [3,4]. We report an unusual case of rupture of a pseudoaneurysm of a digiunal artery in the pancreatic duct, in which the interventional radiology allowed an appropriate emergency treatment.

Case presentation

A 75-year-old man was admitted to the emergency department of our hospital for hematemesis and melena. His clinical history was significant for pacemaker implant, chronic pancreatitis and diabetes. Physical examination revealed cold and pale skin, tachycardia (110 bpm) and arterial hypotension (blood pressure 80/40 mm Hg). Laboratory exams showed a low hemoglobin concentration (7.7 g/dL, normal values 13-17). An esophagogastrroduodenoscopy did not identify foci of active bleeding. A computed tomography (CT) of the abdomen with administration of intravenous contrast material revealed an inhomogeneous and enlarged pancreas with multiple calcifications, a marked dilation of the pancreatic duct, and a hyper-

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* Corresponding author.
E-mail address: carbova@libero.it (C. Bova).

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dense area in the cephalic site as for pseudoaneurysm with likely origin from a digiunal artery (Figs. 1 and 2).

A digital angiography was performed. The exam confirmed a pseudoaneurysm of a digiunal artery in the cephalic-pancreatic region of a dilated pancreatic duct. An emergency procedure was then carried out. A right common femoral artery approach with a 7F catheter was done. The superior mesenteric artery was catheterized using a 6F long sheath introducer. The affected digiunal artery was catheterized in a super-selective way by a 2.9-F micro-catheter, and the pseudoaneurysm was embolized with 12 controlled release spirals. Initially a casting was carried out with 5 standard ruby coils (Penumbra Inc, S. Francisco, CA). Then a framing with 3 soft ruby coils was performed. Finally, a filling of the pseudoaneurysm with packing coil was obtained. During the procedure a small extravasation of contrast medium was noted, as for (further) rupture of the pseudoaneurysm. However, at the final check the complete exclusion of the lesion from the arterial circulation was documented (Figs. 3–5).

After the procedure the conditions of the patient rapidly improved, and he was discharged from the emergency department on the third hospital day. At the 1-month follow-up a CT of the abdomen with contrast material showed the disappearance of the pseudoaneurysm and a reduction of the pancreatic duct dilation (Figs. 6 and 7).

**Discussion**

VAPs are detected in 0.01%-0.2% of autopsies [5,6]. The most common sites are the splenic (60%) and hepatic arteries (20%), while digiunal arteries are rarely affected [6]. Sixty-eight percent of VAPs are reported to be secondary to pancreatitis or to a pseudocyst formation [2] and their incidence in chronic pancreatitis, in about 5 years of follow-up, ranges from 0.03% to 0.8% [7,8]. VAPs are believed to be secondary to a leakage of proteolytic enzymes in the setting of pancreatitis, with subsequent destruction of the vessel wall [2,3,9]. However VAPs can also be due to surgical, endoscopic and interventional radiological procedures, or be secondary to trauma, infectious, or inflammatory conditions [2,10]. Clinical features of VAPs vary from absence of symptoms to hemorrhagic shock and death [11–13]. Gastrointestinal bleeding due to rupture of pseudoaneurysms arising from splanchnic arteries, hematuria from renal artery pseudoaneurysms, and intra-abdominal hematoma, are the most common symptoms. Pain is another common presentation. In about one third of patients, pseudoaneurysms are discovered incidentally (13). When detected, VAPs should be always treated as soon as possible, because of their high probability of rupture [14]. This complication is associated with a mortality rate
Fig. 2 – Coronal contrast-enhanced CT. Digiunal artery feeding the pseudoaneurysm (arrow).

Fig. 3 – Digital subtraction angiography (DSA). Super-selective catheterization, by a 2.9-F micro-catheter, of the pseudoaneurysm (arrow).

Fig. 4 – DSA. Filling of the pseudoaneurysm with packing coil (white arrow). Extravasation of contrast medium for pseudoaneurysm rupture (black arrow).

Fig. 5 – DSA. Exclusion of the pseudoaneurysm from the arterial circulation (arrow).

ranging from 25% to 70%, depending upon the diameter and the location of the pseudoaneurysm [15].

The diagnosis of VAPs relies on CT angiography and on digital angiography, that remains the gold standard [2]. The therapy of VAPs can be surgical (arterial bypass, exclusion of the aneurysmal sac, vessel ligature), percutaneous (thrombin in-
tions of endovascular treatment include rupture of the pseudoaneurysm, arterial dissection, non-target embolization, visceral ischemia, and migration or straight deployment of coil [13].

We believe that our case is interesting. Indeed, the digiunal arteries are an unusual site of splancnic pseudoaneurysms [6]. In addition, the rupture and bleeding of the pseudoaneurysm in the pancreatic duct was rarely reported [3,9].

Patient consent statement

A written informed consent for the publication of this case has been obtained from the patient.

Authors’ contributions

Bova C, De Bartolo T, Verta M: Conception and design of study. Bova C: drafting the manuscript. All authors read and approved the final manuscript.

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