Ajit K. Yadav, Arun Gupta, Abhishek Agarwal1, Hirenkumar K. K. Panwala1, Navneet Redhu1, Kamal Kant Saxena1
Department of Interventional Radiology and 1Radiodiagnosis, Sir Ganga Ram Hospital, New Delhi, India
Address for the Correspondence:
Dr. Navneet Redhu,
Department of Interventional Radiology, Sir Ganga Ram Hospital, New Delhi - 110 060, India.
E-mail: navneet51084@gmail.com

INTRODUCTION

Visceral artery pseudo-aneurysm is one of the lethal complications of pancreatitis that requires treatment on an emergency basis. 68% of pseudo-aneurysms develop as a complication of pancreatitis or pseudo-cyst formation. Pseudo-aneurysm formation is caused by pancreatic enzymes, released due to auto-digestion of pancreatic tissue, which further cause destruction of the elastic tissue layer of the arterial wall.

Mortality associated with visceral artery pseudoaneurysms is estimated to be 22% according to the literature. Urgent or elective treatment of choice in such pseudo-aneurysms is trans-arterial coil embolization or surgery. Here we report a case in which percutaneous thrombin injection and coil embolization was done for pseudoaneurysm arising from the gastroduodenal artery. Percutaneous thrombin injection is used as effective treatment modality in femoral artery pseudo-aneurysms in the last decade. However, in the past few years percutaneous thrombin has also been used in visceral artery pseudo-aneurysms which was not easily accessible with coil embolization.

CASE REPORT

A 44-year-old male, a known case of biliary pancreatitis with choledocholithiasis presented to our hospital with abdomen pain associated with nausea and vomiting. He had undergone endoscopic retrograde cholangio-pancreatography and plastic stent placement for biliary obstruction 2 months back.

Ultrasound of the abdomen revealed pancreatitis, dilated common bile duct (CBD) with a large pseudoaneurysm in relation to CBD at the present admission. Multidetector computed tomography angiography of the abdomen confirmed the presence of a large pseudo-aneurysm arising from gastroduodenal artery (GDA) abutting the CBD and head of pancreas [Figure 1a and b]. The pseudo-aneurysm caused mass effect over the CBD with resultant dilatation of the same.

In angiography suite under deep sedation, through right trans-femoral arterial route, celiac artery angiogram performed confirmed the presence of a large pseudo-aneurysm arising from GDA with no visible distal circulation [Figure 2]. With a super selective cannulation of GDA, embolization of the pseudo-aneurysm with percutaneous thrombin injection was done after balloon (20 × 4 mm)
placement in the neck of the pseudo-aneurysm as the neck was very small and flow was turbulent. Percutaneous thrombin was injected under colour Doppler guidance, which demonstrated a classical yin-yang flow in the pseudo-aneurysm. A 20-gauge needle was placed in the sac and 1000 IU of human thrombin (TISSEL Kit, Baxter AG, Vienna, Austria) was injected. Post injection Doppler showed no colour flow in pseudoaneurysm. After deflation of balloon, repeat angiography showed linear streak of contrast at neck of pseudoaneurysm. Microcatheter was advanced into the neck and two 2 cm × 2 mm 0.018” Multi-Curled microcoils (Hilal coils, Cook, USA) were placed. Check celiac and superior mesenteric artery angiography showed complete exclusion of the pseudo-aneurysmal sac [Figure 3] and thrombosis of the pseudoaneurysm was observed on Doppler examination. On 6-month follow up Doppler examination no flow was noted in the aneurysmal sac with shrinkage in the size of the pseudoaneurysm.

DISCUSSION

Pseudoaneurysm formation in pancreatitis is rare but a life-threatening complication. Pseudo-aneurysm is seen in 3.5-10% of cases of pancreatitis, however rupture is seen in very few cases.[4] Most commonly affected artery is splenic artery followed by GDA and pancreatico-duodenal arcade.[5] Mortality associated with pseudoaneurysm is related to the duration of the pancreatitis and the vessel involved.[4] Surgical treatment carries a high postoperative mortality in pancreatitis-related pseudoaneurysms, so surgery is reserved for candidates who have either failed an attempt of coil embolization or the patient with necrotising pancreatitis who require surgery ultimately for the primary disease control.[7] Percutaneous embolization with microcoils is preferred treatment for such type of aneurysms with a reported success rate of about 67% to 100%.8] Coil embolization is typically done in cases where distal circulation is seen on angiography. However, in our case pseudoaneurysm was arising from GDA with a short neck, hence coil placement was not an easy option. As patient was hemodynamically stable, thrombin was injected percutaneously. Residual space in the aneurysmal sac and neck space were filled with microcoils.

Percutaneous thrombin injection is used for treatment of iatrogenic femoral artery pseudoaneurysm. In recent years, it is also used for percutaneously accessible visceral artery pseudoaneurysms.[9] Thrombin is safe in a volume calculated according to flow and size of the pseudoaneurysm. Non-target embolization is one of the common complications associated with thrombin injection. To reduce inadvertent embolization, a balloon was inflated at the neck of pseudoaneurysm in our case. The other potential complication associated with thrombin injection is anaphylaxis predominantly seen with the bovine form. With the use of human thrombin the risk of anaphylaxis is markedly reduced.[10]

So percutaneous thrombin along with selective coil placement is a suitable option for visceral artery pseudoaneurysm in which distal

Figure 1: (a) Coronal reformat image of CT scan showing large pseudoaneurysm arising from GDA stump. (b) VR image of CT scan showing pseudoaneurysm arising from GDA stump

Figure 2: Celiac artery angiogram shows a large GDA stump pseudoaneurysm without distal circulation

Figure 3: Post embolization celiac artery angiogram – pseudoaneurysm is embolized with 1000 unit of thrombin percutaneously (arrow head) and microcoil in the neck of GDA stump (arrow)
circulation is not seen and where in conventional sandwich type of coil embolization is not feasible.

REFERENCES


How to cite this article: Yadav AK, Gupta A, Agarwal A, Panwala HK, Redhu N, Saxena KK. Percutaneous thrombin and transarterial coil embolization in post pancreatitis gastroduodenal artery pseudo-aneurysm. Onc Gas Hep Rep 2015;4:52-4.

Source of Support: Nil, Conflict of Interest: None declared.