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International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Gastroduodenal artery aneurysm – Post traumatic pancreatic pseudocyst drainage – An interesting case

Mohammad Zarin, Sajid Ali, Abdul Majid, ZakaUllah Jan*

Khyber Teaching Hospital Peshawar, 25120, Pakistan

ARTICLE INFO

Article history:

Received 19 September 2017

Received in revised form

26 November 2017

Accepted 28 November 2017

Available online 6 December 2017

Keywords:

Gastroduodenal artery aneurysm

Traumatic pancreatic pseudocyst

Angioembolization

ABSTRACT

BACKGROUND AND AIM: Pseudoaneurysms of the gastroduodenal artery (GDA) are rare and mostly associated with pancreatitis. However, they can occur as a possible complication following gastric or pancreatic surgery and thus prior recognition and prompt treatment is mandatory (Lee et al., 2009 [1]). We report a case of a ruptured GDA aneurysm in a patient who underwent roux-en-y-cystojejunostomy for traumatic pancreatic pseudocyst and this has rarely been reported in the literature. Our patient presented with melena one month post operatively. CT Angiogram showed pseudoaneurysm of the GDA and the origin of right gastroepiploic artery which was embolised. Our case highlights that GDA aneurysm must be considered in the differential for a patient who presents with melena following drainage of traumatic pancreatic pseudocyst and that it can be managed successfully with angioembolization.

CASE PRESENTATION: A young boy was operated for traumatic pancreatic pseudocyst. One month later, he presented with the complaints of melena. Patient was resuscitated initially and then CT Angiogram was planned that showed pseudo aneurysm of the GDA and the origin of right gastroepiploic artery. The aneurysm was embolised and patient was sent home later on. On two months follow up the patient was doing well and had no episode of melena.

CONCLUSION: GDA aneurysms are rare and should be suspected in a patient with GI hemorrhage after surgery for traumatic pancreatic pseudocyst. The investigation of choice is CT Angiography and endovascular angioembolization is the treatment modality of choice.

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1. Introduction

Bleeding into the GI tract is one of the main causes of admission to the Accident & Emergency department [2]. There are multiple etiologies for this, and one of them is rupture of the GDA pseudoaneurysm. Pseudoaneurysms of the gastroduodenal artery are rare and account for 1.5% of all aneurysms of the visceral arteries [3]. Most of them occur in patients with pancreatitis but have rarely been reported following gastric or pancreatic surgery or trauma [4]. They are challenging to diagnose and may prove fatal if they rupture [5]. Hence, early diagnosis and prompt treatment is necessary. Angioembolization is the treatment of choice. However, they can be managed by ligation of the vessel and excision of the sac or by stenting [6].

We hereby present an interesting case of a ruptured GDA aneurysm. An 18 years old male patient presented one month following roux-en-y-cystojejunostomy for traumatic pancreatic pseudocyst drainage with multiple episodes of melena. CT

angiography was performed which showed a 9.2 × 7 mm pseudoaneurysm at the junction of terminal part of gastroduodenal artery and the origin of right gastroepiploic artery which was embolised at a tertiary care teaching hospital.

This work has been reported in line with the SCARE criteria [7].

2. Case presentation

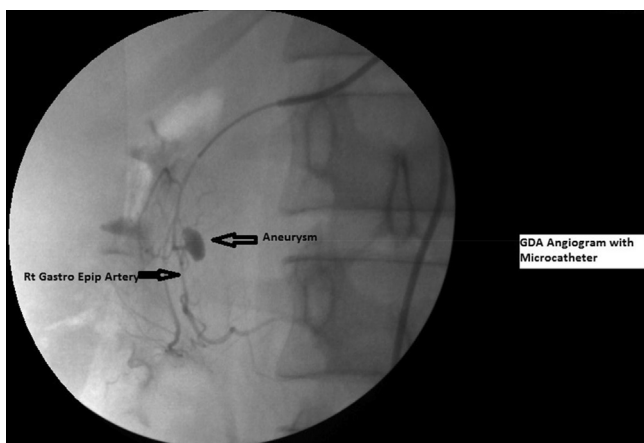
An 18 years old male patient was brought in by the ambulance to the ER with chief complaints of melena for the last 4 days. Patient had undergone laparotomy for a road traffic accident 8 months back. He subsequently developed pancreatic pseudocyst for which he underwent roux-en-y-cystojejunostomy one month back. He had an unremarkable drug, family or psychosocial history including smoking status.

On presentation, the patient was anemic, tachycardic with a pulse of 110/min and mildly hypotensive with a B.P of 100/60 mm of Hg. Abdominal examination showed healed midline scar from prior laparotomy. There were no peritoneal signs. Lab workup showed hemoglobin of 5.9 g/dl. He was resuscitated initially with i/v fluids and required multiple blood transfusions.

Under local anesthesia, CT Angiography was performed in supine position by the consultant interventional radiologist via the

* Corresponding author.

E-mail addresses: drmzareen@yahoo.co.uk (M. Zarin), dralisajid89@gmail.com (S. Ali), teleradiologypk@gmail.com (A. Majid), zuj_cck@yahoo.com (Z. Jan).



Picture 1. Showing GDA Aneurysm.



Picture 3. Post embolization.



Picture 2. Showing extravasation of contrast.

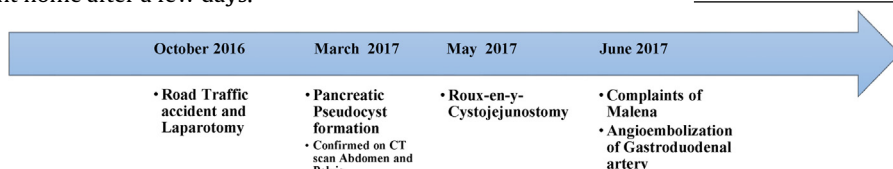
right femoral route. The celiac axis was engaged with 5F SIM 2 catheter. The angiogram showed an oval shaped aneurysm at the junction of terminal part of gastroduodenal artery and the origin of right gastroepiploic artery. The aneurysm was actively bleeding during angiography and accumulation of contrast was appreciated in the gut (Pictures 1 and 2).

The aneurysm and the right gastroepiploic artery was embolised with large size PVA particles upto stasis. On post-procedure angiogram there was no blood flow seen in the aneurysm and the right gastroepiploic artery (Picture 3). There were no immediate post-procedure complications. The patient was shifted back to our unit for post procedure care as per department protocol and was sent home after a few days.

3. Discussion

Aneurysms of the visceral arteries may be classified into two types, true and pseudoaneurysms. True aneurysms involve all layers of the vessel wall whereas pseudoaneurysms are false aneurysms which result from injury to one or more vessel wall layers. Its rupture can cause serious morbidity and mortality [1]. They have been reported in different visceral arteries; splenic artery being the most common (46%), followed by the renal artery (22%), the hepatic artery (16.25%), and least commonly the pancreaticoduodenal artery (1.3%) [8]. Pseudoaneurysms of the gastroduodenal artery are extremely rare [5]. First reported by Starlinger in 1930, since then there have been an increasing reports on GDA aneurysms due to improved radiological techniques. From 1956–2015, 92 cases of GDA aneurysms have been identified [9,18]. Pancreatitis and atherosclerosis are the common etiological factors for aneurysms formation. The former one is most commonly associated with GDA pseudoaneurysms formation. The pathophysiology of aneurysm is not fully understood [9], weakening of GDA by leakage of pancreatic proteolytic enzymes has been implicated in the pathophysiology of pseudo aneurysm formation [10]. Other causes include alcohol abuse, cholecystectomy, Marfan’s syndrome, polyarteritis nodosa, fibromuscular dysplasia and liver cirrhosis [6,9–11]. In case of a pseudocyst, they develop due to erosion of the vessel wall as a result of marked inflammation of vessel wall or auto digestion of a pancreatic or peri-pancreatic artery by enzymes [12,13].

Patients may be completely asymptomatic and GDA aneurysms may be picked up incidentally by imaging for another cause. The most common clinical presentation (52%) is gastrointestinal hemorrhage due to aneurysmal rupture (hematemesis, melena, shock) usually into the duodenum [1]. The second most common presentation is abdominal pain (46%). 7.5% of GDA aneurysms remain clinically silent [9]. Patients can also present with symptoms of gastric outlet obstruction, compressive symptoms (nausea, vomiting), hemobilia and pulsatile abdominal mass. Our patient presented



On two months follow up, the patient was completely asymptomatic and had no complaints of melena.

with melena and had rupture of GDA aneurysm. Mortality rate is quite high at about 40% secondary to rupture [14].

Abdominal CT has got sensitivity of 67% and the aneurysm was missed in our case. The gold standard diagnostic and therapeutic modality is visceral angiography. Angiography has 100% sensitivity for diagnosing GDA [15,16]. Once they are diagnosed even the asymptomatic ones should be treated because of the high morbidity and mortality associated with surgery in the settings of rupture of aneurysms. Treatment consists of bypassing the aneurysm with or without establishing the distal flow and can be accomplished either by surgical or endovascular technique under imaging. Endovascular treatment consists of placing coils, endovascular thrombin, poly vinyl alcohol particle (as in our case) and gelfoam injections. Such treatment offers significant advantages in terms of less post-operative pain, shorter hospital stay and early return to activities of daily life [18]. Apart from angiographic embolization as was done in our case, surgery is another therapeutic alternative. Surgical treatment may be open, laparoscopic or robotic and consists of ligation or resection of the aneurysmal sac [17]. In the event of failed embolization, laparotomy and ligation of GDA and resection of aneurysm with or without vascular reconstruction is the appropriate therapy [19].

4. Conclusion

GDA aneurysms are rare. Our case is unique because the aneurysm involved both gastroduodenal artery and the origin of right gastroepiploic artery. The primary take away lesson from this case is that GDA aneurysm should be suspected in the setting of GI hemorrhage following surgery for traumatic pancreatic pseudocyst drainage. The investigation of choice is CT Angiography and endovascular angioembolization is the treatment modality of choice.

Conflict of interest

There are no conflicts of interests.

Funding

There are no sources of funding. The authors are paying for the publication fee.

Ethical approval

Khyber Teaching Hospital Peshawar, ethical committee.

Consent

A written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution

Sajid Ali: Study concept and data collection.
 Mohammad Zarin: Data analysis and interpretation.
 Abdul Majid: Performed the procedure of angioembolization.
 ZakaUllah Jan: Writing the paper.

Guarantor

ZakaUllah Jan.

Patient perspective

I was all right after my surgery for pancreatic pseudocyst, but then about a month later I had few episodes of melena. At first I ignored that, but they were not resolving. It was on day 4, when I felt a bit weak and I called the ambulance. They took me to the ER, where I was resuscitated. The level of care I received was amazing. I was managed well in time and after the embolization, now I am absolutely symptom free. I think rupture of GDA aneurysm is a serious business and should be treated immediately.

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