

Inferior Pancreatico-Duodenal Artery Pseudoaneurysm - MDCT features

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ABSTRACT

Visceral artery aneurysms is a rare entity and should be managed timely due to their propensity to rupture and associated high mortality. We report a 49-year-old man, presented with a six-month history of persistent epigastric pain associated with indigestion, steatorrhea and weight loss. Ultrasonography (US) and Doppler US showed a cystic mass in the region of pancreatic head with turbulent flow, suggesting a Pseudoaneurysm supplied by the Superior mesenteric artery. Contrast-enhanced Multi Detector Computed Tomography (MDCT) revealed a large Pseudoaneurysm adjacent to the head of pancreas exerting a direct pressure over the head of the pancreas and duodenum. Non-selective abdominal MDCT angiography confirmed the aneurysm stemming from the inferior pancreaticoduodenal artery.

Key Words: Abdominal Angiography, Inferior Pancreaticoduodenal Artery, MDCT, Pseudoaneurysm, Visceral artery aneurysm.

INTRODUCTION

True and Pseudoaneurysm of the visceral arteries are uncommon, but they form an important entity of vascular pathology.^[1] Visceral artery aneurysms (VAAs) represent 0.1%–0.2% of all vascular aneurysms and were also found in 0.1% of autopsies.^[2,3] They most commonly affect the splenic (60%), hepatic (20%) and superior mesenteric (9%) arteries.^[1]

Pancreatico-Duodenal artery aneurysms are rare, accounting for only 2% of all splanchnic artery aneurysms, but they are important vascular diseases because of their potential for fatal rupture.^[3,4] False Pancreatico-Duodenal artery aneurysms can occur after pancreatitis, abdominal trauma, septic emboli or laparoscopic cholecystectomy, and they often rupture into the gastrointestinal tract, whereas true aneurysms are usually associated with celiac axis stenosis, and rupture into the retroperitoneal space.^[3-5]

A review of the literature indicates that the most common complication of such aneurysms is rupture, usually causing massive hemorrhage with an associated high mortality rate.^[4,6]

CASE REPORT

A 49-year-old man presented to our hospital with a six-month history of persistent epigastric pain associated with indigestion, steatorrhea and weight loss. His past medical history included recurring attacks of epigastric discomfort and chronic alcohol abuse. The physical examination revealed a palpable beating mass in the epigastrium.

Axial and reconstructed coronal plain CT acquired on a Philips 256 Slice iCT scanner revealed relatively hyperdense rounded mass with central oval hypodensity in the pancreatic head region associated with partial rim calcification [Figure 1&2].

Dynamic axial and reconstructed coronal CT of the abdomen performed with intravenous contrast material in arterial phase showed an enhancing aneurysmal mass with well-demarcated borders surrounded by low-density areas, which was in accordance with a thrombus with extensive calcification on the outer surface of the aneurysm [Figure 3,4 & 5]. The 48×44 mm aneurysmal mass produced direct pressure over the head of the pancreas and duodenum (Figure 6,7 & 8).

Three-dimensional volume rendered CT revealed a Pseudoaneurysm originating from the Inferior Pancreatico-Duodenal artery, branch of the Superior mesenteric artery. The celiac axis was normal [Figure 9,10 & 11].

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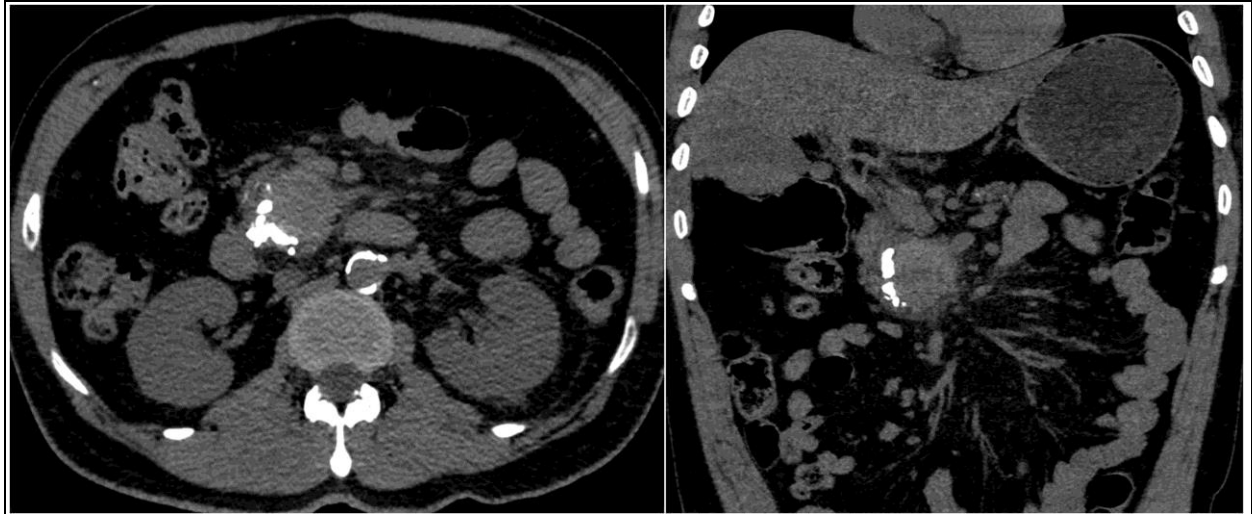


Figure 1 & 2: Axial and coronal plain CT revealed relatively hyperdense rounded mass with central oval hypodensity in the pancreatic head region associated with partial rim calcification.



Figure 3, 4 & 5: Transverse, coronal and MIP images of the abdomen showed an enhancing aneurysmal mass with well-demarcated borders surrounded by thrombus with extensive calcification on the outer surface of the aneurysm.



Figure 6, 7 & 8: Axial and coronal images of abdomen show aneurysmal mass causing direct pressure over the head of the pancreas and duodenum.

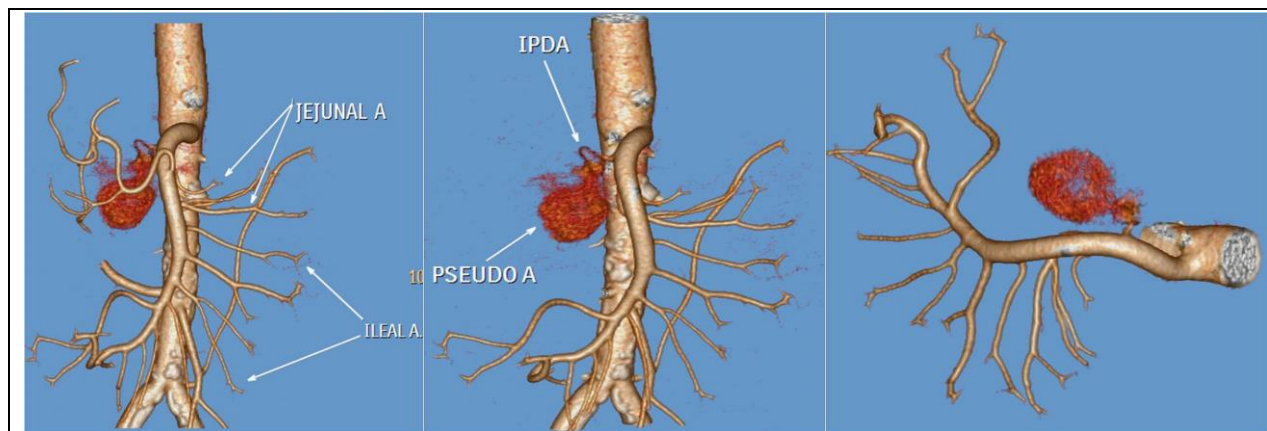


Figure 9, 10 & 11: 3D volume rendered CT Images clearly show the false aneurysm stemming from the inferior pancreatico-duodenal artery and associated vessels.

DISCUSSION

Aneurysm originating from the Inferior Pancreatico-Duodenal artery is a rare diagnosis among the group of the aneurysms of the visceral arteries.^[7] Major etiologies of VAAs in general include arteriosclerosis, media defects, vasculitis, infection and trauma, while Pseudoaneurysms of the Pancreatico-Duodenal artery are principally observed with acute or chronic pancreatitis.^[8,9] The enzymes released from the pancreatic cyst frequently involve the splenic artery (45%) followed by the gastro-duodenal artery (17%) and then the Pancreatico-Duodenal artery (11%). Elastase can erode the artery wall leading to aneurysm formation.

Aneurysms of the Pancreatico-Duodenal artery commonly present clinically with aneurysmal rupture (30%–69%) with clinical manifestations ranging from non-specific abdominal pain to gastrointestinal bleed and hemorrhagic shock.^[9,10] Non-ruptured aneurysms often present with abdominal discomfort or are picked up incidentally during radiological studies.^[11] When these aneurysms develop in the absence of pancreatitis, they are asymptomatic. Some are diagnosed as incidental findings on CT scans or arteriograms.

Our patient developed a large Pseudoaneurysm (48×44 mm), originating from the Inferior Pancreatico-Duodenal artery. In our case, recurring attacks of abdominal discomfort and long standing alcohol abuse made chronic pancreatitis the most possible etiology, because the patient had no medical history of abdominal trauma, septic emboli, carcinoma or cholecystectomy.

Although Pseudoaneurysms in chronic pancreatitis develop more often in the splenic and gastroduodenal arteries because of their proximity

to the pancreas, it arose in our patient from the Inferior Pancreatico-Duodenal artery,^[4,6] and the aneurysm led to sufficient pressure over the pancreas to obstruct the flow of pancreatic secretions, which may have resulted in the recurring attacks of pancreatitis.

Acute hemorrhage is a life-threatening complication of Pseudoaneurysm, with a high mortality rate of up to 37%.^[12] The high morbidity and mortality associated with a False aneurysm emphasizes the importance of early diagnosis and treatment, as in our case.^[12,13] Rupture of Pancreatico-Duodenal artery aneurysm carries a mortality rate of 21%, and the size of aneurysm does not predict the risk of rupture. Hence, it is advocated that all Pancreatico-Duodenal artery aneurysms, regardless of size, be treated actively at the time of the diagnosis.

The two possible treatments for Pseudoaneurysm are Surgery or Angiographic Embolisation.^[3, 13-15]

The accepted gold standard for treatment of visceral artery aneurysm is Surgery.^[3,6,12,14,15]

Endoluminal techniques have now become the first line of therapy instead of surgery in most instances, especially in an emergency setting, but they have also been used successfully in elective patients.

The most widely used materials to embolise or exclude the aneurysm from visceral circulation are coils, gel-foam, polyvinyl alcohol and flow directed detachable balloons.^[4, 13-15] However, lately they have been successfully managed by thrombin injection when tortuous anatomy makes embolization not feasible.

A review of the literature indicates that True aneurysms and Pseudoaneurysms of the Pancreatico-Duodenal artery are treated via endoluminal techniques, which have a lower procedure mortality and a high success rate.^[4, 14-16]

Review of literature also shows that more deaths

occurred in an emergency setting than in elective patients treated by endovascular techniques for vascular aneurysms.^[3,15] Endovascular intervention complicated by reperfusion, recurrent bleeding and failure of intervention may also necessitate surgery and/or reintervention.^[3,17]

CONCLUSION

MDCT is an excellent modality and demonstrates the features of Inferior Pancreatico-Duodenal artery Pseudoaneurysm in the majority of cases in the initial differential diagnosis. Furthermore, associated vascular anomalies can also be revealed, which may be of primary significance for the operating surgeon, and provides a potential means for treatment via transcatheter embolisation. Angiography also plays a critical role and is considered the gold standard for diagnosis of aneurysms in the peripancreatic vessels.

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