



## Case Report

# Pancreatic angiosarcoma with synchronous pancreatic ductal adenocarcinoma leading to hemosuccus pancreaticus: A surgical case report and review of literature

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## ABSTRACT

**Introduction:** Angiosarcoma of pancreas is an extremely rare disease with a poor prognosis. The clinical signs and symptoms of pancreatic angiosarcoma are nonspecific, and it is occasionally diagnosed at an advanced stage. Pancreatic angiosarcoma and Pancreatic ductal adenocarcinoma in one patient was never ever known in English literature.

**Case presentation:** A 56-year-old female was admitted with clinical and laboratory signs of gastrointestinal (GI) bleeding. Upper gastrointestinal endoscopy revealed bleeding from the ampulla of Vater. Besides, abdominal computed tomographic (CT) revealed a solid mass in the region of the pancreatic tail, which was considered the origin of bleeding. Distal pancreatectomy and splenectomy were performed because of persistent GI bleeding, and the final histological diagnosis of tumor in pancreatic tail was pancreatic ductal adenocarcinoma. After 30 days, she developed recurrent bleeding in ampulla and the abdominal CT-scan revealed a huge hematoma in omentum harem. We conducted transcatheter arterial embolization, but anemia continued to worsen. Therefore, pancreaticoduodenectomy was recommended to remove this mass, and based on postoperative histological findings, pancreatic angiosarcoma was diagnosed. After few days, laparotomy was indicated again because of persistent intra-abdominal bleeding. Despite all critical care and surgical therapeutic attempts, the patient died within two weeks after operation.

**Discussion:** A pancreatic angiosarcomas primary origin is especially rare, with the present case being the tenth accounted in the English literature. Angiosarcomas is creating a disorganized mass of cells with extravasated blood that led to characteristics, extensive amounts of hemorrhage. The clinical manifestations of pancreatic angiosarcoma are variable, and immunohistochemistry staining is mandatory, with positive staining for vascular markers, which include CD31, CD34, von Willebrand factor (vWF), factor-VIII, Ulex europaeus agglutinin 1 (UEA-1), Friend leukemia integration 1 (Fli-1) and vascular endothelial growth factor receptor (VEGFR).

**Conclusion:** We here present a report of an extremely rare case with had pancreatic angiosarcoma and synchronous pancreatic ductal adenocarcinoma with clinical picture of GI bleeding secondary to hemosuccus pancreaticus (HP).

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## 1. Introduction

Angiosarcomas are rare, aggressive mesenchymal sarcomas of cells with vascular endothelial features, which account for 1%–2% of all sarcomas that occur in the skin and subcutaneous tissues [1]. Angiosarcomas can be found in any part of the body, primarily in the skin, subcutaneous tissues, breast, and liver, but extremely rare in the pancreatic, with only a few cases reported in the literature [2–5]. The specific etiology of angiosarcoma remain unknown. Several risk factors have been associated with its development, including radiation exposure, thorotrast, arsene [6]. The clinical signs and symptoms of pancreatic angiosarcoma are nonspecific. They are fast growing and very aggressive tumors with a poor prognosis [7,8]. The term ‘hemorrhagic pancreatic’ (HP) was first proposed by Sandblom in 1970, which had attempted to describe the occurrence of bleeding along the pancreatic duct through the papilla [9,10]. HP is mostly caused by acute or chronic pancreatitis and aneurysm [10–12].

We herein present a report of this case presented with GI bleeding secondary to HP is consistent with the presence two pancreatic tumors such as an angiosarcoma and a pancreatic ductal adenocarcinoma. All our work has been reported in line with the SCARE criteria and guidelines [13].

## 2. Case presentation

A 56-year-old female patient was admitted with symptoms of fatigue, abdominal pain, generally being unwell, melena and anemia. Her illness had begun 10 days before with intermittent dark stools. She denied current or prior alcohol, smoking or with no known exposure to carcinogens and drugs. Physical examination showed clinical signs of anemia, otherwise within normal limits. No sign of jaundice was observed. Her abdomen was flat and soft without tenderness or palpable mass. Hematological investigations showed iron deficiency anemia with 59 g/L hemoglobin (Table 1). Dynamic abdominal computed tomography (CT) scan showed a 60 × 44 mm mass within the tail of pancreatic with some active bleeding sites. There was no distant spread location. Esophagogastroduodenoscopy (EGD) revealed fresh blood oozing from papilla (Fig. 1). She was diagnosed a tumor in tail of pancreas, which was considered the origin of bleeding. She received 7 units of packed red blood cells and was referred for operation. Surgically resected fresh tumor showed a cystic mass in tail of pancreas, clearly delineating, containing blood inside and *scatter several small lesions in all parts of pancreas*. Due to the severe condition of this patient intra-operatively

**Table 1**  
Laboratory data on admission.

	Value	Reference range
<b>Peripheral blood</b>		
Red blood cells	2.3	4.5–5.9 × 10 <sup>12</sup> /L
Hemoglobin	59	135–175 g/L
Plateletes	209	150–400 × 10 <sup>9</sup> /L
<b>Serum</b>		
Creatinin	46	72–127 μmol/L
Blood urea nitrogen	3.8	3.2–7.4 mmol/L
Total Bilirubin	18.2	≤17 Umol/L
AST	53	≤37 U/L
ALT	28	≤41 U/L
Amylase	66	13–53 U/L
Procalcitonin	0.94	<0.05 ng/mL
HBsAg	Negative	
Anti-HCV	Negative	
Anti-HIV	Negative	
CA 19-9	18.7	27 < U/mL
CEA	0.77	4.3 < ng/ml

AbbreviationsAST, aspartate aminotransferase; ALT, alanine transaminases; CA 19–9, Carbohydrate antigen 19–9; CEA, carcinoembryonic antigen; HBsAg, Hepatitis B surface antigen; HCV, Hepatitis C virus.

and determined the bleeding origin from the tumor in pancreatic tail, we have decided performed distal pancreatectomy and splenectomy (Fig. 1). After completing the resection, the resected tumor in the pancreatic measured 90 × 60 × 50 mm. Macroscopic examination showed a red-brown, soft, small nodule on the surface with numerous blood vessels visible on the surface, containing septal, blood. Histological findings were *pancreatic ductal adenocarcinoma (PDAC)* (Fig. 1). Thirty days after surgery, she developed worsening melena and fatigue and therefore re-presented emergency department and inpatient work-up was pursued. EGD revealed fresh blood oozing from papilla again. The patient required repeated blood transfusions. Abdominal CT showed a blood mass in omentum harem, 85 × 60 mm in diameter and there are many large lymph nodes around pancreatic (Fig. 2). Selective pancreaticoduodenal artery arteriography revealed extravasation of contrast material from a right gastroepiploic artery. We decided to embolize the bleeding vessel with coils. Her hemodynamic did not improved after embolization. Laparotomy was indicated because of persistent intra-abdominal bleeding, a palpable, rapidly growing mass in the epigastric of the abdomen. During the operation a necrotic, hemorrhagic mass was found occupying between the pancreatic and stomach, accompanied by 300 ml blood in the abdominal cavity. Multiple small hemorrhagic patches were found on bordering pancreatic, stomach and hepatic hilar area.

Pancreaticoduodenectomy was performed. The histological examination of the specimen showed a solid pattern neoplasm consisting of spindle and epithelioid cells, richly vascularized with moderate to intense nuclear pleomorphism and presence of atypical endothelial cells and vascular differentiation arising from the pancreas. Immunohistochemical studies demonstrated positive staining for CD31, CD34, factor VIII, Vimentin, CK, ERG (Fig. 2). Thus, establishing the diagnosis of *pancreatic angiosarcoma*. On the seventh postoperative day, despite conservative therapy, the amount of the drainage of intra-abdominal, bloody abdominal fluid persisted increasing 400 ml per day, the patient unfortunately died of uncontrollable bleeding due to coagulation disorder.

## 3. Discussion

In the abdominal compartment, angiosarcomas develop mostly in the liver and the spleen [3]. A pancreatic angiosarcomas primary origin is especially rare, with the present case being the tenth case accounted in the English literature [14–16].

The clinical manifestations of pancreatic angiosarcoma are variable. Abdominal pain is the most common manifestation. Other symptoms include vomiting, fever, fatigue, gastrointestinal or intraabdominal hemorrhage and jaundice as a sign of an advanced lesion. Like the majority of the cases reported so far, which had a severe clinical presentation, ours was discovered with repeated GI bleeding secondary to hemobilia is consistent with the presence a pancreatic angiosarcoma, with the present case being the second accounted in the English literature [5]. HP is mostly caused by acute or chronic pancreatitis may result in pancreatic duct injuries; the corrosion of the pancreatic juice may cause the rupture of the vascular [17]. Angiosarcomas generally attempt to recapitulate normal endothelium, creating a disorganized mass of cells with extravasated blood that led to characteristics, extensive amounts of hemorrhage. The imaging modalities (Ultrasound and CT scan) are not specific to sarcomas. Abdominal ultrasound is first-line examination for diagnosing pancreatic masses, leading to the use of CT scan. Endoscopic ultrasound guided fine-needle aspiration (EUS-FNA) can be a possible method for diagnosing [18]. Angiography or Tc 99m-labelled red blood cells can be helpful in detecting of the origin of gastrointestinal bleeding and diagnosing angiosarcomas [19]. The diagnosis of pancreatic angiosarcoma may be very challenging due to the non-specific clinical, imaging, and histopathological features are non-specific, with a wide range of histological appearances, often mimicking carcinomas, especially when showing epithelioid-cell

morphology. Therefore, immunohistochemistry staining is mandatory. Positive staining for vascular markers, which include CD31, CD34, von Willebrand factor (vWF), factor-VIII, Ulex europaeus agglutinin 1 (UEA-1), Friend leukemia integration 1 (Fli-1) and vascular endothelial growth factor receptor (VEGFER), are typical. In our case, the strong positivity of factor VIII, CD 31, CD 34 and the morphology of the lesions allowed us to make the diagnosis of angiosarcoma.

Angiosarcomas are extremely aggressive tumors due to a high rate of lymph node and peripheral organs metastasis, which the most metastatic sites are liver, lungs and lymph nodes [18]. The median interval to metastases was 6–8 months depend on different articles [20,21]. The best treatment option for angiosarcoma of the pancreas remains controversial. Till now, radical surgery must be still the most effective treatment approach. Otherwise, the alternative therapeutic options (chemotherapy and radiotherapy) have shown poor results in this type of neoplasms. In the present case, we performed several procedures such as distal pancreatectomy and splenectomy in the first operation, transcatheter arterial embolization and pancreaticoduodenectomy in the second operation to control bleeding attributed to angiosarcoma, but none were successful. In the first operation, we have found the major origin of bleeding from the mass in pancreatic tail and scatter several small lesions alongside all parts of pancreas (Fig. 1), but due to the patient's severe condition intra-operatively, we have decided performed distal pancreatectomy and splenectomy instead of total pancreatectomy, and the histological result was PDAC. However, GI bleeding secondary HP was non-stop and worsen despite pancreaticoduodenal artery arteriography was performed to embolize the extravasation of contrast material from a right gastroepiploic artery, so that we have proceeded the second acute operation and decided performed pancreaticoduodenectomy, and the immunohistology result of tumor in pancreatic was consisted with primary pancreatic angiosarcoma.

This case the recurrent GI bleeding only after one month. As a result, they are often diagnosed at an advanced stage and their prognosis is poor, with a median survival of less than 12 months [22].

#### 4. Conclusion

To the best of our knowledge, the present patient is the second case report of pancreatic angiosarcoma causing HP and tenth case of pancreatic angiosarcoma but the first case of pancreatic angiosarcoma with synchronous pancreatic ductal adenocarcinoma in English literature. Imaging diagnoses are non-specific, with histology and immunohistochemistry analysis are gold standards. Our report emphasizes the difficulty of diagnosis and management for this rare type of pancreatic neoplasms.

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#### Abbreviations

CT	Computed tomography
EGD	Esophagogastroduodenoscopy
GI	Gastrointestinal
HP	Hemosuccus pancreaticus
Fli-1	Friend leukemia integration 1
PDAC	Pancreatic ductal adenocarcinoma
VEGFER	Vascular endothelial growth factor receptor
VEGFER	Vascular endothelial growth factor receptor
UEA-1	Ulex europaeus agglutinin 1

#### Ethical Approval

The study was approved by the Research Ethics Committee of Bach Mai Hospital. The procedures used in this study adhere to the tenets of the Declarations of Helsinki.

#### Consent

The written informed consent was obtained from the recruited patients.

#### Provenance and peer review

Not commissioned, externally peer-reviewed.

#### Author statement

**Cong Long Nguyen:** conceived and wrote the manuscript.

**Truong Khanh Vu:** performed the endoscopy procedure and edited the manuscript.

**Ham Hoi Nguyen and Thanh Khiem Nguyen:** performed the operation.

**Tuan Hiep Luong:** edited the manuscript.

**Thi Tan Tran and Van Khang Le:** analyzed the data.

**Canh Hiep Nguyen** and the other authors discussed the results together and contributed to the final manuscript.

#### Registration of Research Studies

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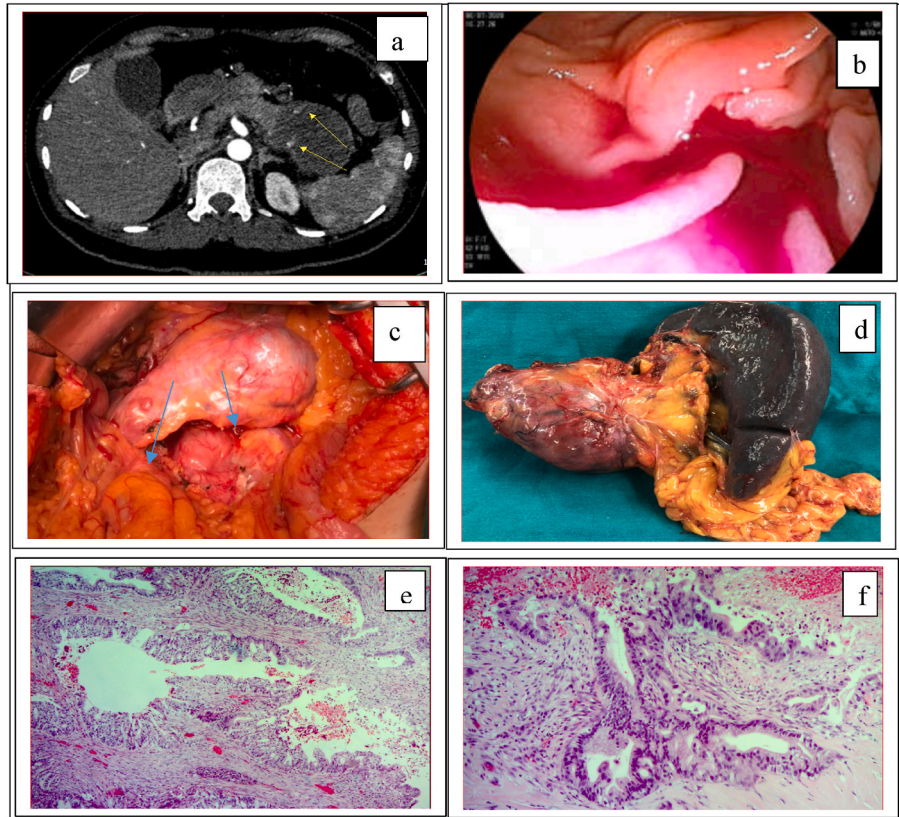
#### Declaration of competing interest

The authors declare that they have no conflicts of interests.

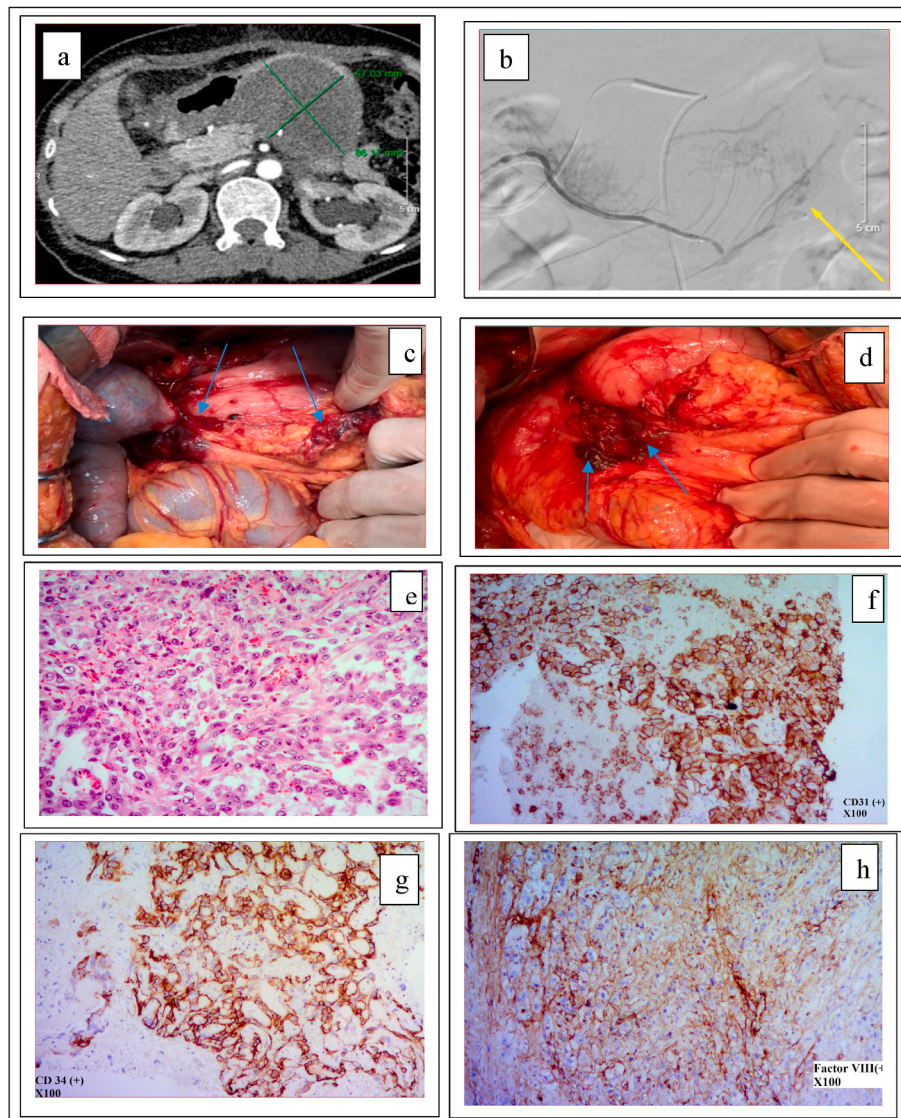
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Appendix



**Fig. 1.** (a) CT images of the pancreas shows a mass in tail of the pancreatic, with some active bleeding sites (arrow). (b) Blood coming out of the ampulla of Vater during side view duodenoscopy. (c) Multiple focal tumors (arrow) were detected on the surface of the tale of pancreatic. (d) Surgically resected fresh tumor shows a cystic mass, with numerous blood vessels visible on the surface. (e,f) Diagnosis of pancreatic ductal adenocarcinoma is based on histopathological findings .



**Fig. 2.** (a) Abdominal CT showed a blood mass in omentum harem. (b) Pancreaticoduodenal arteriography reveals active extravasation (arrow) of the contrast material in next to duodenal. (c) Dissemination was observed in the peritoneal membranes, (d) Macroscopic examination shows multiple small hemorrhagic patches on bordering pancreatic and stomach. (e) HE x200 show spindle cells. Immunohistochemical staining, with positivity for CD 31 (f), CD34 (g), Factor VIII (h) .

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