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Hemosuccus Pancreaticus: A Comprehensive Review of Presentation Patterns, Diagnostic Approaches, Therapeutic Strategies, and Clinical Outcomes

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Abstract

Hemosuccus pancreaticus is a rare but potentially torrential and life-threatening cause of acute upper gastrointestinal bleeding. It is described as an intermittent hemorrhage from the major duodenal papilla via the main pancreatic duct. Peripancreatic pseudoaneurysm following chronic pancreatitis is a common underlying etiology. However, gastroduodenal artery pseudoaneurysm-related hemosuccus pancreaticus remains exceedingly rare in the etiological spectrum of upper gastrointestinal bleeding. We hereby delineate a rare case of hemosuccus pancreaticus associated with gastroduodenal artery pseudoaneurysm in a patient who initially presented with abdominal pain and hematochezia. He was successfully managed with coil embolization without recurrence or sequelae. Furthermore, we conducted a search of the MEDLINE (PubMed and Ovid) database for relevant studies on hemosuccus pancreaticus published between inception and September 15, 2021. The available clinical evidence on causes, presentation patterns, diagnosis, and management was analyzed and summarized. This article highlights the rarity, the intermittent nature of hemorrhage, and the lack of a standardized diagnostic approach for this elusive disease. Clinicians should remain cognizant of hemosuccus pancreaticus, especially in patients presenting with symptoms and signs of intermittent gastrointestinal bleeding and abdominal pain. Prompt diagnosis carries paramount importance in saving patients from repeat hospital admissions and disease-associated morbidity and mortality. Conventional angiography with coil embolization may constitute an effective treatment strategy.

Keywords

hemosuccus pancreaticus, gastroduodenal artery pseudoaneurysm, upper gastrointestinal bleeding, chronic pancreatitis, CT angiography, angiographic embolization

Introduction

Hemosuccus pancreaticus represents a rare clinical phenomenon characterized by intermittent hemorrhage from the major duodenal papilla. Lower and Farrell first reported this entity in 1931 after identifying upper digestive bleeding secondary to splenic artery aneurysm.[1] In 1970, Sandblom first introduced the term *hemosuccus pancreaticus*.[2] Since then, a plethora of clinical studies have discussed this disease. However, it still remains an infrequent form of upper gastrointestinal hemorrhage with an estimated incidence of 1 in 1500 cases.[3,4] Melena is a common presenting symptom, but patients can also develop abdominal pain, worsening anemia, or hemoptysis.[4,5] Hemorrhage is usually intermittent, resulting in chronic anemia.[6] Contrarily, it may also present with hemorrhagic shock in severe cases, requiring immediate intervention.[6] Hemosuccus pancreaticus frequently presents a diagnostic conundrum due to its peculiar anatomical origin, intermittent symptoms, and often negative upper endoscopic

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Table 1. Laboratory Data of the Patient at the Time of Admission.

Laboratory parameter	Patient value	Reference range
Hemoglobin	7.7	12.0-15.5 g/dL
Hematocrit	24.5%	38.3%-48.6%
Mean corpuscular volume	81.4	80-95 fL
Platelet count	237×10^9	$150\text{-}450 \times 10^9$/L
International normalized ratio	1.1	<1.1
Alanine aminotransferase	14	0-34 IU/L
Aspartate aminotransferase	24	15-46 IU/L
Alkaline phosphatase	136	45-140 mg/dL
Total bilirubin	0.8	<1.2 mg/dL
Sodium	132	136-145 mmol/L
Potassium	3.9	3.5-5.1 mmol/L
Chloride	99	98-107 mmol/L
CO_2	19	21-32 mmol/L
Blood urea nitrogen	18	9-18 mg/dL
Creatinine	0.9	0.6-1.3 mg/dL
Blood glucose	98	7-106 mg/dL

findings.[5,7] While endoscopy is helpful to establish the diagnosis in a few cases, it is mostly required to exclude other differentials of obscure (overt and occult) upper gastrointestinal hemorrhage.[8-11] Contrast-enhanced computed tomography (CT) scan can help to determine underlying pancreatic pathologies.[11] CT angiography is the gold standard as it helps in detection of the culprit bleeder and provides an opportunity for therapeutic intervention.[11,12]

Chronic pancreatitis may lead to the formation of visceral artery pseudoaneurysm, which in turn can cause potentially life-threatening hemosuccus pancreaticus. These pseudoaneurysms can be encountered in around 10% of chronic pancreatitis cases.[13] Gastroduodenal artery pseudoaneurysms are rarely reported entities (<2%), making hemosuccus pancreaticus secondary to this lesion an extremely rare event.[14] We performed a search for previously reported cases of hemosuccus pancreaticus to study the trends in diagnostic and therapeutic approaches. To our knowledge, only 22 cases have been described regarding gastroduodenal artery pseudoaneurysm-related hemosuccus pancreaticus thus far. We chronicle here another case denoting this rare clinical association in a man whose initial presentation was dominated by abdominal pain and hematochezia. The patient recovered well after timely treatment with coil embolization. This disease may culminate in significant bleeding-related morbidity and adverse clinical outcomes mainly due to associated diagnostic dilemma. Therefore, endoscopists should include it in differentials of acute gastrointestinal bleeding with no apparent cause.

Illustrative Case

Presentation

A 45-year-old African-American man was admitted to our medical center for clinical assessment of severe acute iron-deficiency anemia. He reported bloody diarrhea for the last 4 days, which was associated with abdominal pain. He denied nausea, vomiting, hemoptysis, dizziness, headache, blurry vision, back or chest pain, shortness of breath, fever, chills, or hematuria. His history was remarkable for chronic hepatitis, long-term alcohol consumption, and poorly controlled hypertension. He had not undergone any recent surgical procedures. Family history was negative for hyperlipidemia, pancreatitis, or cancer. He reported occasional smoking but denied the use of illicit drugs. At presentation, the patient was hemodynamically stable. His vital sign examination demonstrated blood pressure of 153/108 mm Hg, heart rate of 101 beats/min, respiratory rate of 11 breaths/min, temperature of 98.4°F, and oxygen saturation of 100% on room air. Physical examination revealed epigastric and right upper quadrant severe tenderness. The bowel sounds were normal in all 4 quadrants. No rigidity or guarding was noted.

Diagnostic Workup

Laboratory studies at an outside facility revealed a hemoglobin level of 3.2 g/dL. The patient received 4 units of packed red blood cells and was then referred to our medical center. On admission, he underwent extensive laboratory evaluation (Table 1). His serum levels of lipase, amylase, triglycerides, total protein, albumin, calcium, magnesium, and C-reactive protein were within normal limits. Coronavirus testing using reverse transcriptase-polymerase chain reaction via nasopharyngeal swab was negative. Abdominal ultrasonography showed diffuse hepatic steatosis and a complex cystic lesion posterior to the left hepatic lobe. Esophagogastroduodenoscopy showed findings related to antral gastritis. The gastric body had normal-appearing mucosa. No endoscopic evidence of active hemorrhage or clotted blood was noted. The CT of the abdomen

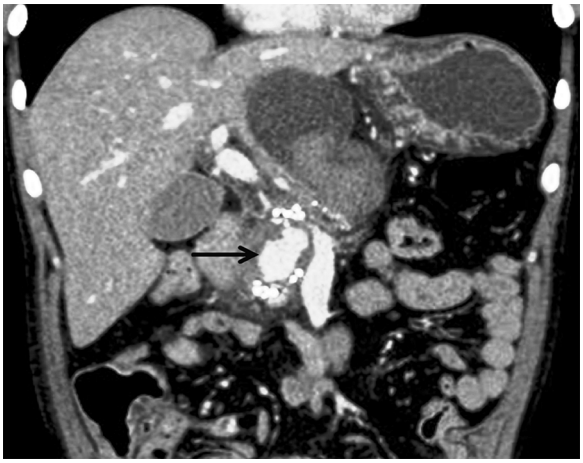

Figure 1. Coronal contrast-enhanced computed tomography scan of the abdomen showing a large pseudoaneurysm in area of the gastroduodenal artery, measuring up to 3 cm (arrow).

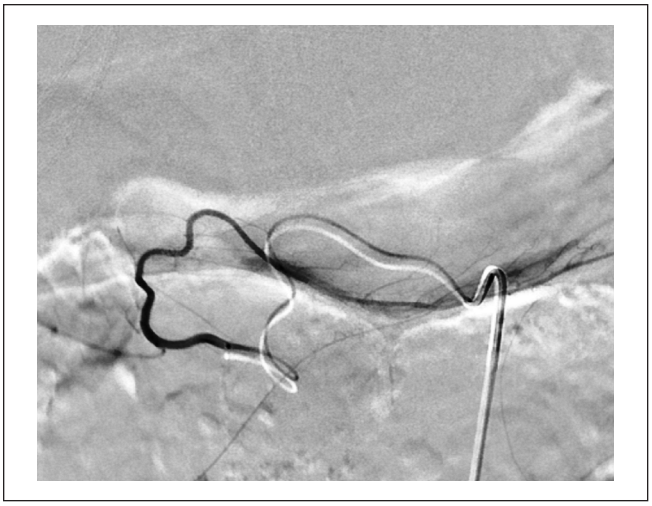

Figure 3. Microcatheter advanced distally to the pseudoaneurysm. Superselective angiography of the gastroepiploic artery confirming location distal to the origin.

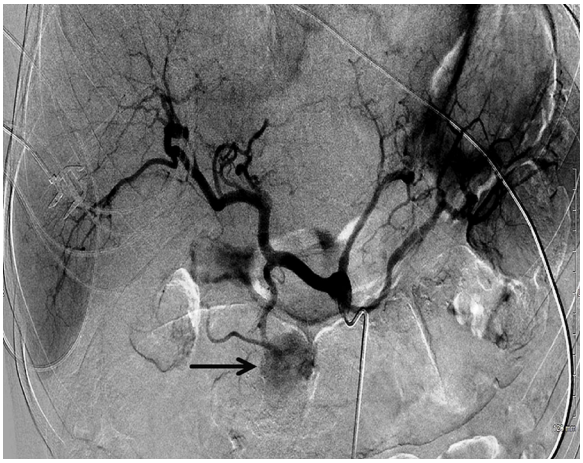

Figure 2. Selective celiac angiography revealing a large pseudoaneurysm, arising from the junction of the gastroduodenal artery and gastroepiploic artery (arrow).

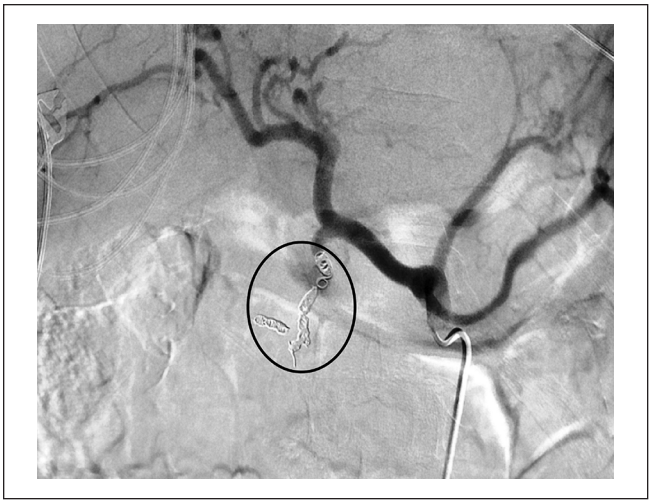

Figure 4. Post-embolization angiography demonstrating complete occlusion of the gastroduodenal artery, with no further filling of the pseudoaneurysm (circle).

with contrast revealed chronic pancreatitis-associated pancreatic parenchymal changes. A large pseudoaneurysm was noted in the vicinity of the pancreatic head, which was located in close proximity to the gastroduodenal artery (Figure 1).

Treatment

The patient was initiated on intravenous hydration and proton-pump inhibitors. Due to concerns of active bleeding from gastroduodenal artery pseudoaneurysm, interventional radiology was immediately consulted. An interventional radiologist performed a selective celiac angiography. The junction of the gastroduodenal and gastroepiploic arteries was considered as the possible originating point of the pseudoaneurysm (Figure 2). A microcatheter was advanced distally to the pseudoaneurysm. Superselective angiography of the gastroepiploic artery confirmed the location distal to the origin (Figure 3). Therein, an uneventful coil embolization procedure was performed. Postembolization angiogram confirmed the full luminal occlusion of the gastroduodenal artery (Figure 4). A retrograde filling of the pseudoaneurysm via the inferior pancreaticoduodenal artery was also ruled out by selective superior mesenteric artery angiography (Figure 5). The patient was kept nil per os, and intravenous hydration was continued.

Clinical Outcome and Follow-up

Postembolization CT angiography confirmed successful coil embolization of the gastroduodenal artery (Figure 6). There

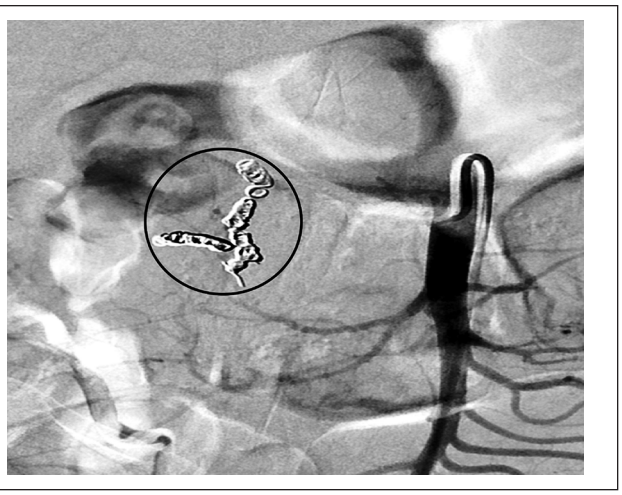

Figure 5. Final selective angiogram of the superior mesenteric artery showing no retrograde filling of the pseudoaneurysm through the inferior pancreaticoduodenal artery (circle).

Figure 6. Postembolization coronal computed tomography angiography confirming coil embolization changes of the gastroduodenal artery (arrow), ruling out a residual or recurrent pseudoaneurysm.

was no evidence of recurrent or residual pseudoaneurysm arising from the culprit artery. On day 2 of admission, he was started on a clear liquid diet after negative upper endoscopy. On day 3 of admission, his hemoglobin level dropped to 6.3 mg/dL. He then received 1 unit of packed red blood cells. Hemoglobin levels were monitored every 12 hours over the next 2 days. The patient maintained hemoglobin levels above 7 mg/dL. Subsequently, he was advanced to a solid diet with no complications. His hemoglobin levels remained stable, with a remarkable clinical recovery. On day 5 of admission, he was discharged home with instructions to follow up with his primary care physician and gastroenterology. He showed an uneventful recovery on the follow-up visit 1 week following the hospital discharge. He did not report a recurrent episode of hematochezia. Laboratory studies were negative for an acute drop in hemoglobin level. At the end of 1 and 6 months after the embolization procedure, the patient developed no symptoms or signs of recurrent hemorrhage. He did not require a repeat endoscopic examination, angiographic embolization, or surgery.

Discussion

Hemosuccus pancreaticus continues to be a rare and enigmatic diagnosis. It can often be challenging to pinpoint in patients with overlapping clinical symptoms related to intermittent upper gastrointestinal bleeding. The delay in precise identification of this etiology culminates in late treatment initiation, potentially resulting in morbidity and mortality. We conducted a MEDLINE (PubMed and Ovid) search to retrieve articles published in the English language between inception and September 15, 2021. The data regarding causes, clinical features, diagnosis, and treatment of hemosuccus pancreaticus were carefully collected and synthesized for analysis. Only case reports and case series were considered for review. After a meticulous review of the pooled studies and exclusion of irrelevant and redundant results, a total of 123 case reports (clinical evidence level: IV) were included in this review. The specific data on the aforementioned features were summarized and discussed. To our knowledge, only 22 cases described hemosuccus pancreaticus from gastroduodenal artery pseudoaneurysm in the English-language literature to date.

A myriad of clinical associations have previously been reported in patients with hemosuccus pancreaticus. Inflammatory pancreatic diseases, including acute and chronic pancreatitis, pancreatic pseudocyst, and pancreaticolithiasis, are common associations.[4,15] Other major causes include visceral artery pseudoaneurysms, pancreatic cancer, gastrointestinal stromal tumor, post-endoscopic retrograde cholangiopancreatography (ERCP) setting, pancreatic trauma, pancreas divisum, and infections (Table 2).[4,16,17] Notably, visceral artery pseudoaneurysm-related hemosuccus pancreaticus can be encountered in ~10% of cases.[5,16-18] The pseudoaneurysm can involve pancreatic parenchyma as well as adjacent structures. The involvement of splenic (54%), gastroduodenal (16%), hepatic (11%), and pancreaticoduodenal (11%) arteries has been ascertained.[19] The gastroduodenal artery pseudoaneurysm has been described to be the second most common location for the peripancreatic pseudoaneurysm formation after the splenic artery.[19] However, in the whole spectrum of etiologies of upper gastrointestinal bleeding, gastroduodenal artery pseudoaneurysm-related hemosuccus pancreaticus remains an extremely rare clinical entity.

The pathogenesis of this clinical phenomenon implicates inflammation associated with recurrent acute or chronic

Table 2. Clinical Associations of Hemosuccus Pancreaticus Described in the Previously Reported Cases (N = 123).

Clinical condition	Type	Causal mechanism
Inflammatory/pancreatitis	Chronic, acute, severe acute, recurrent acute, autoimmune	Gradual arterial wall necrosis, pseudoaneurysm bulging and rupture, pancreatic stone formation
Neoplastic	Pancreatic cystadenoma, IPMN, endocrine adenoma, adenocarcinoma, carcinoma in situ, serous cystic neoplasm, neuroendocrine tumor, microcytic adenoma, metastatic RCC	Hemorrhage through the pancreatic duct secondary to neoplasm
Vascular	Aneurysm, pseudoaneurysm, AVM	Blood vessels rupture into pancreatic duct leading to bleeding
Procedural	ERCP, EUS-guided FNA, pancreatic stenting	Peripancreatic arterial damage during the procedural manipulation
Infectious	Pancreatic brucellosis, syphilis	Aneurysm formation followed by erosion of aneurysmal wall into the pancreatic duct
Developmental	Pancreas divisum, heterotopic pancreas	Remains to be determined
Mechanical trauma	Blunt, penetrating	Rupture of a peripancreatic blood vessel or a visceral artery pseudoaneurysm into the pancreatic duct

Abbreviations: IPMN, intraductal papillary mucinous neoplasms; RCC, renal cell carcinoma; AVM, arteriovenous malformation; ERCP, endoscopic retrograde cholangiopancreatography; EUS, endoscopic ultrasound; FNA, fine-needle aspiration.

pancreatitis. It triggers the release of pancreatic enzymes (mainly elastase), which in turn causes injury to the arterial wall and pancreatic tissues due to their lytic actions. This process results in cyst formation and a ruptured vessel wall.[18,19] Consequently, the communication between the involved artery and the cyst culminates in a pseudoaneurysm formation. This mechanism may also cause pseudoaneurysm of an artery adjacent to the pancreatic parenchyma.[4,20] The tensile strength of the arterial wall involved by the pseudoaneurysm gradually decreases. The increased arterial blood flow results in bulging, which increases the diameter of the pseudoaneurysm. This sequence of events may result in rupture of the pseudoaneurysm into the pancreatic duct, causing obscure hemorrhage through the major duodenal papilla. At this stage, the pseudoaneurysm may also burst into the abdominal cavity, resulting in an overt gastrointestinal hemorrhage or intra-abdominal bleeding.[21] Furthermore, a gastroduodenal artery pseudoaneurysm with direct pancreatic ductal communication may also result in hemosuccus pancreaticus.[22]

Hemosuccus pancreaticus frequently presents a diagnostic dilemma due to its rarity and intermittent signs and symptoms. The presentation patterns of this disease may also show inter-patient and intra-patient variations, often contributing to its difficult detection. The typical features of this disease include intermittent bleeding along with waxing and waning abdominal pain (Table 3). Abdominal pain can be attributed to the possible blockage of the pancreatic duct by blood clots, which leads to a rise in intraductal pressure.[23] This event results in bleeding cessation, but the pain may continue to occur. Subsequently, the blood clots may dissolve after hours to days, causing a decrease in pressure in the pancreatic duct and resolution of the abdominal pain. However, this step may lead to the recurrence of bleeding through the major duodenal papilla.[23] Furthermore, complete or incomplete pancreatic duct blockage can also cause transient hyperamylasemia or hyperbilirubinemia.[23] Gastroduodenal artery pseudoaneurysm may also cause compression of the pancreaticobiliary drainage system, resulting in the aforementioned signs.[23] The clinical presentation of this patient fits the typical symptoms and signs of hemosuccus pancreaticus.

Table 3. Major Clinical Presentations Encountered in Patients With Hemosuccus Pancreaticus (N = 123).

Clinical presentation	N	%
Melena	71	58
Abdominal pain	62	50
Hematemesis	34	28
Hematochezia	19	15
Obscure GI bleeding	16	13

GI, gastrointestinal.

Due to nonspecific findings, patients with hemosuccus pancreaticus commonly undergo extensive diagnostic workup. Initial laboratory evaluation is rarely helpful in diagnosis. However, elevated serum bilirubin levels due to pancreaticobiliary reflux can occasionally be detected. Hyperamylasemia is another positive laboratory finding observed in a few patients with acute pancreatitis.[4,5,24] Common diagnostic modalities include upper endoscopy, CT scan, magnetic resonance imaging, visceral angiography, ERCP, endoscopic ultrasound, Doppler ultrasonography, and radionuclide scintigraphy.[23,24] Hemosuccus pancreaticus may require a combination of endoscopic and imaging modalities, especially in difficult-to-diagnose cases (Table 4).

Table 4. Findings of Different Diagnostic Modalities Employed in Patients With Hemosuccus Pancreaticus (N = 123).

Diagnostic modalities	N	%
Laboratory findings		
Hyperamylasemia	13	11
Hyperbilirubinemia	7	6
Endoscopic findings		
Bleeding detected at ampulla	57	46
No evidence of bleeding	66	54
Imaging findings		
Underlying cause identified	84	68
Failed to identify underlying cause	39	32

Upper endoscopy is the investigation of choice in cases with upper gastrointestinal bleeding. In patients with hemosuccus pancreaticus, it may reveal blood oozing from the ampulla of Vater.[25] However, initial endoscopic evaluation can frequently be negative for active bleeding due to the intermittent nature of the hemorrhage.[25] A recent retrospective study by Yashavanth et al[16] showed that overall endoscopic diagnosis was made in 64.4% of patients with hemosuccus pancreaticus. The conventional and side-viewing endoscopic diagnostic yields were 29.6% and 70.1%, respectively.[16] It is notable that 36.8% of patients required more than 1 view for the diagnosis in the side-viewing endoscopic group.[16] Pertinently, previous studies showed the diagnostic yields of endoscopy ranging from 33.3% to 51%.[5,26] Endoscopy also plays a key role in ruling out other common and rare differentials such as esophageal varices, peptic ulcer disease, erosive gastritis, Dieulafoy's lesion, atypical forms of inflammatory bowel disease, and gastrointestinal primary or metastatic neoplasms.[4,10,25-29]

Endoscopy using a side-viewing duodenoscope can help in some patients where detection of the duodenal papilla is challenging.[16] Therefore, a repeat upper endoscopy with a side-viewing duodenoscope can be used in patients with recurrent gastrointestinal bleeding of unknown source.[3] ERCP and endoscopic ultrasound are other modalities that may pinpoint the filling defect in the pancreatic duct and a fistulous communication with the aneurysm.[16,25] Contrast-enhanced ultrasound has also been used to diagnose hemosuccus pancreaticus when an angiogram fails to differentiate the feeding artery from the pseudoaneurysm.[30] Doppler ultrasound could also help in finding such vascular abnormalities.

Radiological imaging aid help in the diagnosis of several difficult gastrointestinal pathologies. Due to the avoidance of procedural preparation, widespread availability, and the ability to provide thorough clinical analysis, CT scan has become a popular choice for the evaluation of gastrointestinal hemorrhage.[31] It can be used in 2 different methods: multiphase CT angiography and CT enterography.[31,32] CT angiography is preferred when there is suspicion of active bleeding from the upper gastrointestinal or colorectal source. It is commonly employed in patients with hemosuccus pancreaticus, with a sensitivity of 96%.[32] The CT angiographic bleeding protocols focus on the detection of active extravasation, pseudoaneurysm formation, and other gut pathologies.[31,33] It also aids in the selection of the next appropriate intervention. Oral contrast is not used in the CT angiographic bleeding protocol as it can potentially abstruse intraluminal contrast leakage and intestinal wall demarcation. In these cases, 3 to 4 different acquisitions are obtained, including nonenhanced, arterial, portal venous, and delayed phase imaging. Nonenhanced images can help to identify high-attenuating materials such as blood clots (attenuation: ~45-70 Hounsfield units). It differentiates them from other hyperintense enteric contents, facilitating detection of the bleeding source.[34] This feature can also help in the delineation of acute blood clots present in the pancreatic duct, which is referred to as a "sentinel clot sign."[18] The arterial phase can demonstrate active extravasation along with the portal venous phase that can differentiate it from a pseudoaneurysm, which is usually the culprit in patients with hemosuccus pancreaticus. Therefore, CT angiography carries paramount diagnostic importance in patients with hemosuccus pancreaticus.[35,36] Notably, the diagnostic yield of CT angiography is relatively higher in patients with clinical evidence of severe bleeding and hemodynamic compromise.[31-39]

Multiphase CT enterography can also be used in the assessment of gastrointestinal hemorrhage, especially in stable patients where endoscopy is not feasible or fails to pinpoint the source of obscure hemorrhage.[31,39] It is favored in outpatient setting for global assessment of the abdomen and concerns of small bowel source below the ligament of Treitz.[40] It also helps mitigate the risk of treatment-related adverse events by accurate evaluation of anatomical abnormalities and pancreatic pathologies.[4,23,41] Therefore, the CT scan is a particularly effective modality in patients with hemosuccus pancreaticus secondary to peripancreatic pseudoaneurysms. Magnetic resonance imaging is an additional reliable diagnostic tool. It provides the added benefit of better visualization of the ampulla, differentiating abscess from pseudocyst, detecting even trace blood in the pancreatic duct as well as in the C-loop of the duodenum, and no radiation

Table 5. Treatment Modalities Used in Cases of Hemosuccus Pancreaticus (N = 123).

Treatment modality	N	%
Angiographic embolization	56	46
Surgery	47	38
Conservative treatment	8	7
Stenting	7	6
Thrombin injection	5	4

The categorization of data in this summary represents the therapeutic modalities that eventually achieved permanent hemostasis.

exposure.[42,43] Although CT angiography is the gold standard investigation for hemosuccus pancreaticus, it may possibly miss a few cases of minor or intermittent bleeding.[4,44]

With regard to treatment, angiographic embolization is a preferred method (Table 5). It has a therapeutic success rate of 79% to 100% due to increased skill and advancement in angiographic techniques.[5,45] Several embolic materials are used for embolization, but coils are commonly employed.[23,46] In the embolization procedure, the lumen of the pseudoaneurysm is packed with coils for complete thrombosis, followed by the closure of the lumen opening. The culprit artery is completely embolized at proximal and distal ends to isolate the pseudoaneurysm from the blood supply, resulting in hemostasis. The materials such as n-butyl-2-cyanoacrylate, gelatin sponge, or thrombin can also be used.[23,46-49] Overall, this procedure is safe and efficient. However, the chances of recurrent bleeding following embolization therapy may reach ~37%.[50] The rebleeding can be attributed to blood flow through collateral vessels.

The stenting procedure using a covered stent can also be employed in patients with hemosuccus pancreaticus from pseudoaneurysm of a large vessel or single vessel with no collateral branches.[23] The stent impedes the opening of the pseudoaneurysm and blocks the blood flow toward the aneurysm body. Stenting also maintains the blood flow to other organs supplied by the parent vessel and can help to avoid ischemic injury. In addition, endoscopic ultrasound-guided angiography with coiling, thrombin injection, or glue has also been used successfully.[23] However, the role of this newer technique as a diagnostic and therapeutic tool needs to be determined in the future.[51-53]

Surgical intervention is required in hemodynamically unstable patients, suspected bleeding from a large vessel, inability to locate the bleeding vessel, or after failed angiographic treatment.[5] Surgery is also a better choice in cases where another concurrent condition warrants surgical treatment, including pancreatic pseudocyst, gastric outlet obstruction, abscess, or a pancreatic tumor.[25] Standard surgical procedures include intracystic ligation, pancreatectomy, pancreaticoduodenectomy, external vessel ligation, and pseudocyst drainage. End-arterial ligation is not recommended for gastroduodenal and pancreaticoduodenal arteries due to increased risk of recurrent bleeding.[44] The surgical treatment has shown a success rate of up to 85%, with operative mortality rates ranging from 10% to 50%. The rebleeding rate after surgical intervention is considerably low at 0% to 5%.[54]

Hemosuccus pancreaticus in untreated cases can lead to several complications, including massive gastrointestinal hemorrhage, chronic blood loss anemia, ruptured viscera, retroperitoneal blood accumulation, hemodynamic compromise, multiple organ dysfunction syndrome, and death.[55] The overall mortality rate associated with this disease is up to 9.6%.[6,19,55] It can possibly increase up to 90% in cases where conservative treatment alone is offered.[55] The paucity of data culminates in a lack of systematic evaluation of several diagnostic and therapeutic strategies used in these patients.[55] Therefore, large multicenter clinical registry-based research projects are warranted to study the trends and natural history of this entity.

Conclusion

Hemosuccus pancreaticus remains a rare but important clinicopathologic entity. Clinical presentation is frequently related to gastrointestinal bleeding and abdominal pain. Despite technological advancements in diagnostic modalities, late detection is common owing to the intermittent nature of symptomatology. The diagnostic approach lacks consensus. However, investigations such as repeat conventional endoscopy, endoscopy with side-viewing duodenoscope, and CT angiography frequently help in diagnosis. In terms of treatment, angiographic embolization is preferred. It can facilitate achieving hemostasis in an unstable hemodynamic setting, with overall low rates of rebleeding. In patients with persistent hemodynamic compromise or failed embolization, surgical intervention is considered. It is imperative for clinicians to remain vigilant for this rare etiology, especially in patients presenting with features of obscure or overt gastrointestinal hemorrhage without an obvious source.

Authors' Note

The preliminary form of these data was presented as an abstract at the Annual Scientific Meeting of the American College of Gastroenterology, October 24-27, 2021, in Las Vegas, NV, USA. Faisal Ibrahim, is now affiliated to Wexham Park Hospital, Slough, UK.

Authors' Contributions

Z.I.T. and H.A.K. substantially contributed to the conception and design of the work, and drafted the manuscript. F.I., M.H.N.G., M.R., and F.I. coauthored the writing of the manuscript. A.M., F.I., F.I., and Z.A. were involved in the acquisition, analysis, interpretations, and tabulation of data. R.M.D. reviewed, revised, and improved the manuscript by suggesting pertinent modifications. All authors critically assessed, edited, and approved the final manuscript and are accountable for all aspects of the work.

Declaration of Conflicting Interests

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Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed Consent

Informed consent was obtained before publication. Verbal informed consent was obtained from the patient for their anonymized information to be published in this article.

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