Diverticulitis associated pancreatitis: a report of 2 cases and review of the literature

H. Colin[1], D. Ndjekembo Shango[2], B. Pilet[3], F. Waignein[4], P. Yengue[1]

(1) Department of Gastroenterology, Centre Hospitalier de Wallonie Picarde, Tournai, Belgium; (2) Department of Anaesthesiology-intense care unit, Centre Hospitalier de Wallonie Picarde, Tournai, Belgium; (3) Department of Radiology, Centre Hospitalier de Wallonie Picarde, Tournai, Belgium; (4) Department of Anatomopathology, Centre Hospitalier de Wallonie Picarde, Tournai, Belgium.

Abstract

Duodenal diverticula are the second most common type of digestive diverticula after those in the colon. They are present in approximately 27% of patients who undergo upper digestive endoscopy. Most of these diverticula, especially those located near the papilla, are asymptomatic. However, in rare cases, they can be associated with obstructive jaundice (Lemmel Syndrome), bacterial infection, pancreatitis, or bleeding. In this report, we present two cases of acute obstructive pancreatitis caused by duodenal diverticulitis. Both patients were managed conservatively, resulting in a positive outcome. (Acta gastroenterol. belg., **2023,** 86, **352-355**).

Keywords: duodenal diverticulitis, pancreatitis, echo-endosonography, magnetic resonance cholangiography, positron emission tomography.

Introduction

Duodenal diverticula are protrusions of the digestive mucosa and submucosa through the muscular wall of the duodenum (1). They are caused by duodenal hyperpressure, which occurs opposite the embryological line of fusion between the ventral and dorsal parts of the pancreas (2). Most duodenal diverticula are acquired and extraluminal. Juxta-papillary diverticula (JPD) are located in the second portion of the duodenum, approximately 20-30 mm from the ampulla. When a diverticulum contains the papilla, it is called an intrapapillary diverticulum (IPD). They are asymptomatic in 95% of cases. In autopsy series, diverticula are found in up to 20% of the general population, and incidence increases with age (1,3,4). However, JPDs are associated with biliopancreatic pathologies such as choledocholithiasis, cholangitis, and pancreatitis. Several lithogenic mechanisms are involved, including mechanical obstruction, dysfunction of the sphincter of Oddi, and an increased presence of beta-glucuronidase-producing bacteria (4,5). Non-biliary complications include diverticulitis, diverticular bleeding, abdominal pain, and food impaction. In this report, we present two cases of patients who were admitted to the emergency department with abdominal pain and elevated lipase levels.

Case 1

A 57-year-old woman presented to the emergency room with abdominal pain occurring after meals. She had no significant medical history, did not smoke or drink alcohol, and was only taking hormonal substitution therapy for menopause. Her blood pressure was 120/74 mmHg, and her heart rate was 74 beats per minute. Laboratory tests revealed elevated levels of lipase (32700 U/L; normal range: 73-393 U/L), as well as liver enzymes, including GOT (130 U/L; normal range: 15-37 U/L), GPT (100 U/L; normal range: 13-56 U/L), and bilirubin (1.86 mg/dL; normal range: <1.2 mg/dL). There were no signs of an inflammatory response or renal failure, and tests for viral infections including hepatitis B, C, and HIV were negative. Her CA 19.9 level was normal. An abdominal computed tomography (CT) scan showed dilation of the intra- and extrahepatic bile ducts, and a focal lesion containing liquid and air (measuring 39x27x32 mm) was observed near the papilla. Magnetic resonance imaging (MRI) revealed a mass (measuring 20x24x40 mm) containing liquid and gas, which was connected to the duodenum and compressing the distal part of the common bile duct with moderate dilatation of the intrahepatic biliary duct (see Figure 1). Positron

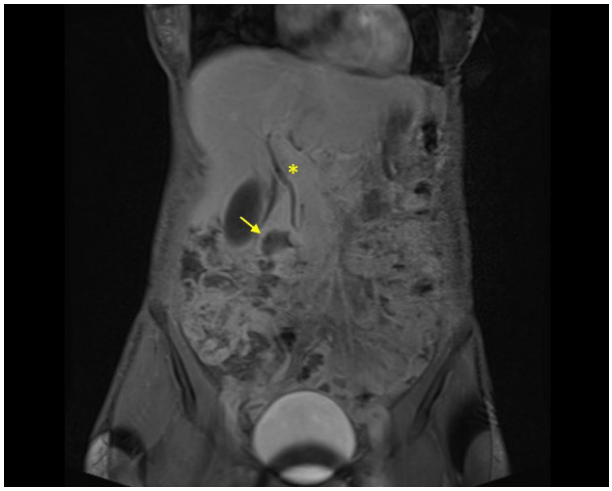

Figure 1. — Coronal MRI: duodenal diverticulum (arrow) and moderate bile duct dilatation (asterisk).

Correspondence to: P. Yengue, Department of Gastroenterology, Centre Hospitalier de Wallonie Picarde, 9 Avenue Delmée, 7500 Tournai, Belgium.
Email: patrick.yengue@chwapi.be

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emission tomography (PET) scan showed hypermetabolic uptake near the papilla. Endoscopic ultrasound (EUS) confirmed the periampullary lesion, and EUS-guided fine needle biopsy (EUS-FNB) revealed necrotic and inflammatory cells. After ten days of hospitalization, the patient was discharged without any complications. The final diagnosis was acute pancreatitis secondary to duodenal diverticulitis with compression of the common bile duct.

Case 2

An 88-year-old woman with a medical history of cirrhosis secondary to primary biliary cholangitis, hypertension, hypothyroidism, hyperuricemia, cholecystectomy, and appendectomy presented with severe epigastric pain despite analgesics. She was taking L-thyroxine 125 µg, allopurinol 300 mg, indapamide 2.5 mg, perindopril 5 mg daily, and ursodeoxycholic acid 500 mg twice a day. Physical examination revealed tenderness in the epigastric region. Her blood pressure was 152/74 mmHg, and heart rate was 78/min. Laboratory tests indicated elevated levels of CRP (38 mg/L, normal range <5 mg/L), fibrinogen (548 mg/dL, normal range 200-400 mg/dL), lipase (11147 U/L, normal range 73-393 U/L), and liver enzymes, including alkaline phosphatase (175 U/L, normal range 35-104 U/L), GOT (100 U/L, normal range 15-37 U/L), GPT (105 U/L, normal range 13-56 U/L), gamma GT (191 U/L, normal range 5-55 U/L), and bilirubin (2.53 mg/dL, normal range <1.2 mg/dL). Abdominal CT scan revealed a parapapillary duodenal diverticulum with a hydro-air level, main bile duct dilation and peripancreatic fat infiltration (see Figure 2). EUS showed a pseudocystic mass measuring 21x18 mm, and EUS-FNB ruled out neoplasia and confirmed the presence of inflammatory cells and necrosis. Bacteriology revealed a polymicrobial flora, including Escherichia coli, Enterococcus faecalis, and Bacteroides vulgatus. The patient responded to intravenous antibiotics (cefuroxime and metronidazole), and subsequent laboratory tests showed normalization of CRP and liver enzymes. She was discharged after 9 days. The final diagnosis was acute pancreatitis due to abscessed parapapillary diverticulitis.

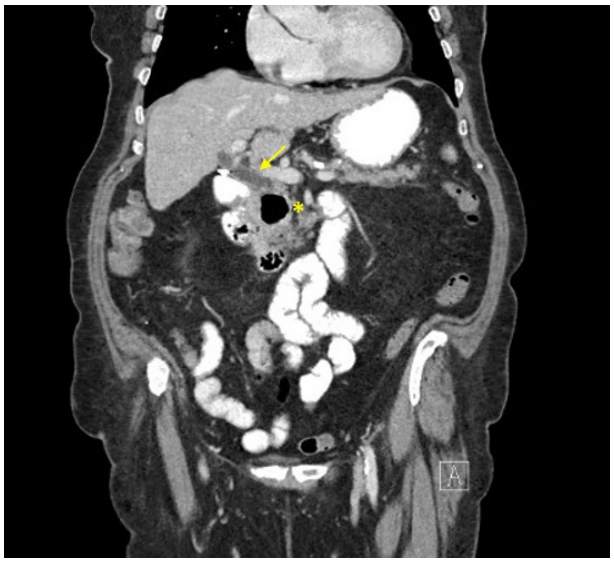

Figure 2. — Coronal CT scan: D2 diverticulum and peripancreatic fat infiltration (asterisk). Main bile duct dilation (arrow).

Discussion

A duodenal diverticulum is present in approximately 20% of the general population, and its incidence increases with age. In the majority of cases, it is asymptomatic. In the past, the presence of duodenal diverticulum was discovered through barium follow-through tests or upper endoscopy. Nowadays, the diagnosis is confirmed through abdominal CT scan, which is the first tool used to identify the diverticulum when gas, liquid or debris are found in its vicinity near the second part of the duodenum (6). Complications are rare, with only 5% of cases experiencing them. The most common biliopancreatic complications are caused by the lithogenic mechanism of direct compression by the diverticulum on the common bile duct and the dysfunction of Oddi's sphincter (4,5). Additionally, the presence of bacteria inside the diverticula that increase beta-glucuronidase (5,7,8) has been recognized as a potential origin of idiopathic acute pancreatitis (9). In rare cases, papillary diverticulum can be associated with chronic pancreatitis (10). Obstructive jaundice, known as Lemmel syndrome, can result from compression of the common bile duct due to duodenal diverticulum (11). Physicians should be aware of this possibility as it can be mistaken for a tumour of the head of the pancreas, with a completely different prognosis and management. The key to diagnosis is EUS-FNB. There have been only three reported cases of acute pancreatitis associated with duodenal diverticulitis (12,13,14) (see Table 1). Other complications include diverticulitis, perforation, and digestive hemorrhage. In cases where patients with duodenal diverticulum suffer from abdominal pain, obstructive pancreatitis should be considered. Once diagnosed, management is straightforward and conservative, with recovery facilitated by antibiotics and hydration. No recurrence has been reported. In conclusion, acute obstructive pancreatitis secondary to duodenal diverticulitis is rare, with only five cases described in the literature to date. Physicians should consider duodenal diverticulitis in patients with a flare-up of pancreatitis who have a duodenal diverticulum. While radiological exams such as CT scan and/or MRI can facilitate diagnosis, it remains essential to exclude the presence of a tumour through other investigations.

This study does not contain identifying information of the patients.

Table 1. — **Review of the literature. Five cases of acute pancreatitis associated with duodenal diverticulitis**

	Pastides et al.	***Hospital Medicine 2015.***	***Mora-Guzman***	***Case report 1***	***Case report 2***
Year	2010	2015	2016	2020	2020
Age	38	54	93	57	88
Sex	Female	Female	Female	Female	Female
CRP mg/L	NK	NK	Normal	<2.9	38
WBC	16.5 x10³/µL	11 x10³/µL	NK	15.13 x10³/µL	12.19 x10³/µL
Lipase U/L /amylase U/L	Amylase : 2245	Lipase >9000	Amylase : 1261	Lipase: 32700	Lipase 11147
Bilirubine mg/dL	2.6	0.4	NK	1.86	2.53
CT Abdominal	Cystic or necrotic mass behind the head of the pancreas, representing an inflammatory lesion, phlegmon, or duodenal diverticular abscess	Suspicious 4.5×4 cm mass near the head of pancreas containing air-bubbles with adjacent fat inflammation, suggesting either an abscess or necrotic tumour	Periampular diverticula with local inflammatory signs and moderately dilated Wirsung duct	Close to the ampullar in connection with duodenum a lesion with solid and liquid aspect 39x27x32 mm	D2 diverticula (30mm) with hydro-air level with an infiltrated peripancreatic fat
MRI	Cystic lesion with air-fluid level	Suspicious 4.5×4 cm mass near the head of pancreas containing air-bubbles with adjacent fat inflammation, suggesting either an abscess or necrotic tumour	None	Liquid and gaz containing mass (24x20x40mm) adjacent and connecting with the duodenum	None
EUS-FNB	None	None	None	Hypoechogenic periampular lesion 38x42mm with common bile duct dilatation (8mm) FNB : -no neoplastic cells -necrotic and inflammatory polynuclear cells	Pseudo kystic mass 21x18 mm FNB: -no neoplastic cells -polymicrobial flora
PET	None	None	None	Hypersignal of the mass close the duodenum and the papilla	None
ERCP	10 cm duodenal diverticular abscess draining pus and bile, at the level of the major papilla	None	None	None	None
Treatment	Antibiotics/endoscopic drainage	Antibiotics	Conservative	Hydration	Antibiotics
Follow-up	Healed	Healed	Healed	Healed	Healed

NK: Not known. WBC: White Blood Cell. MRI: Magnetic Resonance Imaging. EUS-FNB: Endoscopic Ultrasound Fine Needle Biopsy. PET: Positron Emission Tomography. ERCP: Endoscopic Retrograde Cholangio Pancreatography.

Conflict of interest

All authors declare no conflict of interest.

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