

## CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

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### Surgery Quiz – Case 35

A 71-year-old female patient, with a history of stage I arterial hypertension under amlodipine, presented to the emergency department due to a 4 hours episode of sudden onset, constant, mild and gradually becoming more severe right upper quadrant pain with associated nausea. Upon admission, vital signs (body temperature, blood pressure, respiration and pulse rate) were normal. Physical examination revealed mild right upper quadrant tenderness without guarding. Complete blood count test was within normal range, serum amylase was elevated 5 times above the reference range, liver associated enzymes (alkaline phosphatase, total bilirubin, aspartate aminotransferase and alanine aminotransferase) levels were mildly elevated and serum electrolytes, BUN, creatinine, glucose, CRP, cholesterol and triglycerides levels were within normal range. Arterial blood gases analysis was within normal range. Abdominal radiographs revealed no findings of pneumoperitoneum. Ultrasonography revealed the presence of biliary microlithiasis, increased pancreatic volume with a marked decrease in echogenicity and the absence of gallbladder wall thickening, pericholecystic fluid and biliary tree dilatation. Interestingly, abdominal computed tomography (CT) revealed probably at least a couple of ill-defined, air-containing,

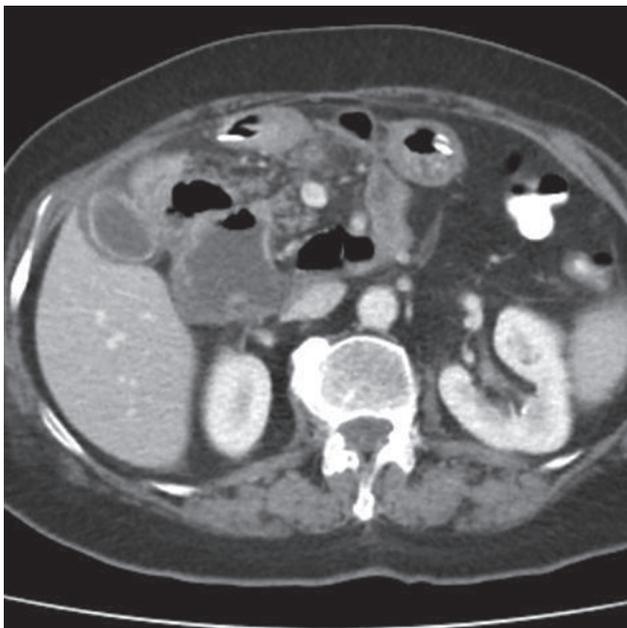


Figure 1



Figure 2

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2021, 38(5):713–715

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soft-tissue density mass-like and abscess-like lesions interposed between the duodenum and the pancreas (fig. 1) along with focal pancreatic head enlargement and peripancreatic inflammatory changes (fig. 2).

What is your diagnosis based on clinical and CT findings?

- (a) Perforated or penetrating duodenal ulcer
- (b) Acute severe pancreatitis complicated with pancreatic abscess
- (c) Simple or complicated duodenal diverticulosis
- (d) Transmural duodenitis.

### Comments

Based on initial assessment, the most likely diagnosis was mild acute biliary pancreatitis (Ranson's score 2, APACHE II score 5, CT severity index 2) in the setting of simple duodenal diverticulosis. Although no worrisome clinical and laboratory findings were present on initial survey, the uncertainty of the diagnosis along with the worrisome imaging finding of periduodenal gas, led to aggressive conservative management including nil per os, adequate intravenous hydration and broad-spectrum antibiotic prophylaxis/therapy under strict re-evaluation. Our major consideration was the presence of air in the abscess-like masses between the duodenum and pancreas. The presence of periduodenal gas limits differential diagnosis in potential causes of periduodenal abscess: (a) Perforated or penetrating duodenal ulcer; (b) iatrogenic or traumatic duodenal injury; (c) complicated duodenal diverticulosis; (d) transmural duodenitis (Crohn's, tuberculosis, NSAID-related); (e) severe pancreatitis complicated with pancreatic abscess or infected pseudocyst.

In the present patient, free-perforated duodenal ulcer, duodenal injury and transmural duodenitis were excluded based on history, clinical, laboratory and imaging findings. Pancreatic abscess and infected pseudocyst were also excluded in the early phase of pancreatitis. As the patient showed clinical, laboratory and imaging improvement during consecutive re-evaluation, upper endoscopy performed to delineate between duodenal penetrating ulcer and diverticulosis which confirmed the presence of three large duodenal diverticula at the medial aspect of the second and the third portion all with wide neck, normal appearance of the mucosal wall and without impacted intraluminal contents. Conclusively, final diagnosis was coexistence of mild acute biliary pancreatitis and simple duodenal diverticulosis depicted in CT as three ill-defined, air-containing, mass-like and abscess-like lesions (red outline) between the duodenum (blue outline) and pancreas (green outline) along with focal pancreatic head enlargement and peripancreatic inflammatory changes (fig. 3).

Duodenal diverticulosis is a common entity with a prevalence of up to 23%; duodenum ranks second to the colon as the most common site of diverticula. Duodenal diverticula may be congenital or acquired. Acquired diverticula are more common and formed by protrusion of mucosa and submucosa through a focal weakness in the duodenal wall usually near blood vessels, pancreatic duct, common bile duct and areas of aberrant growth of pancreatic tissue in the duodenal wall. 62% of acquired diverticula arise from the second portion, 30% from the third and 8% from the fourth, usually along its medial aspect.

Duodenal diverticula are usually asymptomatic; approximately 5% of patients develop clinical symptoms. This is most commonly caused by perforation and hemorrhage. Duodenal diverticulitis



Figure 3

is rare; this is probably because of their larger size and improved intraluminal flow of relatively sterile and liquid duodenal contents. Other less common complications include common bile duct obstruction, superior mesenteric vein thrombosis and malabsorption secondary to duodenocolic fistulas. CT appearance of a duodenal diverticulum includes a saccular outpouching which may resemble a mass-like structure interposed between the duodenum and the pancreas that contains air, air-fluid level, fluid, contrast material or debris. A periampullary diverticulum may simulate pseudocyst or tumor. CT features of duodenal diverticulitis appear similar to diverticulitis at other locations and may include wall thickening, stranding of the surrounding soft tissues and adjacent mesenteric or retroperitoneal fat.

Making the correct diagnosis can be challenging, as radiographic features of duodenal diverticula sometimes mimic other acute intra-abdominal processes; these include acute pancreatitis and its complications, perforated or penetrating duodenal ulcer, transmural duodenitis, duodenal duplication cyst and its complications, iatrogenic or traumatic duodenal injury and rarely malignant or benign pancreatic head and duodenal neoplasms. In summary, duodenal diverticulosis can be a difficult CT diagnosis to make. It should be considered in the differential diagnosis when a periduodenal mass-like structure that may contain air, air-fluid level or contrast material with or without peripancreatic inflammatory changes is depicted especially in the presence of normal serum amylase and lipase levels.

### References

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**Diagnosis:** Mild acute biliary pancreatitis in the setting of simple duodenal diverticulosis

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