Conservative Management of Perforated Duodenal Diverticulitis

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Abstract

The prevalence of duodenal diverticula in the general population is 22%, diverticulitis is a rare complication and its clinical manifestations are nonspecific. The diagnosis of perforated duodenal diverticulitis is difficult, possibly because of the absence of specific symptoms. We present a case of perforated duodenal diverticulitis in a 53 year old woman with no history of interest in which the abdominal CT scan shows a duodenal diverticulitis complicated, confirmed retrospectively by abdominal magnetic resonance imaging and Gastrointestinal Transit. The patient showed a significant clinical improvement, with conservative treatment: bowel rest, broad spectrum antibiotics and parenteral nutrition. We review the different imaging methods and treatment options.

KEYWORDS: Perforated duodenal diverticulitis; Duodenal diverticulum; Nonoperative management
INTRODUCTION

A duodenal diverticulum was first described by Chomel in 1710 (1). Duodenal diverticula are found in up to 22% of the general population, with complications developing in only 5%. Most are acquired and are located in the second duodenal portion (1-3).

Diverticulitis is one of its rare complications and its clinical manifestations are non-specific, and can mimic peptic ulcer disease, acute cholecystitis, acute pancreatitis etc. (1-3).

The retroperitoneal location of the duodenum means that pre-operative diagnosis of perforated duodenal diverticulitis (PDD) can be difficult. Duarte et al. reviewed 101 patients with PDD and only 13 were diagnosed correctly before surgery. (2).

We now present a case of PDD treated conservatively, and the different treatment options are reviewed.

CLINICAL CASE

A 53 year old woman, with no significant personal history, was admitted to the Emergency Department of our hospital having had abdominal pain for 3 days, which was continuous and of moderate intensity, located in the epigastric region and the right hypochondrium, and accompanied by bilious vomiting and fever. She did not report any alcohol abuse, recent abdominal trauma, or swallowing of a foreign object. The physical examination revealed the presence of a fever of 38ºC and abdominal pain with moderate tenderness to palpation around the epigastric region and the right hypochondrium. Blood analysis showed mild leucocytosis with neutrophilia, amylase and unchanged bilirubin. Following the results of the urgent abdominal ultrasound which showed a pathological intestinal loop in the right hypochondrium with an image like a pseudokidney, which could be inflammation at the level of the duodenum or at the hepatic flexure of the colon, an urgent abdominal CT scan was requested to focus on: the duodenal loop, the second and third duodenal portions, enlarged, an increasing abdominal collection between the duodenum and the head of the pancreas containing air bubbles which suggest a duodenal perforation, without a clear indication of the pancreas being affected, possibly linked to a perforated duodenal diverticulum, inflammatory or neoplastic pathology, complicated by perforation (Fig. 1a).

In the absence of sepsis the patient is admitted to General Surgery and conservative treatment is started, involving gut rest, broad spectrum intravenous empirical antibiotic therapy, Piperacillin/Tazobactum 4.0/ 5g every 6 hours and total parenteral nutrition.

An upper endoscopy is carried out with controlled air insufflation, revealing an oedematous mucosa with signs of inflammation around the second portion of the duodenum.
The patient showed a significant clinical improvement, with the blood analysis normalising. A week later another abdominal CT scan was carried out, in which was noted a good radiologic outcome with a decrease in the inflammatory mass, which showed a small quantity of gas inside. (Fig.1b).

Because of the favourable progression of the condition an intestinal transit took place without anything significant being found so a nuclear magnetic resonance (NMR) is requested, showing a diverticulum in the second duodenal portion, with an inflammatory perilesional component. With the PDD diagnosis the intravenous antibiotic and gut rest treatments were maintained for a 12 day period.

One month after discharge, a double-contrast intestinal transit shows a small sliding hiatal hernia, with thickening of oesophageal-gastric folds and at the level of the second duodenal portion a small lesion suggestive of a small diverticulum (Fig. 2).

Six months later the patient remains symptom-free.

**DISCUSSION**

Perforation is a rare complication of duodenal diverticulitis. The clinical diagnosis is not straightforward, due to its non-specific symptoms, which is why it is necessary to rely on imaging tests. The preferred diagnostic test is the abdominal CT scan, although the results are not always conclusive (1,4).

The most difficult differential diagnosis is with a perforated duodenal ulcer, which also exhibits extraluminal gas and free liquid in the retroperitoneum; however most perforated duodenal ulcers are to be found in the duodenal bulb or in the first duodenal portion, whilst duodenal diverticula prefer the 2nd or 3rd duodenal portions even if, at times, it is impossible to differentiate one from the other by CT. The upper endoscopy (UE) with controlled gas insufflations can provide valuable complementary information; however its use is controversial due to the risk of spreading infection in the retroperitoneal space (1,5,6).

Other authors like Vandenbroucke et al. recommend carrying out an abdominal RNM, when there is diagnostic suspicion, in order to avoid possible complications (7).

The management of PDD depends upon the clinical conditions applicable to the particular patient. Traditionally treatment was surgical: diverticulectomy and primary suture of the duodenal wall, or anastomosis to a jejunum loop following the diverticulectomy. In less favourable conditions one can opt for: duodenal exclusion with or without drainage of the bile duct, or subtotal gastrectomy and reconstruction (Billroth II) or gastroenteroanastomosis (Y de Roux), associated with retroperitoneal drainage. (2,3,8).

Shackleton was the first to describe the conservative management of PDD. Increasingly widespread, for selected patients, the treatment is based on gut rest, nasogastric tube,
parenteral nutrition, broad spectrum intravenous antibiotics and monitoring. A lack of response to this treatment means that surgery will have to be considered (1).

Favourable results from conservative management of these patients have been published recently, although sometimes percutaneous drainage of an associated collection is necessary. In all instances it is the haemodynamic stability of the patient which dictates which treatment path should be followed (2-3,8), as happened with our case.

CONCLUSIONS

Duodenal diverticula are rare and perforation due to acute diverticulitis is even more uncommon. The diagnosis of duodenal perforation by acute diverticulitis requires a high index of suspicion because of nonspecific symptoms often delay. It should support in imaging tests such as abdominal CT, yet in many cases not reached a correct diagnosis preoperatively. Traditionally, the treatment was surgical, but due to the good results reported in the literature, the current trend is toward increasingly conservative management, provided that the patient's clinical conditions allow.

REFERENCES


Figure 1a. Abdominal CT scan: abdominal collection between the duodenum and the head of the pancreas containing air bubbles which suggest a duodenal perforation.
Figure. 1b. Abdominal CT scan: a good radiologic outcome with a decrease in the inflammatory mass, which showed a small quantity of gas inside.