Paraduodenal pancreatitis: a new unifying term and its morphological characteristics

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Abstract

Two inflammatory lesions represent the major differential diagnosis of pancreatic cancer clinically and on imaging: autoimmune (IgG4) pancreatitis and paraduodenal pancreatitis. This latter lesion has been described under various denominations, especially in most early reports by using the term "cystic dystrophy developed in heterotopic pancreas". Most cases present in young alcoholic males as cystic and inflammatory mass forming lesions centred in the duodenum and the juxtaduodenal pancreatic tissue, predominating in the region of the minor papilla. They may be associated with chronic calcifying pancreatitis. Pathogenetically, key factors are alcohol and anatomical or functional obstruction of the papilla minor.

Keywords cyst; duodenum; groove; heterotopia; pancreatitis; pseudotumour

Introduction

One of the main challenges in pancreatology has always been to distinguish neoplastic lesions, mostly pancreatic adenocarcinoma, from non-neoplastic lesions, especially inflammatory changes resulting in various forms of pancreatitis.[1] Although pancreatic surgery induces significant morbidity and even mortality, there are a small percentage of non-neoplastic pseudotumourous lesions in a series of pancreatectomies performed for suspicion of cancer.[2] The two major categories of lesions mimicking cancer are autoimmune pancreatitis, and a peculiar lesion of the duodenopancreatic area described under various names in the literature.[1,3] The most widely used name for this entity is now paraduodenal pancreatitis,[4] but our group was at the origin of its initial description under another name, "cystic dystrophy of the duodenal wall developed in heterotopic pancreas".[5,6] It has been known for many years that this uncommon inflammatory lesion of the duodenopancreatic area has distinctive clinical and pathological features. The various names that have been proposed for this entity were often introduced to describe isolated case reports or small series. These names reflect the main morphological characteristics of the lesion, i.e. location in the duodenal wall and surrounding pancreas (paraduodenal wall cyst, groove pancreatitis),[7–9] inflammation (groove pancreatitis),[9] frequent cystic component (cystic dystrophy of heterotopic pancreas, paraduodenal wall cyst),[5–8] dystrophic changes (cystic dystrophy),[6] "malformative–hamartomatous" heterotopic component (pancreatic hamartoma, cystic dystrophy developed in heterotopic pancreas, adenomyomata, adenomyomatosis).[10,11] The names used in the literature also partially reflect the country where the description was made. Following the first description of this entity in French in 1969–1970,[5,12] and the first reasonably sized clinical series, still French but published in English in 1993,[6] a number of papers mostly originating from France were published describing the characteristic features of cystic dystrophy developed in heterotopic pancreas, a name that is still used by most French gastroenterologists, surgeons and pathologists. Groove pancreatitis was described by German authors in 1982,[9] and since then, several reports have used this term, often coming from Germany and Japan. Other names were proposed by various authors, and a similar lesion was recognized as a separate entity by the Armed Forces Institute of Pathology in 1984 under the term paraampullary duodenal cyst.[13] Interestingly, although most reports from Italy initially used the "French" term "cystic dystrophy developed in heterotopic pancreas", the unifying concept of paraduodenal pancreatitis as an umbrella term embracing all previous names was proposed by Adsay and Zamboni in 2004,[4] and it is now used in most reports, including a large surgical series of 58 cases from Italy.[14] However, France resists, and the largest series reported to date (105 patients) was published in 2007 under the "classical French term" cystic dystrophy developed in heterotopic pancreas.[15]

In this article, the main clinical and pathological characteristics of this entity will be described, and some pathogenetic hypotheses will be discussed.

Clinical and imaging characteristics

Most patients are relatively young (40- to 50-year-old, range 24–75, no paediatric cases) men, with a history of heavy alcohol abuse. However, the lesion can be observed in women (10–20% of cases), and in non-alcoholic patients (again 10–20% of cases).[15] There are no conditions suggesting other causes of chronic pancreatitis, such as an autoimmune (IgG4) context, hypercalcaemia, gallstones, and a family history of chronic pancreatitis. The time between first symptoms and diagnosis varies considerably, but may be as long as 24 years (median time 1 year in the largest published series).[14,15] The predominant symptoms are directly related to the anatomical lesions: pancreatitis leads to severe abdominal pain, impaired duodenal motility and duodenal stenosis induce post-prandial vomiting and weight loss. In a minority of cases biliary stenosis may lead to jaundice. The diagnosis is never incidentally made. The main clinical differential diagnosis is pancreatic cancer, especially when severe weight loss is present. Laboratory findings may reveal a slight elevation in pancreatic enzymes and occasionally hepatic enzymes.

Several series have described in detail the changes observed in paraduodenal pancreatitis with imaging techniques used to investigate the duodenopancreatic area. It must be emphasized that although initial series only reported patients who had surgery and therefore a diagnosis based on pathology examination of the surgical specimen, recent reports included large numbers of patients with a diagnosis relying on imaging of the

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diseased area and not on surgical resection.[14] Imaging techniques include transabdominal ultrasound (US), computed tomography (CT) scan, magnetic resonance imaging (MRI), magnetic resonance cholangiopancreatography (MRCP), endoscopy, endoscopic retrograde cholangiopancreatography (ERCP), and endoscopic ultrasound (EUS).[16,17] The main difficulty is to differentiate paraduodenal pancreatitis from pancreatic carcinoma. No totally specific features are available. The lesions that can be observed depend on the relative cystic and fibrotic components and from their limitation to the duodenal wall or extension to the pancreatic head. In typical cases, the best diagnostic criteria are multiple cysts located in a thickened duodenal wall with enhancement after contrast injection on CT.[7,15] On EUS, the precise location of the duodenal cysts in the muscularis propria and submucosa can be appreciated. Imaging techniques that allow precise visualization of the common bile duct and the pancreatic duct (ERCP, EUS, MRCP) can show smooth stenosis, while irregular stenosis is seen in pancreatic adenocarcinoma. In rare cases the findings obtained with guided fine-needle aspiration of paraduodenal pancreatitis have been described, showing inflammatory changes most often interpreted as negative for malignancy.[18]

Macroscopy

Major progress in preoperative imaging techniques imply that when patients have surgery, there is, in most cases, a strongly suspected diagnosis of paraduodenal pancreatitis. However, only 30% of patients had surgery in the recent large series by Rebours et al.[15] In initial series, the diagnosis was not raised before surgery in most cases, and entirely relied on pathological examination of the surgical specimen. The latter usually consists of a pancreaticoduodenectomy specimen which has to be examined along established procedures and guidelines, identical to those applied to pancreatic cancer. It is especially important to examine the duodenal mucosa after opening the duodenum on the side opposite to the pancreas, and to cut serial axial sections through the duodenal wall and the pancreatic head. In our initial series of "cystic dystrophy of the duodenal wall", we demonstrated that there was a major thickening of the duodenal wall, largely predominant on the pancreatic side of the duodenum, above the papilla of Vater.[6] The mucosal appearance was very often pseudotumorous, with duodenal giant folds and multiple sessile polypoid lesions, which can be intervened by ulcerations (Figure 1). The presence of cysts was constant in initial series, as it was the main diagnostic criteria of "cystic dystrophy", but it was also very frequent in series of lesions described under other denominations, including groove pancreatitis.[6,9] In a majority of cases there are multiple cysts, measuring 1–2 mm to 40 mm in diameter (Figure 2). The cysts may contain either clear fluid, or thick granular material and even stones; they are located in the submucosa and the muscularis propria. In those cases described as "paraduodenal wall cyst", the cysts may be as large as 10 cm, mimicking intestinal duplication (Figure 3). Surrounding the cysts, and in some cases without any cystic changes, there is thickening and scarring of the duodenal wall, which surrounds the cystic lesions if any are present, and which leads to with retraction, ulceration, and polypoid changes of the surrounding duodenal mucosa. The lesions can be macroscopically limited to the duodenal wall, but they often extend to the "groove" area, lending either or both a white homogeneous oedematous and fibrous aspect (Figure 4). In some cases there is chronic calcifying pancreatitis of the pancreatic head (Figure 5). The common bile duct can be dilated. The lymph nodes around the head of the pancreas are often enlarged. Importantly, although the large majority of cases consist of lesions occurring in the duodenal wall in the vicinity of minor papilla, we and other authors have described rare cases occurring in the gastric antrum, with similar cystic changes (Figure 6).[19,20] Those cases cannot be termed paraduodenal pancreatitis, as they are not paraduodenal. The term cystic dystrophy in heterotopic pancreas of the stomach seems more appropriate for this uncommon location.

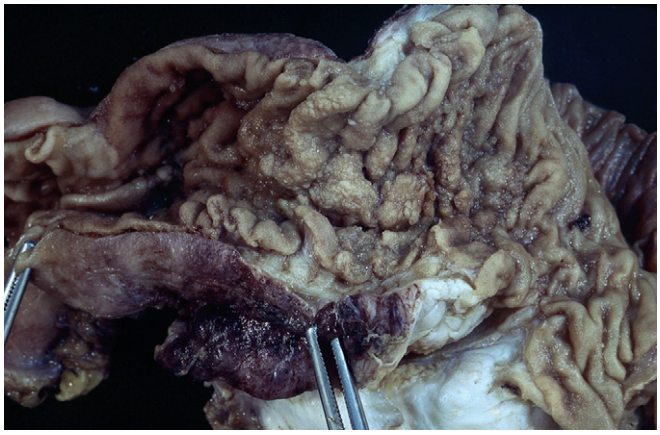

Figure 1 Paraduodenal pancreatitis. Macroscopic aspect of the duodenal mucosa, with pseudotumorous polypoid giant folds and ulcerations.

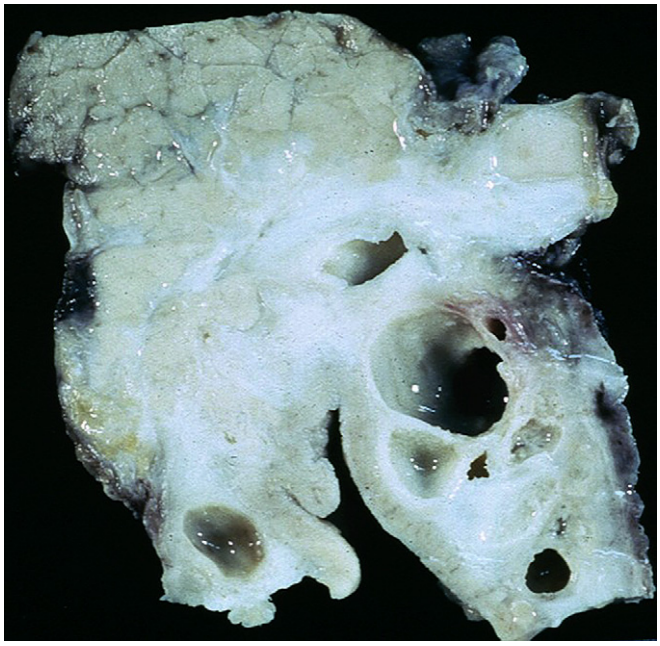

Figure 2 Paraduodenal pancreatic, cystic form (so-called cystic dystrophy). Numerous cysts of varied size in the duodenal submucosa and muscularis propria. The major part of the pancreatic head appears normal.