

## Acute recurrent pancreatitis

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History, physical examination, simple laboratory and radiological tests, and endoscopic retrograde cholangiopancreatography (ERCP) are able to establish the cause of recurrent acute pancreatitis in 70% to 90% of patients. Dysfunction of the biliary and/or pancreatic sphincter, as identified by sphincter of Oddi manometry, accounts for the majority of the remaining cases. The diagnosis may be missed if the pancreatic sphincter is not evaluated. Pancreas divisum is a prevalent congenital abnormality that is usually innocuous but can lead to recurrent attacks of acute pancreatitis or abdominal pain. In select cases, endoscopic sphincterotomy of the minor papilla can provide relief of symptoms and prevent further attacks. A small proportion of patients with idiopathic pancreatitis have tiny stones in the common bile duct (microlithiasis). Crystals can be visualized during microscopic analysis of bile that is aspirated at the time of ERCP. Neoplasia is a rare cause of pancreatitis, and the diagnosis can usually be established by computerized tomography or ERCP. A wide variety of medications can also cause recurrent pancreatitis. ERCP, sphincter of Oddi manometry, and microscopy of aspirated bile should be undertaken in patients with recurrent pancreatitis in whom the diagnosis is not obvious.

**Key Words:** *Manometry; Pancreatitis; Sphincter of Oddi*

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There are many causes of recurrent pancreatitis (Table 1) (1). Frequently, the diagnosis can be readily determined by a detailed history, physical examination, routine laboratory tests and simple radiological studies. After application of these modalities, plus endoscopic retrograde cholangiopancreatography (ERCP) to reveal structural abnormalities, 10% to 30% of cases remain unexplained (1). Pancreaticobiliary manometry identifies sphincter of Oddi dysfunction (SOD), and reduces the idiopathic group to between 5% and 10% of the total.

It is recommended that ERCP plus sphincter of Oddi manometry be undertaken in cases of idiopathic acute recurrent pancreatitis. Sherman et al (2) evaluated 55 consecutive patients with ERCP, sphincter of Oddi manometry and microscopic examination of the bile for microlithiasis. They identified a potential cause of the illness in 66% of patients, including SOD (33%), microlithiasis (12%), pancreas divisum (PD) (14%), common bile duct stones (5%), choledochocoele

### Pancréatite aiguë récidivante

L'anamnèse, l'examen physique, des épreuves biochimiques et radiologiques simples, ainsi que la cholangiopancreatographie rétrograde endoscopique (CPRE) permettent d'établir la cause d'une pancréatite aiguë récidivante chez 70 à 90 % des patients. Un dysfonctionnement du sphincter du cholédoque et(ou) du canal de Wirsung, qu'on détecte à l'aide d'une manométrie du sphincter d'Oddi, compte pour la majorité des autres cas. On peut se tromper de diagnostic si l'on n'évalue pas le fonctionnement du sphincter du canal de Wirsung. Le pancréas divisum est une anomalie congénitale courante généralement sans danger, mais qui peut provoquer des crises récidivantes de pancréatite aiguë ou de douleurs abdominales. Dans certains cas, une sphincterotomie endoscopique de la papille mineure peut procurer un soulagement des symptômes et prévenir d'autres crises. Une petite proportion de patients souffrant de pancréatite idiopathique ont de minuscules cholédocholitiases (microlitiases du cholédoque). On peut observer des cristaux à l'analyse microscopique de la bile prélevée par aspiration lors de la CPRE. Une néoplasie est une cause rare de la pancréatite et l'on peut habituellement en établir le diagnostic par tomographie assistée par ordinateur ou par CPRE. Une grande variété de médicaments peuvent également conduire à une pancréatite récidivante. On doit effectuer une CPRE, une manométrie du sphincter d'Oddi et une microscopie de la bile prélevée par aspiration chez les patients victimes de pancréatites récidivantes dont le diagnostic n'est pas évident.

(4%), pancreatic cancer (4%), pancreatic stricture (2%) and papillary tumour (2%). Endoscopic or surgical therapy was of benefit in 84% of patients during a follow-up period of 17 months, whereas improvement occurred in only seven of the 13 patients (54%) who did not receive a diagnosis.

### SOD

Elevated pancreatic and/or biliary basal sphincter pressure can be identified in 15% to 60% of patients with idiopathic pancreatitis (3-5). Although most patients have elevated pressures in both sphincters, 10% to 20% have abnormalities confined to the pancreatic sphincter (6). Therefore, standard biliary manometry and biliary sphincterotomy alone may miss pancreatic sphincter hypertension and fail to prevent recurrent attacks of pancreatitis. Evaluation of the pancreatic sphincter is recommended.

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**TABLE 1**  
**Causes of acute relapsing pancreatitis**

Gallstones (large or microlithiasis)
Drugs (including alcohol)
Hyperlipidemia
Hypercalcemia
Structural abnormalities of the duodenum or ampulla (eg, neoplasm and sphincter of Oddi dysfunction)
Structural abnormalities of the common bile duct
Sclerosing cholangitis
Choledochal cysts (> 5 cm, with a long common channel)
Pancreatic duct anomalies
Tumours
Mucinous ductal ectasia
Pancreas divisum
Genetic abnormalities (eg, hereditary pancreatitis)

### Pancreas divisum

PD is the most common congenital abnormality of the pancreas, and occurs in 5% to 10% of the general population (7). Even though most individuals with this lesion never experience symptoms, PD has been implicated as a cause of recurrent acute pancreatitis, chronic pancreatitis and chronic abdominal pain without pancreatitis. The mechanism for pancreatitis appears to be obstruction of the flow of pancreatic juice through a small or stenotic minor papilla, resulting in elevated intraductal pressure (8). The most compelling evidence in support of this argument is the prevention of recurrent episodes after pancreatic sphincterotomy (9,10).

Lans et al (11) conducted the first randomized trial of endoscopic therapy for this condition. They prospectively studied 19 patients with PD and acute recurrent pancreatitis, and compared a sham procedure with dilation of the minor papilla (but without sphincterotomy) followed by placement of a stent into the dorsal pancreatic duct. The stent was permanently removed after one year of treatment. During a follow-up period of roughly 30 months, pancreatitis was documented in only one of 10 patients (10%) in the endoscopic group, but occurred seven times in six of the nine control patients (67%). Symptomatic improvement of at least 50% occurred in 90% of the stented patients but in only 11% of control subjects. Ertan (12) reported similar results in an uncontrolled trial of papillary dilation and stent insertion in 25 patients with acute recurrent pancreatitis.

Lehman et al (13) showed that 13 of 17 patients with PD and recurrent acute pancreatitis enjoyed significant reductions in pain scores, frequency of episodes of pancreatitis and hospitalization rate after sphincterotomy of the minor papilla and transpapillary stenting. This technique involves placement of a short 3 to 5 French stent across the minor papilla followed by sphincterotomy using a 3 to 5 mm needle knife. The stent serves to prevent closure of the site by edema. It was then removed or allowed to fall out spontaneously after approximately two weeks. The mean period of follow-up was 1.7 years.

Restenosis is an unresolved problem that occurs in 10% to 25% of patients (10,13), and may be averted by injecting steroids into the sphincterotomy zone. Unlike the situation with recurrent acute pancreatitis, patients with PD and only chronic abdominal pain or chronic pancreatitis have shown

**TABLE 2**  
**Medications that are known to cause acute pancreatitis**

Immunosuppressive medications (eg, azathioprine and 6-mercaptopurine)
Sulfonamides
Oral 5-aminosalicylic acid preparations
Antibiotics
Metronidazole, tetracyclines, nitrofurantoin
Valproic acid
Corticosteroids
Furosemide
Estrogens
Alpha-methyl dopa
Pentamidine
Octreotide
Didanosine

minimal or no improvement with endoscopic sphincterotomy and/or stent placement (10,13).

### Gallstones and microlithiasis

Gallstones are responsible for 30% to 70% of all cases of acute pancreatitis (3). Many cases of so-called idiopathic pancreatitis are caused by tiny stones (microlithiasis) that cannot be seen at ultrasonography or ERCP, but are visible with the microscopic examination of bile that is aspirated during ERCP (14-16). In some studies, cholesterol monohydrate or calcium bilirubinate crystals have been documented in 60% of 75% of cases. Other studies, especially those conducted after cholecystectomy, have documented the presence of these crystals only rarely. With modern day ultrasound studies that can readily detect gall bladder stones and sludge, subtle biliary disease is now a less common cause of idiopathic pancreatitis. Patients with liver blood test abnormalities at the onset of pancreatitis should not be classified as 'idiopathic' but more correctly probably biliary.

### Neoplasms

Although tumours are often evident with standard imaging studies, ERCP or endoscopic ultrasound may be required to demonstrate the lesion. Neoplasms that can cause pancreatitis include ampullary tumours, cystic pancreatic neoplasms, intraductal mucin-hypersecreting neoplasms and ordinary ductal adenocarcinomas (17).

### Drugs

Medications that are shown to cause pancreatitis are listed in Table 2 (1). The clinical value of the drug must be weighed against the potential risk of adverse effects.

## CONCLUSIONS

Many patients who are currently thought to have idiopathic recurrent pancreatitis have a detectable cause if carefully evaluated. ERCP will continue to play an important role in the management of patients with recurrent acute pancreatitis, especially those with structural abnormalities. Bile aspiration with microscopic examination for crystals is useful for ruling out microlithiasis. In addition, SOD manometry is essential to identify cases of biliary or pancreatic duct dyskinesia

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