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## Complications of bile-duct stones: acute cholangitis and pancreatitis

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Gallstones are frequent in the Western world, with up to 10% of the general population affected. Gallstone prevalence is higher in the elderly and in women. Acute cholangitis and pancreatitis are the most serious complications of gallstones, with considerable morbidity and mortality. We discuss here clinical features, laboratory and radiological examinations, and treatment for gallstone cholangitis and pancreatitis. The diagnostic approach for acute 'idiopathic' pancreatitis is dealt with in some detail. Also, the role in pancreatitis of enteral nutrition, antibiotic prophylaxis, and the place of endoscopic retrograde cholangiography with papillotomy for biliary decompression is discussed in detail.

**Key words:** antibiotics; cholangitis; endoscopic retrograde cholangiography; enteral feeding; pancreatitis; sludge.

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### ACUTE CHOLANGITIS

#### Background

This chapter deals with cholangitis secondary to bile-duct stones as typically found in Europe and the USA. Recurrent pyogenic cholangitis (Oriental cholangiohepatitis) is endemic to East Asia, and will be discussed elsewhere in this issue. Acute bacterial cholangitis develops when bacterial infection complicates obstruction within the biliary tract. Patients with partial obstruction are at increased risk compared to those with complete obstruction. Infection is generally thought to occur through direct extension of bacteria from the duodenum. Increased colonisation with coliforms (the most commonly isolated organisms in cholangitis) within the proximal small intestine may predispose to bacteraemia (e.g. in the elderly with achlorhydria). Haematogenous spread through the portal venous system could be another route. Effectiveness of the reticulo-endothelial system may be compromised in the setting of increased bile

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duct pressures. Bactobilia alone generally does not result in cholangitis. In fact, bactobilia without symptoms may be more common in gallstone patients than previously thought.

### Clinical features

The classical presentation includes fever, right upper quadrant pain and jaundice (Charcot's triad). Especially in the elderly, abdominal pain may be absent. In severe cases, mental confusion and hypotension may also be present (Reynold's pentad), indicating need for urgent treatment with decompression of the biliary tree. The latter presentation is infrequent. Up to 80–90% of cholangitis patients will respond satisfactorily to initial conservative therapy with broad-spectrum antibiotics. Although bile-duct stones are the most frequent cause of acute cholangitis in the Western world, other causes of cholangitis should be kept in mind if stones are absent (Table I). Also, there are some other conditions that can occasionally be difficult to distinguish from acute cholangitis (Table I).

### Laboratory investigations

Leucocytosis, increased C-reactive protein, and high sedimentation rates are generally found. Also cholestatic liver biochemistry (increased bilirubin, alkaline phosphatase,  $\gamma$ -glutamyl transferase) are usual. However, in the early stage of obstruction, there may be a pronounced and disproportionate increase of aminotransferases (ASAT, ALAT). This may cause confusion with viral hepatitis, since in the early stage bile ducts are often not (yet) dilated on ultrasound. Trans-abdominal ultrasound is the first step in detecting bile-duct (as well as associated gallbladder) stones. However, the distal bile duct in particular may be difficult to visualise because of air-containing intestinal loops in front of it. Therefore, the sensitivity of ultrasound in detecting bile-duct stones is rather low (depending on the experience of investigator and stone size: 27–49%).<sup>1</sup> In contrast, specificity of ultrasonographic bile-duct stone detection is extremely high (99–100%).<sup>1</sup> Also, the finding of bile-duct dilatation during the ultrasonographic

**Table I.** Causes and differential diagnosis of acute bacterial cholangitis.

Causes:

- Choledocholithiasis, sludge
- Benign or malignant biliary strictures
- Choledochal cysts, choledochocele, Caroli's disease
- Postoperative:
  - 'sump' syndrome post-choledochoduodenostomy
  - choledochojejunostomy
- Stenosis papilla of Vater
- Parasitic infections
- Iatrogenic (e.g. post-ERCP)

Differential diagnosis:

- Gallbladder: acute cholecystitis, Mirizzi's syndrome
- Intra-abdominal: acute appendicitis, perforated duodenal ulcer, hepatic abscess, acute hepatitis

ERCP, endoscopic retrograde cholangio-pancreaticography.

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