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Endoscopic sphincterotomy and cholecystectomy in acute biliary pancreatitis

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ABSTRACT

Background: This review discusses current insights with regard to biliary tract management during and after acute biliary pancreatitis.
Methods: A MEDLINE and EMBASE search was done and studies were selected based on methodological quality and publication date. The recommendations of recent guidelines are incorporated in this review. In absence of consensus in the literature, expert opinion is expressed.
Results: There is no role for early endoscopic retrograde cholangiopancreatography (ERCP) in patients with (predicted) mild biliary pancreatitis to improve outcome. In case of persisting choledocholithiasis, ERCP with stone extraction is scheduled electively when the acute event has subsided. Whether early ERCP with sphincterotomy is beneficial in patients with predicted severe pancreatitis remains subject to debate. Regardless of disease severity, in case of concomitant cholangitis urgent endoscopic sphincterotomy (ES) is recommended. As a definitive treatment to reduce the risk of recurrent biliary events in the long term, ES is inferior to cholecystectomy and should be reserved for patients considered unfit for surgery. After severe biliary pancreatitis, cholecystectomy should be postponed until all signs of inflammation have subsided. In patients with mild pancreatitis, cholecystectomy during the primary admission reduces the risk of recurrent biliary complications.
Conclusion: Recent research has provided valuable data to guide biliary tract management in the setting of acute biliary pancreatitis with great value and benefit for patients and clinicians. Some important clinical dilemmas remain, but it is anticipated that on-going clinical trials will deliver some important insights and additional guidance soon.

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Introduction

Gallstones cause substantial morbidity in the western world.[1,2] Ranging from relatively harmless colics to potentially lethal pancreatitis, biliary disorders represent some of the most prevalent benign abdominal diseases.[3] Especially small gallstones and sludge are wont to migrate from the gallbladder into the duodenum.[4,5] In the proximity of the ampulla of Vater, gallstones obstructing the biliopancreatic duct are a frequent cause of acute pancreatitis.[6] Most stones migrate into the duodenum spontaneously,[7] but persisting obstruction of the ampulla can theoretically aggravate pancreatic inflammation.[8]

Long-term management of symptomatic cholelithiasis aims at minimizing the risk of new biliary events. Recurrence rates of biliary pancreatitis up to 61% have been described when no definitive treatment was provided.[9] Cholecystectomy and endoscopic retrograde cholangiopancreatography (ERCP) are widely used to this end, although some aspects such as the timing and indication of these interventions remain unclear. This review discusses current insights in acute biliary pancreatitis and its management.

Methods

Pubmed searches were conducted by N.J.S. and D.d.C. using the following medical search headings: "Pancreatitis" and "Acute Pancreatitis", "Biliary Tract Diseases", "Endoscopic retrograde cholangiography", "Cholecystectomy" and "Laparoscopic cholecystectomy". These MeSH terms, in combination with title and abstract review, with subheadings such as "diagnosis" and "epidemiology", were employed for the various topics included in this review. A secondary search was performed in Embase, using combinations of the Emtree terms "Acute Pancreatitis", "Biliary Tract Diseases", "Epidemiology", "Endoscopic Retrograde Cholangiopancreatography" and "Cholecystectomy". The search was limited to English language literature and to subtopics 'diagnosis', 'aetiology', 'prevention', 'disease management' and 'surgery'. Articles were selected based on study type, methodological quality and publication date. Where possible, we selected population-based studies for epidemiological data, whereas for treatment recommendations a hierarchical selection strategy was applied based on the level of evidence. Additional articles were explored by cross-referencing the articles found through the literature searches.

The recommendations of the recently revised guidelines from the International Association of Pancreatology/American Pancreatic Association (IAP/APA guidelines) as well as the American College of Gastroenterologists guidelines were incorporated in this review.[10,11] Regarding the aspects of treatment in which no clear consensus exists or decent quality evidence lacks, recommendations in this article were based on expert opinion and consensus within the Dutch Pancreatitis Study Group.

Results

Incidence, classification and diagnosis

Gallstones are listed as the most common cause of pancreatitis, accounting for 27–62% of all cases.[12,13] Either reflux of bile or increased pressure in the pancreatic duct resulting from gallstones or microlithiasis obstructing Vater's ampulla is believed to trigger pancreatic inflammation.[14,15] Gallstones are more prevalent in women than in men. Consequently, women are twice as likely to develop biliary pancreatitis.[16–18] Population studies have revealed growing incidence numbers for acute pancreatitis over the past few decades, attributed at least in part to the higher prevalence of gallstones associated with obesity. Overall incidence rates of acute pancreatitis increase with age and are between 13 and 50 per 100.000.[19–22] Overall mortality of acute pancreatitis is low (1–4%),[21,23] but mortality rates increase 5–10 fold when organ failure or infected pancreatic necrosis complicate the disease course.[24]

A flow chart with management steps for patients with (suspected) biliary pancreatitis is presented in Fig. 1. The diagnosis of acute biliary pancreatitis is made by visualisation of gallstones or sludge in addition to at least two of the following three items: 1) pain in the upper abdomen, 2) serum amylase or lipase at least three times the upper limit of normal and 3) characteristics of acute pancreatic inflammation on cross-sectional imaging (if performed).[25] Confirmation of the presence of gallstones is usually done by transabdominal ultrasound of the gallbladder (positive predictive value: 100%), but this is ineffective for detecting microlithiasis.[26] Unless a significant dilatation of the common bile duct is found (i.e. more than 8 mm in patients under 75 years, more than 10 mm in patients aged 75 and over), transabdominal ultrasound cannot be used to reliably assess choledocholithiasis.[27] Aggregate studies have found endoscopic ultrasound (EUS) and magnetic resonance cholangiopancreatography (MRCP) to be excellent modalities for detection of intraductal gallstones.[28–32] A systematic review comparing EUS and MRCP for choledocholithiasis found positive predictive value scores of 93 and 87% respectively.[31] EUS, while more invasive, has greater potential for finding small gallstones and sludge, especially distally in the common bile duct.[29] Additionally, more recent studies have called into question the ability of MRCP to detect choledocholithiasis in the setting of acute gallstone pancreatitis, as sensitivity dropped to 62%.[33,34] However, as these are retrospective studies, further investigation is needed for a definitive appraisal of MRCP in this setting.

In addition to imaging, serum liver biochemistry can be highly predictive of a biliary origin. Several studies have identified a strong correlation between the presence of gallstones and raised serum alanine aminotransferase (ALT).[13,27,35] ALT levels twice the upper limit of normal have a positive predictive value of 82%, increasing to 92% if raised three times.[13,27]

Disease severity can be classified into three categories according to the presence or absence of organ failure and