Biliary tract and pancreatic surgery complicated by acute pancreatitis: a clinical analysis

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Abstract: Objective: To study the clinical treatment features of biliary tract and pancreatic surgery complicated by acute pancreatitis. Methods: A retrospective analysis of 21 cases of biliary tract and pancreatic surgery complicated by acute pancreatitis in the Department of General Surgery in our hospital during May 2005 to July 2011 was performed; the clinical treatment features were analyzed in terms of surgical option, onset interval of acute pancreatitis after last surgery, length of stay in hospital and Ranson score. Results: There was no statistic difference between the two groups (A: The onset interval of acute pancreatitis after last surgery < 0.5 year. B: The onset interval of acute pancreatitis after last surgery > 0.5 year) in pathogenetic condition and length of stay in hospital. All patients were discharged after treatment, a follow-up of 6-18 months found no recurrence of pancreatitis. Conclusion: There is no relevance between the treatment feature and onset interval of biliary and pancreatic surgery complicated by acute pancreatitis. The disease is still treated meanly with symptomatic and supportive treatment, while the etiological treatment is also particularly important.

Keywords: Acute pancreatitis, surgery, Oddi’s sphincter, ERCP

Introduction

Acute pancreatitis is a common type of clinical acute abdomen, there is difficulty both in its diagnosis and treatment due to its various clinical manifestations, lacking of specific symptoms or signs, its complex pathogenesis and its uncertain prognosis of outcomes [1]. With the development of medicine as well as the accumulation of clinical experience, the individualized therapy of acute pancreatitis has gradually become a mainstream therapy in treatment of acute pancreatitis, making it to be more standardized and rationalized [2]. The details of the individualized therapy depend on the different individuals as well as the different causes, such as gallstone, alcohol, hyperlipidemia, biliary tract and pancreas surgery, and hereditary factor, therefore the etiological treatment is particularly important. Various causes with their special clinical feature and occurrence regularity determine the implementation of individualized therapy, or even the clinical efficacy and prognosis. This article analyzed retrospectively the clinical treatment feature of biliary tract and pancreas surgery complicated by acute pancreatitis.

Materials and methods

General information

A total of 1065 patients had biliary or pancreatic surgery during May 2005-July 2011 in the general surgery department of our hospital, a follow-up of patients after surgery showed there were 21 cases complicated by acute pancreatitis, the incidence was 1.97%. 11 in 21 patients are males and 10 are females, aged from 23 to 67 years, at a mean age of 43.38 ± 3.69 years. Among 19 cases of biliary tract surgery, 5 cases were open cholecystectomy, 12 cases were laparoscopic cholecystectomy, 2 cases were gallstones complicated by choledocholithiasis; 2 cases of pancreatic surgery included 1 pancreatic pseudocyst drainage and 1 pancreatico-jejunostomy. All patients of this group had a postoperative abdominal pain or lower back
pain as the chief clinical manifestations, accompanied by varying degrees of nausea, vomiting, fever and other associated symptoms. Most patients had a localized upper abdominal tenderness, a mild rebound tenderness and muscle guarding; a few patients were accompanied by mild scleral jaundice. Supplementary examination: urine amylase all increased to varying levels, B ultrasound or CT showed varying degrees of pancreatic edema. All patients met the diagnostic criteria for acute pancreatitis.

**Therapeutic method**

All patients in this group received symptomatic and supportive treatment, such as fasting, anti-inflammation, fluid infusion, maintenance of water and electrolyte balance, inhibition of pancreatic secretion and relieving spasm and pain. Critical patients could be monitored and treated in ICU. After the condition was stable, endoscopic retrograde cholangiopancreatography (ERCP) could be used to check the conditions of pancreatic duct, the lower common bile duct and Oddi’s sphincter, the residual stones should be cleared away if found, and the Oddi’s sphincter should be cut open or expanded if it had spasm or stricture.

**Statistical analysis**

Patients’ data were organized, the onset interval after surgery, the length of stay in hospital and the Ranson score were observed. Statistical measurement data used an expression of \( x \pm s \). Analysis was performed by using the SPSS version 13.0 software. The chi-square test was used to assess the pancreatitis severe extent difference between group A and group B, and the independent samples t test was used to assess the average length of hospital stays difference between group A and group B.

**Results**

All patients were cured and discharged after treatment. According to the Ranson score [3], severe pancreatitis scores more than 3; mild pancreatitis scores less than 3. Table 1 shows that, there were 9 cases (Group A) with the onset interval after the last surgery < 0.5 Y, accounting for 42.86%, including 1 case of severe pancreatitis, accounting for 11.11%, and 8 cases of mild pancreatitis, accounting for 88.89%, the hospital stays lasted 10-23 d, at an average of 14.72 ± 2.36 d; there were 12 cases (Group B) with onset interval after the last surgery > 0.5 year, accounting for 57.14%, including 1 case of severe pancreatitis, accounting for 8.33%, and 11 cases of mild pancreatitis, accounting for 91.67%, the hospital stays lasted 11-24 d, at an average of 13.16 ± 2.12 d. There was no significant difference between the patients with the onset interval less or more than 0.5 Y in terms of the pathogenetic condition and length of stay in hospital (\( P > 0.05 \)). Through the analysis of ERCP after the condition was stable, we found that the acute pancreatitis was mostly associated with the common bile duct residual stones in patients with onset interval less than 0.5 year, and was mostly related to the spasm of Oddi’s sphincter, stricture or muddy sediments of the lower common biliary duct in patients with onset interval more than 0.5 year. A 6-18 months follow-up was performed after the patients were cured and discharged, no recurrence of pancreatitis nor death was found.

**Discussion**

Acute pancreatitis is not rare in clinical practice. The biliary factor, alcohol and the idiopathic factor have mostly been thought to be the main cause of acute pancreatitis all the time, but in recent years, cases of biliary or pancreatic surgery complicated by acute pancreatitis have been gradually reported [4, 5], such surgery complications are diverse, often resulting in the difficulties of the diagnosis of acute pancreatitis, the delayed treatments, the disease...

**Table 1. Comparison between two groups of patients with different onset interval of pancreatitis after the last surgery**

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Severe pancreatitis (case)</th>
<th>Mild pancreatitis (case)</th>
<th>Average length of hospital stays (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>9 (42.86%)</td>
<td>1 (11.11%)</td>
<td>8 (88.89%)</td>
<td>14.72 ± 2.36</td>
</tr>
<tr>
<td>Group B</td>
<td>12 (57.14%)</td>
<td>1 (8.33%)</td>
<td>11 (91.67%)</td>
<td>13.16 ± 2.12</td>
</tr>
</tbody>
</table>

Annotation: Group A: the onset interval of pancreatitis after the last surgery < 0.5 Y; Group B: the onset interval of pancreatitis after the last surgery > 0.5 Y; No significant difference between the two groups (\( P > 0.05 \)).
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progression, and even the threat to the lives of patients [6]. It is worthy of our surgeons’ attention.

This study found that the acute pancreatitis was mostly associated with the common bile duct residual stones in patients with the onset interval of pancreatitis after the last surgery less than 0.5 year, especially in patients receiving laparoscopic cholecystectomy. It was reported [7] that the postoperative residual rate of common bile duct stones was up to 2%-10%, its treatment mechanism is similar to which of gallstone pancreatitis. In patients with the onset interval more than 0.5 Y, the causes were complicated, the following points may be considered [1] Oddi’s sphincter dysfunction [2]. Muddy sediments in lower common bile duct. Biliary sludge deposition and small stones within 3 mm diameter tend to lead to acute pancreatitis and recurrent episodes of biliary colic, but it is often misdiagnosed as idiopathic pancreatitis in clinical practice [3, 8]. Bile duct dilatation after the surgery for common bile duct stones [4]. Pancreatic hypoperfusion with various causes. It is important to consider the etiology of biliary or pancreatic surgery complicated by acute pancreatitis, to make clear whether there is a presence of Oddi sphincter dysfunction, to know whether there is sediment deposited in the lower common bile duct, whether there is a dilatation of common bile duct and the condition of pancreatic perfusion. These evaluations rely more on the endoscopic retrograde cholangiopancreatography (ERCP) examination.

Currently laparoscopic cholecystectomy has become the first choice of cholecystectomy, and is widely used in clinical practice, but complicated postoperative acute pancreatitis is also reported repeatedly, the risk of the disease could be reduced by laparoscopic cholecystectomy combined with intraoperative angiography or by performing endoscopic retrograde cholangiopancreatography/endoptic Oddi’s sphincterotomy (ERCP/EST) 3 weeks before laparoscopic cholecystectomy [9].

Combined the analysis of clinical data, the diagnosis of biliary tract and pancreas surgery complicated by acute pancreatitis should not just be satisfied with some auxiliary examinations such as biochemistry, ultrasound and CT, the detailed history should be traced to find the cause and at last, to make a definitive diagnosis. The therapies should not be limited to the symptomatic and supportive treatment, the etiological treatment is also critical. The risk of acute pancreatitis could be reduced by giving appropriate treatments and by using a normal ERCP in order to find the cause. It is important to study the predisposing factors, the progress of illness, and the measures to reduce the recurrence, to improve the efficacy and prognosis, which plays an important role in the understanding and managing of Biliary tract and pancreas surgery complicated by acute pancreatitis. It is still worthy of our surgeons’ efforts to explore how to set on a more standardized and more rational individualized therapy of biliary tract and pancreas surgery complicated by acute pancreatitis.

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Disclosure of conflict of interest

None.

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