Pancreatitis After a Primary and Secondary Excision of Congenital Choledochal Cysts

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Abstract

Purpose. Pancreatitis has been reported long after total choledochal cyst excision. The aim of this study was to determine if the disease process of postoperative pancreatitis differs between a primary and secondary cyst excision in a long-term follow-up.

Methods. Among 53 postoperative patients who underwent a total cyst excision and were followed up, 44 patients underwent a primary cyst excision (primary excision group), while 9 patients underwent a secondary cyst excision after a previous cyst-duodenostomy for internal drainage (secondary excision group). The long-term clinical course, including the pancreatographic findings after a total cyst excision, was compared.

Results. In the primary excision group, six patients had mild pancreatitis. Endoscopic retrograde pancreatography demonstrated ductal dilatation that was limited to the common channel in two patients, concurrent with the ventral duct in three, and extended the duct of Santorini in three. Conservative treatments were carried out in three patients, and endoscopic irrigation in one patient with protein plugs in the ventral duct. A resection of the choledochal remnant in the pancreas was performed in two patients with choledochal remnant-associated pancreatitis. From the secondary excision group, 5 of the 9 patients had chronic pancreatitis. Endoscopic retrograde pancreatography showed entire pancreatic ductal dilatation. Two of these patients underwent duodenal papilloplasty at the same time as secondary surgery; however, the disease progressively worsened.

Conclusion. In patients undergoing a secondary total excision after internal drainage, it is difficult to halt the ongoing aggravating process in pancreatitis.

Key words Congenital choledochal cyst · Pancreatic complications · Pancreatitis · Total cyst excision

Introduction

For the treatment of congenital choledochal cysts (CCC), a total cyst excision with a hepaticojejunostomy is now widely established as the treatment of choice. Although the results of a total cyst excision have been generally considered to be satisfactory, pancreatitis as a complication has been reported even long after a total choledochal cyst excision.1-4

A total cyst excision has also been secondarily performed for patients who have previously undergone an internal drainage operation. However, in the case of this secondary operation, it remains unclear as to how total cyst excision influences morbidity in which an internal drainage has been previously performed. Particularly in pancreatitis, little is known about the long-term disease process after a secondary cyst excision has been performed.

In the present study we divided the patients into two groups, consisting of patients who underwent a primary cyst excision and those with secondary cyst excision after previous internal drainage. We compared the long-term clinical findings between these groups of patients, including the pancreatographic findings after total cyst excision, to determine whether the disease process of pancreatitis differed.

Patients and Methods

Among 137 patients who underwent operations for CCC at the Division of Pediatric Surgery, Nihon University Itabashi Hospital, from January 1964 to December 2004, medical records of 53 postoperative patients
(37 females and 16 males) who had been periodically followed up were retrospectively reviewed in this study. The age of the patients ranged from 6 to 30 years old (mean: 18.9 years).

As a surgical procedure, total cyst excision and Roux-en-Y hepaticojejunostomy is a standard procedure for CCC. This procedure was performed as an initial operation in 44 of the patients (primary excision group) and was done after the initial cyst-duodenostomy in the remaining 9 patients (secondary excision group).

The duration of the postoperative follow-up was 5 years or less in 8 patients, 6–10 years in 8 patients, 11–15 years in 22, 16–20 years in 9, and 21 years or more in 6, with the longest follow-up period being 29 years.

The postoperative clinical course and pancreatographic findings were evaluated.

Diagnoses of acute pancreatitis and chronic pancreatitis were made based on the standardized criteria for clinical diagnosis of acute pancreatitis and the clinical diagnostic criteria for chronic pancreatitis of the Japanese Society of Gastroenterology, respectively. Patients with other pancreatic diseases and acute abdomen due to different causes were excluded.

The image of pancreatic ductal morphology was obtained by endoscopic retrograde pancreatography (ERP). The morphological categories of the pancreatic ductal system were classified into four types, including a usual type, an ansa pancreatica type, a loop type, and a divisum type. For the convenience of the measurements at each site of the pancreatic duct, the pancreatic ductal system was subdivided into the common channel (from the duodenal major papilla to the pancreaticobiliary junction), the ventral duct (from the pancreaticobiliary junction up to the junction of the main and accessory ducts), the duct of Santorini, and the ducts of body and tail.

The diameters of the largest point of each part of the duct were measured. In the present study, a positive finding of dilatation was recorded if the diameter of the common channel or the ventral duct exceeded 4 mm, or the diameter of the duct of Santorini or the duct of the pancreatic body exceeded 3 mm.

Results

Of the 53 patients who underwent a primary and secondary total cyst excision, 11 developed pancreatitis postoperatively during the routine checkups on an outpatient basis. These patients comprised 6 from the primary excision group and 5 from the secondary excision group.

Clinical Course in the Primary Excision Group

In the six patients (5 females and 1 male) who underwent a primary cyst excision, age at surgery ranged from 1 to 6 years of age, and the age of onset of pancreatitis after surgery was 5–18 years (mean: 11.3 years) (Table 1). All had recurrent abdominal pain that was aggravated by consuming oily foods. All had high amylase levels in their blood and/or urine. Three patients (patients 4, 5, 6) presented with a mild increase in the white blood cell count and were positive to C-reactive protein in the blood. No other significant abnormal values were found in the blood chemistry, which indicated the severity of pancreatitis. An abdominal ultrasonographic and computed tomographic (CT) scan revealed no swelling or parenchymal heterogeneity. With a diagnosis of acute mild pancreatitis, the patients were given nothing orally, but only intravenous fluid with gabexate mesilate and antibiotics.

After the acute phase of inflammation subsided, ERP was performed (Table 2). The pancreatic ductal type was found to be the usual type in five patients and the loop type in one patient. All had ductal dilatations in various portions of the pancreatic duct. However, no entire pancreatic duct dilatation was observed in this

| Table 1. Profiles of patients with pancreatitis in the primary excision group |
|--------------------------|-----------------|------------------|-----------------|-----------------|-----------------|-----------------|
| Patient no. | Sex | Age (years) at primary cyst excision | Age (years) at onset of pancreatitis | Serum/urine amylase level (mIU/l) | Treatment of pancreatitis | Outcome |
| 1 | F | 4 | 8 | 410/860 | Conservative treatment | Improved |
| 2 | F | 3 | 14 | 390/1010 | Conservative treatment | Improved |
| 3 | M | 1 | 5 | 470/1100 | Conservative treatment | Improved |
| 4 | F | 6 | 13 | 310/1200 | Protein plug removal by endoscopy | Improved |
| 5 | F | 4 | 10 | 780/1320 | Resection of choledochal remnant | Improved |
| 6 | F | 5 | 18 | 680/1235 | Resection of choledochal remnant | Improved |

Primary excision group, the group of patients who underwent a primary cyst excision