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Significance of splenic vein thrombosis in chronic pancreatitis

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Abstract

BACKGROUND: Splenic vein thrombosis leading to sinistral portal hypertension and variceal bleeding is a complication of chronic pancreatitis. The management of these patients without variceal bleeding remains controversial.

METHODS: A total of 157 patients with chronic pancreatitis were managed consecutively in our center between January 1996 and December 2005. Thirty-four patients with chronic pancreatitis were diagnosed to have splenic vein thrombosis.

RESULTS: The incidence of splenic vein thrombosis in patients with chronic pancreatitis was 22%. Fifteen percent of patients with chronic pancreatitis and splenic vein thrombosis presented with gastroesophageal variceal bleeding. Nine patients underwent splenectomy along with pancreatic procedures and 21 patients underwent pancreatic procedures only. Adding splenectomy to the pancreatic procedure did not lead to increased morbidity or mortality.

CONCLUSION: Splenectomy should be added to the pancreatic procedure in patients who have evidence of portal hypertension on preoperative evaluation, especially if gastric varices are found.

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Splenic vein thrombosis leading to sinistral portal hypertension and gastroesophageal variceal bleeding is a well-known complication of chronic pancreatitis.¹ In chronic pancreatitis, splenic vein thrombosis is considered to be multifactorial in origin, namely due to local, prothrombotic, inflammatory changes in the vascular endothelium, extrinsic splenic vein compression by pseudocysts, relatively low perfusion, and later in the course of disease pancreatic fibrosis.² Splenic vein thrombosis has been reported in 20% to 40% of patients with chronic pancreatitis.^{3–10} The inci-

dence of gastroesophageal variceal bleeding reported in these series varied from 3% to 72%.^{3–10}

Patients with chronic pancreatitis and splenic vein thrombosis presenting with gastroesophageal variceal bleeding are treated with splenectomy. However, the appropriate management of patients with chronic pancreatitis and splenic vein thrombosis with evidence of portal hypertension but without variceal bleeding remains controversial; both splenectomy and expectant management have been recommended.^{8–12} Whether decompression of pseudocyst or pancreatic duct leads to regression of splenic vein thrombosis and decreases the chance of bleeding also remains to be established.

The aim of the present study was to evaluate whether splenectomy should be added to the surgical treatment in patients for chronic pancreatitis with splenic vein throm-

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Table 1 Detection of varices/collaterals and relation with variceal bleeding

Modality	No. of patients (%)	Patients with varices/collaterals (%)	Variceal bleeding (%)
Contrast-enhanced CT scan	29 (85)	16 (55)	3 (19)
Upper gastrointestinal endoscopy	27 (79)	11 (41)	3 (27)
Doppler scan	20 (59)	15 (75)	2 (13)

bosis and preoperative evidence of portal hypertension, in order to prevent subsequent variceal bleeding.

Patients and Methods

A total of 157 patients with chronic pancreatitis were managed at a tertiary care teaching gastrointestinal surgery center between January 1996 and December 2005. In this consecutive series of patients, 34 patients (28 male, 6 female; mean age 36 ± 10.9 years) were found to have splenic vein thrombosis and constituted the study group. Chronic pancreatitis was defined using the Marseille criteria.¹³ Splenic vein thrombosis was diagnosed on preoperative imaging studies such as the dynamic dual-phase contrast-enhanced computerized tomography (CT) scan, magnetic resonance imaging (MRI), and color Doppler ultrasonography studies. Portal venous phase of contrast-enhanced CT scan was performed after 55 to 60 seconds of intravenous contrast injection to study the spleno-portal axis. Presence of collaterals in the gastrosplenic region with splenic vein thrombosis in contrast-enhanced CT scan and/or color Doppler ultrasound indicated the diagnosis of left-sided portal hypertension. At upper gastrointestinal endoscopy, presence of esophageal and/or gastric varices and portal hypertensive gastropathy associated with splenic vein thrombosis on cross-sectional imaging like contrast-enhanced CT scan and Doppler ultrasound scan indicates the diagnosis of left-sided portal hypertension. Upper gastrointestinal endoscopy was performed to know the variceal status of patients. Gastric varices were graded according to the grading system of Hashizume et al¹⁴ (grade F1 = tortuous and winding, grade F2 = nodular, and grade F3 = huge varices). Esophageal varices were graded according to the grading system of Conn¹⁵ (grade 1 = small varices appear on Valsalva maneuver, grade 2 = varices [1–3 mm] appear without Valsalva maneuver, grade 3 = variceal diameter 3–6 mm, and grade 4 = variceal diameter >6 mm). Thirty of 34 patients underwent surgery. Pancreatic pathology was the primary indication for surgery in all of these patients. Prospectively collected data were analyzed retrospectively in relation to patient demographics, clinical presentation, laboratory in-

vestigations, imaging studies, surgical procedures, and hospital course. Follow-up data were collected from outpatient records and postal queries.

Gastroesophageal variceal bleeding was defined as bleeding from varices diagnosed by upper gastrointestinal endoscopy after excluding all other causes of upper gastrointestinal bleeding. With the exception of wound seroma, postoperative complications were taken as major postoperative morbidities. Mortality was defined as in-hospital mortality or mortality within 30 days of discharge from the hospital.

The SPSS statistical software program (version 12.0, SPSS, Chicago, IL) was used for all analyses. Pearson's chi-square test and Fisher exact test were applied for categorical data and Student *t* test was applied for continuous data. Statistical significance was set at $P < .05$.

Results

The incidence of splenic vein thrombosis in patients with chronic pancreatitis was 22% (34 of 157 patients). Contrast-enhanced CT scan demonstrated splenic vein thrombosis in 29 patients, and 5 patients were diagnosed by Doppler scan or magnetic resonance imaging (MRI). Five of these 34 patients (15%) presented with a history of gastroesophageal variceal bleeding. Upper gastrointestinal endoscopy was performed in 27 patients. Contrast-enhanced CT scan, Doppler scan, and upper gastrointestinal endoscopy findings are enumerated in Table 1.

On upper gastrointestinal endoscopy, 11 patients had varices. Seven of these 11 patients (64%) were found to have gastric varices, while 4 patients (36%) had esophageal varices. Among the gastric varices, 4 patients had F1 grade, 1 patient had F2 grade, and the remaining 2 patients had F3 grade.¹⁴ In patients with esophageal varices the grading was grade 1 in 1 patient and grade 2 in 3 patients.¹⁵ In addition, 3 patients had severe portal hypertensive gastropathy.

Gastroesophageal variceal status is enumerated in Table 2. Gastric varices were the source of bleeding in 3 of 5 patients (60%) who presented with variceal bleeding (grade F2 in 1 patient and grade F3 in 2 patients). In the remaining 2 patients (40%), portal hypertensive gastropathy was the cause of bleeding.

On clinical evaluation, splenomegaly was present in 13 patients (38%); of these, 3 patients (23%) presented with bleeding. Two patients without splenomegaly also pre-

Table 2 Esophagogastric variceal status in variceal bleeding patients

Variceal status	Total no. of varices (n = 11)	Gastric varices (n = 7)	Esophageal varices (n = 4)
Bleeder	3 (27%)	3 (43%)	—
Nonbleeder	8 (73%)	4 (57%)	4

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