INTRODUCTION

Endoscopic injection sclerotherapy (EIS) has proven beneficial for the control of active bleeding and prevention of rebleeding of esophageal varices during long-term management.[1-3] However, this treatment is associated with a substantial complication rate.[4] Endoscopic variceal ligation (EVL) was newly developed in an attempt to provide a safer alternative.[5] The aim of this study is to compare the efficacy and safety of EIS versus EVL in the management of patients with esophageal varices.

MATERIALS AND METHODS

Sixty-one patients with esophageal varices were randomly allocated to receive either EIS or EVL therapy. Patients who were previously treated for esophageal varices were not included. All patients had liver cirrhosis: 33 patients by viral hepatitis B (EIS 15, EVL 18); 19 patients by viral hepatitis C (EIS 10, EVL 9); and 9 patients by alcohol (EIS 4, EVL 5). The hepatic functional reserve was classified by Pugh's modification of Child's scoring system,[6] and patients included Child A = 24 (EIS 11, EVL 13); Child B = 24 (EIS 12, EVL 12); Child C = 13 (EIS 6, EVL 7). When patients had an active bleeding history, therapy was performed either within the active bleeding stage (emergent case) or later than 24 h after bleeding had stopped (elective case). When patients had no active bleeding history, treatment was performed prophylactically (prophylactic case). By this definition, 15 patients (EIS 7, EVL 8) were classified as emergent cases, 36 (EIS 18, EVL 18) were elective cases, and 9 (EIS 4, EVL 5) were prophylactic cases. Endoscopic diagnosis was made at each session according to the recording of standard criteria of endoscopic findings of esophageal varices established by the Japanese Gastroenterological Endoscopy Society,[7,8] in which the form of varices is graded as F0 (absence of esophageal varices), F1 (straight), F2 (winding), or F3 (nodule-beaded). After evaluating the initial variceal status, either EIS or EVL was performed. EVL was done using an endoscopic single-band ligator with plastic esophageal overtube or multi-band ligator without using an overtube. Ligation was begun in the region of the gastroesophageal junction with subsequent ligatures applied more proximally, and therapy was repeated to effect multiple ligations of individual channels at separate levels in the distal esophagus. Up to 4-5 bands were placed per session, and the procedure was repeated every 2 weeks until variceal obliteration was achieved. EIS was done with the free-hand technique to thrombose the main variceal channels and eradicate the varices. During the course of treatment, patients were assessed for complications such as retrosternal pain, fever, dysphagia, ulcers, esophageal stricture, pleural effusion, pneumonia, or mediastinitis. If extensive ulceration or stricture was found during the therapy course, the treatment was withheld, although endoscopy was continued on a weekly basis. In patients with less extensive ulceration, treatment was delivered to an area not ulcerated. All patients received oral sucralfate, 1 g 4 times per day during treatment until eradication was achieved. After initial obliteration of varices, patients were followed-up at the outpatient department every 2-4 weeks and repeat endoscopy was performed every 3 months or for recurrent bleeding. The efficacy of treatment was assessed in terms of control of active bleeding, eradication of varices, number of session for variceal eradication, rebleeding episodes prior to and after eradication, and associated complications.

Table 1. Characteristics of Patients with Cirrhosis Treated by EIS or EVL

	EIS (n=29)	EVL (n=32)	P value
Mean age (years)	49.5	53.4	NS
Sex (M/F)	25/7	24/8	NS
Etiology of cirrhosis			NS
Hepatitis-B	15	18	
Hepatitis-C	10	9	
Alcoholic	4	5	
Child-Pugh score			NS
A/B/C	11/12/6	13/12/7	
Emergent/elective/prophylactic	7/18/4	9/18/5	NS
Variceal size F1/F2/F3	7/15/7	8/19/5	NS

RESULTS

Clinical characteristics of patients before treatment are shown in Table 1. No significant differences between the EIS and EVL groups were observed in age,