

Outcomes of endoscopic treatment for acute duodenal ectopic variceal bleeding: a single-center retrospective case series

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Abstract

Duodenal ectopic variceal hemorrhage is a rare portal hypertension complication that can easily be clinically missed. Once hemorrhage occurs, the rebleeding and fatality rates are high. There is no unified standard for its treatment, we reported the endoscopic treatment of eight patients admitted to our department between January 2014 and May 2021. Endoscopic band ligation and endoscopic cyanoacrylate injection were performed in five and three cases, respectively. The hemostasis success rate was 100%, no postoperative bleeding occurred, and there were no serious complications. Duodenal varices disappeared in four cases after 2-12 months. In conclusion, Endoscopic therapy is an ideal treatment method for acute duodenal ectopic variceal hemorrhage. (*Acta gastroenterol. belg.*, 2024, 87, 322-325).

Keywords: Duodenal varices, ectopic variceal hemorrhage, endoscopic therapy, liver cirrhosis.

Introduction

Duodenal varices (DV) are ectopic varices (ECV) and a rare complication of portal hypertension (PHT). It has been reported that DV-induced bleeding comprises approximately 17% of ectopic variceal hemorrhage (1). Bleeding is uncommon, but once rupture occurs, the fatality rate can be as high as 40% (2). Currently, the main treatment options for DV-induced bleeding include pharmacotherapy, endoscopic treatment, interventional therapy, and surgery. However, data on endoscopic treatment for ruptured DV bleeding are still limited due to its low incidence. This study aimed to retrospectively evaluate the efficacy and safety of endoscopic treatment for duodenal ectopic variceal bleeding caused by cirrhosis.

Case series

Eight patients were diagnosed with acute DV bleeding after liver cirrhosis, all of them were performed endoscopic treatment at the Endoscopy Center of the First Hospital of Jilin University between January 2014 and May 2021. The basic information and clinical characteristics are presented in Table 1. Among the eight patients, five had symptoms of hematemesis and melena, and the other three were hospitalized due to intermittent melena. There were six men and two women, with an average age of 60.4±11.3 years (range, 43-79). The causes of DV included post-hepatitis B cirrhosis (PHBC)

in three cases, post-hepatitis C cirrhosis (PHCC) in two cases, primary biliary cirrhosis in two cases, and autoimmune post-hepatitis cirrhosis in one case. One patient with PHBC complicated by primary liver cancer received interventional therapy, and one with PHCC had a history of choledochojejunostomy. One patient had Child-Pugh grade A (12.5%), three had grade B (37.5%), and four had grade C (50.0%).

Among all included patients, two underwent endoscopic band ligation (EBL) for esophageal varices (EV), which disappeared after treatment, the rebleeding was due to newly discovered DV 3 to 6 months later. One patient with esophagogastric varices (EGV) underwent esophageal variceal ligation (EVL) and endoscopic injection of cyanoacrylate (EIC) into gastric fundus varices. Endoscopic examination and treatment were performed within 12 h after admission while the patients were receiving supportive medical care, including fluid resuscitation, reduction of portal hypertension pressure, such as somatostatin and analogues (e.g. octreotide), inhibition of gastric acid secretion, and hemodynamic monitoring. Antibiotics should be given to prevent infection if bleeding was severe or EIC was given. To prevent the occurrence of ectopic embolism, If the condition permitted, the patients underwent abdominal enhanced computed tomography before treatment to exclude the presence of venous shunts. But there was a special case that one patient with PHBC with the collateral circulation of the portal vein open, accompanied by a splenorenal shunt. Periduodenal collateral circulation was open and connected to the right renal vein. This patient experienced rebleeding after coil-assisted retrograde transvenous obliteration (CARTO). Written informed consent was obtained from all patients or their family members for endoscopic examination and treatment. All patients were administered intravenous anesthesia, and experienced endoscopists performed the treatments. Radial endoscopic ultrasound (EUS), which can differentiate varices from other submucosal lesions

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Table 1. — Baseline data and clinical characteristics

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All varices were located in second portion of duodenum (D2). The morphology was nodular (n=2), earthworm (n=4), and mass (n=2). The largest diameter was approximately 2.0 cm, with an average of 1.1 ± 0.5 cm. Erythema was seen on the variceal surface in seven cases, and white thrombus was seen on the variceal surface in one patient. EBL was performed in five cases (62.5%), and EIC was performed in three cases (37.5%). The hemostasis success rate was 100%, and no postoperative bleeding occurred. No serious complications, such as infection, perforation, ectopic embolization, or hepatic encephalopathy, occurred. One patient had a fever within 24 h postoperatively, with a temperature of 37.7°C. No DV rebleeding occurred during follow-up. One patient died of hepatic encephalopathy after 38 months.

All patients underwent upper endoscopy or EUS examination one month after endoscopic treatment to observe the degree of variceal relief and determine whether a second treatment was needed. According to the severity of the varices, retreatment was performed until the varices disappeared. None of the patients received a second treatment, DV disappeared in four cases (50.0%) after 2-12 months of endoscopic treatment; Typical cases are shown in Figures 1-2.

Discussion

This study reported 8 cases of gastrointestinal bleeding (GB) caused by ECV occurred in second portion of duodenum. ECV refer to varices located in areas other than the esophagus and stomach, comprising 2-5% of all variceal bleeding (4). The risk of ECV bleeding is reported to be four times higher than that of EV, and once bleeding occurs, it is not only massive but also highly lethal (5). Besides the duodenum, ECV can also occur in the jejunum, ileum, colorectum, stoma, peritoneum, abdominal wall and genitourinary system (4,6). As for ECV in the duodenum, it is reported that the duodenal bulb is more common in European and American countries (7), while the second portion of duodenum is more common in Asian countries (8). All lesions sites in this study were consistent with previous reports. We conducted the current study because of the low incidence, high risk, and high mortality of DV.

DV is a rare complication of PHT, and its main cause is liver cirrhosis induced by different factors, in addition to splenic vein occlusion caused by pancreatitis, tumors, and thrombosis or portal vein occlusion due to thrombosis, infection, and tumors (9). In this study, all DV bleeding were associated with cirrhosis. A study reported that more than 69% of cases of DV were often accompanied by EV, which needed to be confirmed by repeated endoscopic examinations (10). Other studies have reported that DV can occur after EVL and is caused by spontaneous portal shunting. In this study, DV alone comprised 62.5% of the cases. Three patients had EV or

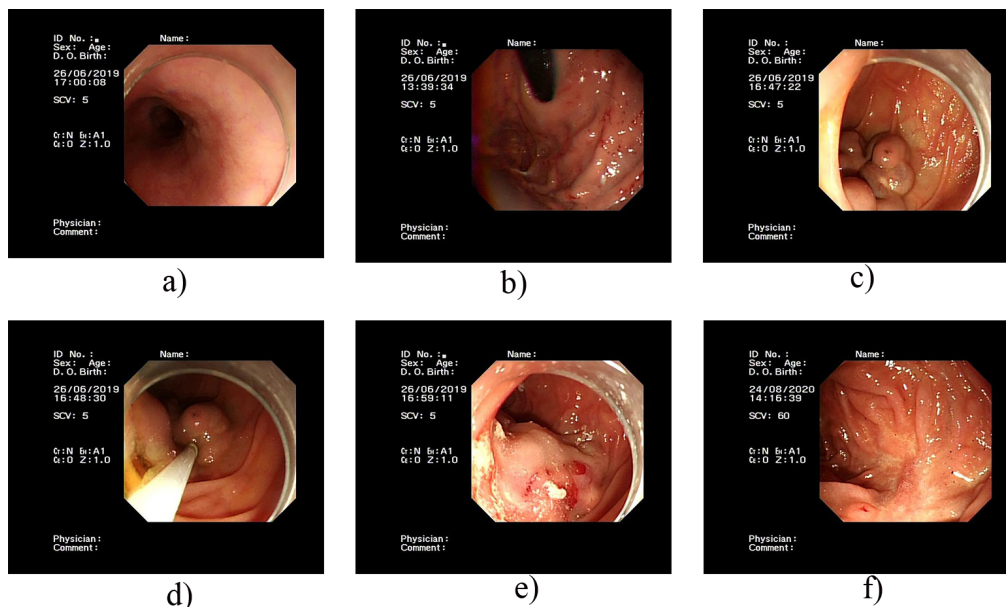


Figure 1.

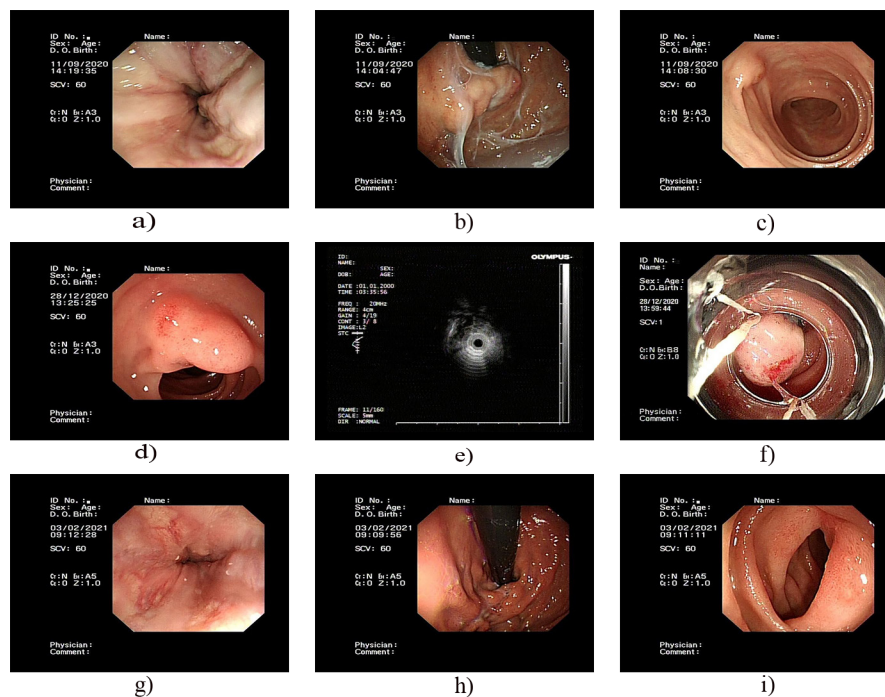


Figure 2.

EGV in the past and had undergone EVL and/or EIC. Wan et al. analyzed the risk factors of ECV bleeding and found that age <55 years, superficial erythema, and DV significantly increased ECV bleeding (11). Adriana et al. found that ECV bleeding was unrelated to esophageal or gastric variceal bleeding (4). Owing to the low incidence of DV bleeding, cases of GB in clinical practice are not easily associated with DV bleeding. The diagnosis of DV mainly relies on endoscopy, CT, and angiography. DV can be easily missed due to the limited endpoint of esophagogastroduodenoscopy in conventional intubation and increased attention toward EGV from endoscopists if the patient has PHT. In recent years, with the progress

in endoscopic technology, particularly EUS, capsule endoscopy, enteroscopy, diagnosis of DV could be improved.

As DV treatment is limited to case reports and small-sample case studies, no clinical guidelines or expert consensus have been formed, causing certain challenges to clinical treatment. Management for DV bleeding include endoscopic, interventional, and surgery based on drug treatment. The success rate of treatment depends on the hospital's available resources and doctors' experience. Endoscopic treatment includes EBL, EIC, endoscopic injection sclerosis (EIS), hemostatic clips (12), and combined therapy. Combined treatment can

be performed for large or complex lesions, including endoscopic combined treatment or endoscopy combined with interventional therapy. EBL is considered the first-line treatment for EV because of its rapidity, effectiveness, and safety. It has also been proven to be effective in the treatment of DV (12). However, because of the anatomy of the duodenum and the DV vessels originating from the deep serosal layer, EBL may not be able to ligate the trophoblast vessels adequately. Just like large size of fundal gastric varices, EIC can better embolize deeper submucosal varices (13). Moreover, EBL is limited to DV with varices less than 15 mm in diameter. In this study, EBL was performed in five patients, with variceal diameters ranging from 6 to 10 mm, and no postoperative rebleeding occurred in any of the patients. EIS for DV has also been reported to be effective in hemostasis, but since the duodenal wall is thin, there is a risk of perforation (14). EIC can play a role in rapid blood clotting and hemostasis, particularly in nodular and large size of duodenal ectopic varices. Studies have shown that EIC has a higher hemostasis rate and a lower rebleeding rate than EBL and EIS (14). However, there is also a risk of ectopic embolism. In this study, EIC was administered to varices with a diameter >15 mm or large nodular DV. The curative effect was satisfactory, the hemostasis success rate was 100%, and no serious complications occurred. In 2021, a meta-analysis evaluated the efficacy and safety of EBL, EIS, and EIC for DV bleeding, the results showed that the initial hemostasis and treatment success rates of EIC were better than those of the other two treatments (15).

Interventional therapy is generally considered to be an option when endoscopic therapy fails, including transjugular intrahepatic portosystemic shunt (TIPS), balloon retrograde transvenous obliteration (BRTO) (13), and some new interventional technologies, such as CARTO, microvascular plug (MVP) and percutaneous transsplenic embolization (PTE). However, in our study, one patient was administered EIC for rebleeding after CARTO due to the shunt between the duodenal vein and right renal vein, which was related to insufficient vascular embolization or an insufficient decompressive effect of portal hypertension by CARTO. Therefore, endoscopic therapy can also be a supplementary treatment when interventional therapy fails. In addition, EUS-guided coil injection with or without cyanoacrylate has been reported to be useful for DV bleeding who have failed or were poor candidates for standard endoscopic, surgical, or interventional radiologic therapies (12).

In this study, all patients achieved satisfactory results during the endoscopy follow-up period, and DV disappeared completely in four patients. The reasons for these satisfactory results were analyzed as follows: the experience of endoscopists was particularly important in diagnosing lesions, particularly for the recognition and

differential diagnosis of duodenal lesions; the obtained results were also due to subsequent multidisciplinary collaborative treatment because the control of the primary disease effectively prevented the progression and rebleeding of DV.

However, the incidence of DV bleeding is low, the corresponding clinical data are limited, and there is a lack of large-sample data comparisons. It is expected that further large-scale studies or multicenter randomized controlled studies will be conducted to propose the best and most optimized treatment methods.

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