Gastric Varices and Ectopic Varices

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Introduction

Gastric Varices (GV) are present in approximately 20% of cirrhotic patients [1]. GV may bleed less frequently than Esophageal Varices (EV); however, rupture of GV is associated with more severe hemorrhage, higher mortality, and a greater risk of rebleeding [1]. GV can be categorized into four types based on Sarin's classification described in Chap. 39 [2]. GOV1 shares similar vascular anatomy with EV and follows similar management recommendations. In patients with IGV2, left-sided regional portal hypertension secondary to splenic vein obstruction should be considered [3].

Hemodynamic Features of GV

Imaging evaluation of GV is very important to guide treatment. Generally, GV may drain into the systemic circulation via the esophageal and paraesophageal varices, the left inferior phrenic vein (IPV), or both [4]. The left IPV can terminate inferiorly

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into the left renal vein, transversely into the hepatic vein or inferior vena cava, or directly or ascendingly into the pericardiophrenic vein. In most cases, GOV1 drain into the esophageal and paraesophageal varices, IGV1 drain via the IPV, and GOV2 drain via both ways.

Although the presence of large collaterals may counteract the increased Portal Pressure Gradient (PPG), it cannot avert bleeding from GV. Unlike EV, patients with GV can still bleed when the PPG is below 12 mmHg. A study comprising 292 patients found that patients presenting with GV bleeding had a lower PPG than patients who bled from EV (15.8 vs. 21.4 mmHg) [5]. Therefore, decompression of GV using TIPS or surgical shunt may not be as efficacious as in patients with EV.

Management of Acute Gastric Variceal Bleeding

The medical management of acute gastric variceal bleeding does not differ from EV. In those with GV, once the patient is hemodynamically stable, cross-sectional imaging, preferably contrast-enhanced (CT or MRI) should be considered to evaluate the patency of the portal venous system, screen for liver malignancy, and detect the presence of large portosystemic collaterals. Endoscopic techniques including band ligation, glue injection, and endoscopic ultrasound-guided injection are described in Chap. 39.

Transjugular Intrahepatic Portosystemic Shunt (TIPS) creates an artificial shunt between the hepatic and portal veins in the liver to decompress the portal venous system. It is a well-established effective interventional procedure to control acute variceal bleeding. The use of early or preemptive TIPS (pTIPS) within 72 h (ideally <24 h) in patients with high risk of failure and/or rebleeding has proven to reduce treatment failure and improve survival; however, patients with acute bleeding from GOV2 & IGV1 have not been specifically evaluated [6]. Two ongoing randomized controlled trials evaluating the efficacy of pTIPS in GOV2 & IGV1 (NCT02364297 & NCT03705078) will help answer this question in the near future.

As in EV, failure to control bleeding despite combined pharmacological and endoscopic therapy is best managed by salvage PTFE-covered TIPS. In achieving initial hemostasis for acute GV bleeding, TIPS is equally effective as for EV bleeding. However, GOV1 and IGV1 may rebleed despite adequate decompression following TIPS (post-TIPS PPG $\leq$ 12 mmHg), particularly in cases when the portal flow remains diverted to collaterals. The reduced efficiency of TIPS is partially attributed to the presence of well-developed low-resistance large collaterals, or to the fact that the afferent veins are distant from the intrahepatic shunt. Embolization of GV has been proposed to increase the efficiency of the TIPS procedure (Fig. 44.1). A previous study found that TIPS combined with embolization could lower the risk of rebleeding compared with TIPS alone (13.4% vs. 28% at 2 years) [7] and should be considered in selected cases.

A standard Balloon-occluded Retrograde Transvenous Obliteration (BRTO) procedure involves occlusion of the draining veins of large collaterals, usually

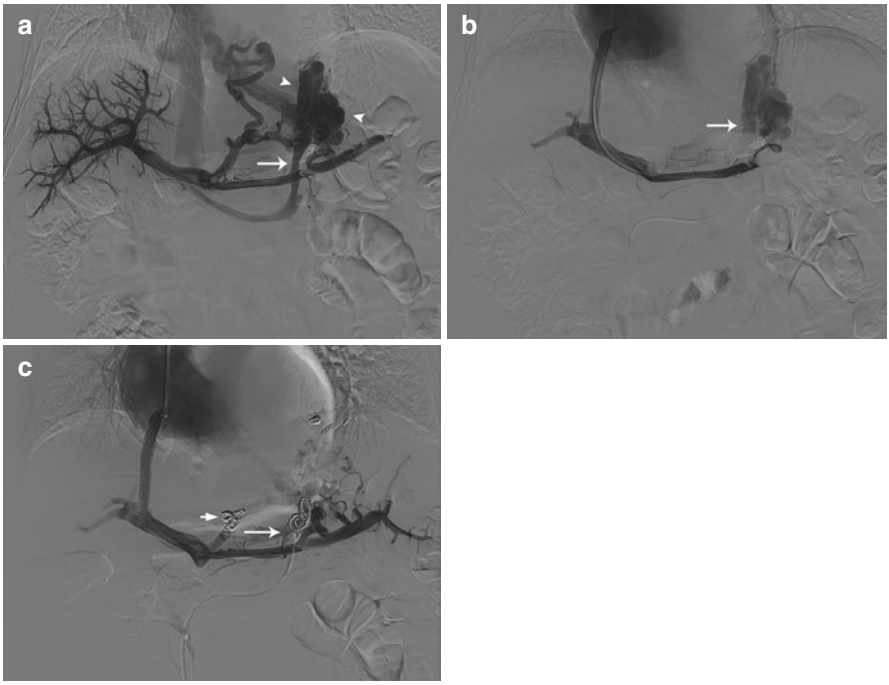

Fig. 44.1 (**a**) Direct portal venogram showing gastric varices (GV) (arrowheads) and the Gastrorenal Shunt (GRS; arrow). (**b**) A second venogram revealed that contrast emptied into the GRS (arrow) despite the TIPS being patent. (**c**) GV was not visualized after balloon-occluded retrograde transvenous obliteration (long arrow) and antegrade embolization with coils (short arrow)

gastrorenal shunt or gastrocaval shunt, followed by the injection of a sclerosing agent directly into the GV (Fig. 44.2). The concept of BRTO was first introduced by Olson et al. in 1984, then further developed in Japan by Kanagawa and his colleagues [8, 9]. BRTO has gained acceptance in Japan and Korea, and more recently in the USA and China. BRTO should be considered as a salvage choice for the management of failure to control or recurrent GV bleeding. Several studies have demonstrated that the rebleeding rate following salvage BRTO is generally less than 5% with an eradication rate of GV as high as 97.9% [10].

Aggravation of EV and ascites following BRTO is one of the major concerns due to the increase in portal hypertension following BRTO. The rates of aggravation of EV ranged from 9.8% to 72.2% with a pooled rate of 33.3% [11]. The high level of variance was probably due to the different degrees of awareness of the possibility of EV aggravation and to the different timeframes of follow-up endoscopy. Improved follow-up strategy, prophylactic ligation alone or in the combination of beta-blockers may reduce the occurrence of the EV and the risk of bleeding and should be considered.

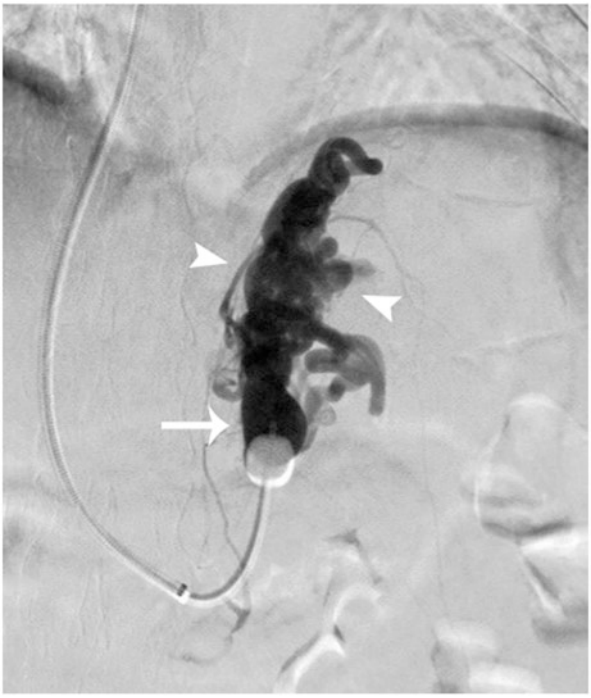

Fig. 44.2 The gastric varices (arrowheads) were filled with polidocanol foam after the balloon was inflated to stop the outflow of the gastrorenal shunt (arrow)

Ectopic Varices

Ectopic varices are dilated porto-portal or portosystemic collateral veins that occur outside the common pathologic variceal sites and constitute 2% to 5% of all variceal bleeding [12]. Ectopic varices can be caused by general or regional portal hypertension with or without splanchnic venous obstruction. A nationwide questionnaire survey in Japan collected 173 cases of ectopic varices and the most frequent sites were rectum (44.5%) and duodenum (32.9%) [13]. The management of ectopic variceal bleeding is challenging as most of the current knowledge comes from case reports and small case series, which include endoscopic treatments (endoscopic band ligation, injection sclerotherapy), embolization using coils or plugs, BRTO, TIPS, and surgical options. Imaging evaluation of ectopic varices and the presence of large collaterals and splanchnic venous thrombosis are very important for treatment planning. Either endovascular or endoscopic treatment should be considered in patients with ectopic varices and treatment should be individualized.

Currently, endoscopic treatment is one of the most common modalities for the management of bleeding from ectopic varices. Endoscopic band ligation, sclerotherapy, or glue injection are all treatment options, and their use depends on the location of varices and local expertise. Despite the rarity of cases, endoscopic modalities for the control of acute ectopic variceal bleeding achieve a high initial hemostasis rate. Rebleeding of ectopic varices may occur and can be treated successfully with additional endoscopic therapy or endovascular treatment.

Percutaneous embolization of ectopic varices is a safe and technically easy treatment option. Coil, plug, and liquid embolization material including glue and sclerosing agents have been reported [12]. Transvenous obliteration via antegrade or retrograde approach may be more advantageous in obliterating complex, multichanneled vascular structures. Still, embolization without decompression of portal hypertension or recanalization of the occluded vein may be less effective to prevent the reoccurrence of ectopic varices or rebleeding.

TIPS is a reliable option, as the underlying cause of bleeding ectopic varices is elevated portal pressure. However, TIPS may be less effective in decompressing ectopic varices with a rebleeding rate ranging from 11% to 37% [14, 15] depending on the localization.

Summary

In conclusion, gastric and ectopic varices in different locations are associated with various hemodynamic features. They should better be managed by a multidisciplinary team with multiple treatment options available after proper radiologic and endoscopic evaluation. Due to the limited number of high-quality studies and the scarcity of cases, strong evidence-based recommendations cannot be made. More randomized controlled trials are needed to better determine the priority of treatments in a particular subset of the population.

References

1. Garcia-Tsao G, Abraldes J, Berzigotti A, Bosch J. Portal hypertensive bleeding in cirrhosis: risk stratification, diagnosis and management—2016 practice guidance by the American Association for the Study of Liver Diseases. Hepatology. 2017;65(1):310–35. https://doi.org/10.1002/hep.28906.
2. Sarin SK, Lahoti D, Saxena SP, Murthy NS, Makwana UK. Prevalence, classification and natural history of gastric varices: a long-term follow-up study in 568 portal hypertension patients. Hepatology. 1992;16(6):1343–9.
3. Luo X, Nie L, Wang Z, Tsauo J, Tang C, Li X. Transjugular endovascular recanalization of splenic vein in patients with regional portal hypertension complicated by gastrointestinal bleeding. Cardiovasc Intervent Radiol. 2014;37(1):108–13.
4. Kiyosue H, Ibukuro K, Maruno M, Tanoue S, Hongo N, Mori H. Multidetector CT anatomy of drainage routes of gastric varices: a pictorial review. Radiographics. 2013;33(1):87–100.
5. Tripathi D, Therapondos G, Jackson E, Redhead DN, Hayes PC. The role of the transjugular intrahepatic portosystemic stent shunt (TIPSS) in the management of bleeding gastric varices: clinical and haemodynamic correlations. Gut. 2002;51(2):270–4.
6. Garcia-Pagan JC, Caca K, Bureau C, Laleman W, Appenrodt B, Luca A, et al. Early use of TIPS in patients with cirrhosis and variceal bleeding. N Engl J Med. 2010;362(25):2370–9.
7. Yu J, Wang X, Jiang M, Ma H, Zhou Z, Yang L, et al. Comparison of transjugular intrahepatic portosystemic shunt (TIPS) alone and combined with embolisation for the management of cardiofundal varices: a retrospective study. Eur Radiol. 2019;29(2):699–706.
8. Olson E, Yune HY, Klatte EC. Transrenal-vein reflux ethanol sclerosis of gastroesophageal varices. AJR Am J Roentgenol. 1984;143(3):627–8.

9. Kanagawa H, Mima S, Kouyama H, Gotoh K, Uchida T, Okuda K. Treatment of gastric fundal varices by balloon-occluded retrograde transvenous obliteration. J Gastroenterol Hepatol. 1996;11(1):51–8.
10. Mukund A, Rangarh P, Shasthry SM, Patidar Y, Sarin SK. Salvage balloon occluded retrograde transvenous obliteration for gastric variceal bleed in cirrhotic patients with endoscopic failure to control bleed/very early rebleed: long-term outcomes. J Clin Exp Hepatol. 2020;10(5):421–8.
11. Park JK, Saab S, Kee ST, Busuttil RW, Kim HJ, Durazo F, et al. Balloon-occluded retrograde transvenous obliteration (BRTO) for treatment of gastric varices: review and meta-analysis. Dig Dis Sci. 2015;60(6):1543–53.
12. Saad WE, Lippert A, Saad NE, Caldwell S. Ectopic varices: anatomical classification, hemodynamic classification, and hemodynamic-based management. Tech Vasc Interv Radiol. 2013;16(2):158–75.
13. Watanabe N, Toyonaga A, Kojima S, Takashimizu S, Oho K, Kokubu S, et al. Current status of ectopic varices in Japan: results of a survey by the Japan Society for Portal Hypertension. Hepatol Res. 2010;40(8):763–76.
14. Haskal ZJ, Scott M, Rubin RA, Cope C. Intestinal varices: treatment with the transjugular intrahepatic portosystemic shunt. Radiology. 1994;191(1):183–7.
15. Vangeli M, Patch D, Terreni N, Tibballs J, Watkinson A, Davies N, et al. Bleeding ectopic varices--treatment with transjugular intrahepatic porto-systemic shunt (TIPS) and embolisation. J Hepatol. 2004;41(4):560–6.