

Ectopic variceal bleeding due to portosystemic shunt via dilated mesenteric veins and a varicous left ovarian vein : case report and literature review of ectopic varices

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Abstract

Ectopic varices are dilated portosystemic venous collaterals located outside of the gastro-esophageal region. Whereas they are common endoscopic findings in patients with portal hypertension, ectopic variceal bleeding is rather rare and accounts for only 1 to 5 % of all variceal bleedings. The rectum and the duodenum are the most common sites for ectopic varices, but they can be present along the whole intestinal tract and neighborhood. At present, there is no consensus well established on diagnostic workup for ectopic variceal bleeding and their therapeutic strategies. Further investigation of large series or randomized-controlled trials is needed because nowadays most of the data available are based on case reports. We report here an unusual case of an ectopic variceal bleeding, presented as an acute small intestine bleeding, due to a portosystemic shunt via dilated mesenteric veins and a varicous left ovarian vein in a patient with alcoholic cirrhosis. The involvement of an ovarian vein in ectopic variceal bleeding is rarely described. (*Acta gastroenterol. belg.* 2017, 80, 388-395).

Key words : Ectopic varices, ovarian vein, portal hypertension, intestinal bleeding, cirrhosis.

Abbreviations : ICU, intensive care unit EGD, esofago-gastroduodenoscopy – CT, computed tomography – PHT, portal hypertension – EV, ectopic varices – TIPS, transjugular intrahepatic portosystemic shunt – MRI, magnetic resonance imaging – B-RTO, balloon occluded retrograde transvenous obliteration – MELD, model of end stage liver disease

CASE REPORT

A 53-year-old woman was admitted at a psychiatric facility because of alcohol abuse. The patient was found at night lying unconsciously on the floor in a large pool of blood. She was urgently transferred to the hospital under medical assistance where she was stabilized and intubated and afterwards transported to the Intensive Care Unit (ICU). Her medical history consisted of an important addiction of alcohol with diagnosis of alcoholic cirrhosis in 2005 and schizophrenia. A physical examination at admission revealed a tension of 112/63 mmHg, a pulse of 83 beats per minute and an oxygen saturation ratio of 99% with a FiO₂ of 21%. Glasgow Coma Scale was 7/15. The abdomen was slightly tender. Rectal digital examination showed massive melena mixed with dark blood clots.

Laboratory analyses demonstrated a deep anaemia (a serum hemoglobin of 5 g/dl [11.7-16.1]), a mild thrombopenia (blood platelets 141 x 1000/mm³ [150-

400]), a decreased prothrombin time (68%), a normal kidney function (serum creatinine level 0.93 mg/dl [0.5-0.9]), no signs of inflammation, normal liver enzymes and a hyperammonia (356 microgram% (11-51)).

An urgent esofagogastroduodenoscopy (EGD) was performed bedside at the ICU after stabilization of the patient. Neither an active bleeding nor potential bleeding source could be found. A left colonoscopy immediately followed showed a massive active lower intestinal bleeding, but again the site of bleeding could not be discovered.

A contrast-enhanced computed tomography (CT) scan of the abdomen was performed shortly after (Fig. 1-3). This examination demonstrated advanced cirrhosis with signs of portal hypertension (PHT), i.e. splenomegaly, edema in the mesenteric fat, some ascites and varices. Furthermore a spontaneous portosystemic shunt was demonstrated, occurring by connections between mesenteric veins and a varicous left ovarian vein (Fig. 1).



Fig. 1. — CT-angiographic reconstructions demonstrating a broad portosystemic shunt via dilated mesenteric and ovarian veins, communicating with each other.

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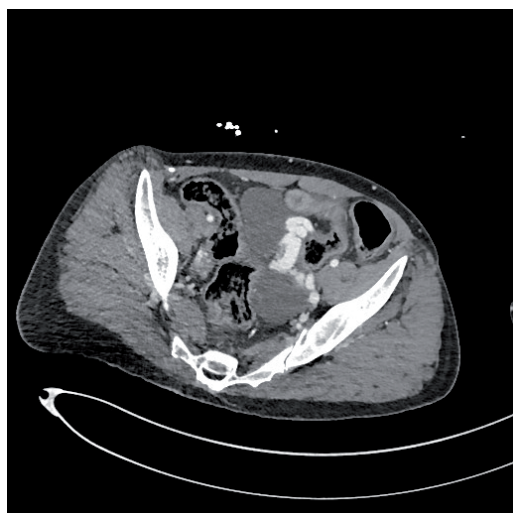


Fig. 2. — CT image shows a dilated and varicose left ovarian vein, communicating with dilated mesenteric veins (not shown).

These ectopic varices (EV) were in close contact with the submucosa of a dilated segment of the ileal part of the small intestine (Fig. 3). In addition, CT demonstrated profound active intestinal bleeding caused by part of these ileal varices (Fig. 3).

During the short stay at the ICU, there was a hemodynamic stabilization of the patient with a spontaneous cessation of the intestinal bleeding, observed by meaning of stabilization of the serum hemoglobin value and spontaneous resolution of melena. In contrast, there was a progressively and rapid neurological deterioration due to post-hypoxic cerebral edema with refractory epileptic insults. Therefore we were not able to perform any endoscopic interventional treatment, interventional radiological procedures (transjugular intrahepatic portosystemic shunt (TIPS) e.g.) nor surgical treatment to manage the ectopic varices. The patient unfortunately died due to neurological complications.

LITERATURE REVIEW

We report here an unusual case of an ectopic variceal bleeding, presented as an acute small intestine bleeding, due to a portosystemic shunt via dilated mesenteric veins and a varicose left ovarian vein as a sign of PHT in the setting of alcoholic cirrhosis. A literature search on PUBMED from 1958 to 2016 using keywords ectopic varices showed 186 hits but the involvement of the ovarian veins was only in three case reports described (1-3).

Pathogenesis and etiology

The portal venous system is a complex and extensive tract that drains blood from parts of the gastrointestinal system, the pancreas and the spleen to the liver. The gastrointestinal drainage occurs from the lower part of the esophagus to the upper part of the anal canal. These veins

arise from capillary complexes that form a submucosal venous plexus in the wall of the gastrointestinal system and drain into short veins penetrating the muscular intestinal layer subsequently into major veins, forming an extensive communicating venous network.

Intestinal varices are defined as dilated blood vessels in this network, occurring in case of increased portal pressure. Deep intrinsic veins in the mucosa of the gastrointestinal tract will enlarge and become tortuous variceal channels. Also an increase in number and size of the venous vessels in the lamina propria will occur (4). They may shunt blood from the portal circulation to the systemic venous circulation, if communication between varicose portal veins and systemic veins occur. The most common sites are the esophagus and the gastric fundus. Ectopic varices are considered as dilated portosystemic collateral veins along the digestive tract other than the esophageal and gastric region. The duodenum, small intestine, colon, rectum, peritoneum, abdominal wall,

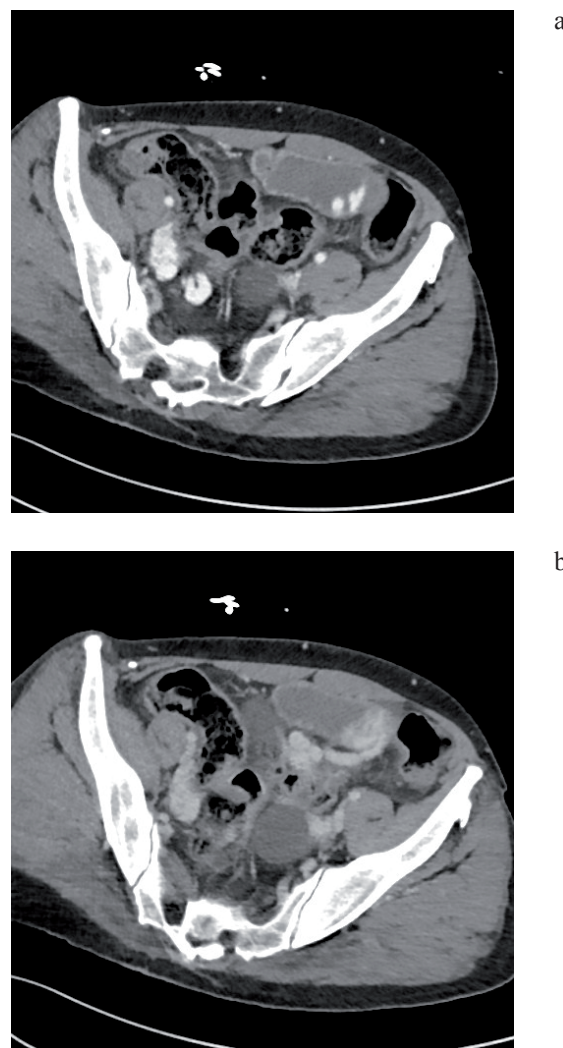


Fig. 3. — Computed tomography (CT) image demonstrating contrastleakage in a dilated segment of the small intestine (a,b). (b) CT image in the portal-venous phase demonstrating further intraluminal dilution of the intraluminal contrastleakage as an indicative sign of an acute and active intestinal bleeding.

retroperitoneal space and even the ovary (like in our case) are potential sites of ectopic varices.

Luminal ectopic varices (within the gastrointestinal tract lumen) are distinguished from non-luminal ectopic varices (elsewhere in the abdominal cavity or the pelvis) and the latter can be more difficult to detect (5). The most frequent sites of ectopic varices are the rectum (44.5 %) and the duodenum (32.9 %). The ovaries, like in this case report, are an infrequent site for ectopic varices (5-6). These findings were confirmed by Norton *et al.* in a review of 169 cases of bleeding due to ectopic varices (7). Whereas ectopic varices are relatively common findings during endoscopy in PHT, ectopic variceal bleeding however are rare and counts for only 1 to 5 % of all variceal bleeding episodes (1,7,8).

In normal and healthy conditions, portosystemic collaterals are anatomically present but the portal bloodstream flows by preference in a hepatopetal manner because of their higher vascular resistance, their significantly smaller size and due to the low-pressure in the portal venous system. In case of severe portal hypertension, blood can be shunted around the liver through these collaterals, their caliber will consequently increase due to the augmented venous pressure and will shunt the venous drainage from the bowel in the systemic venous return. These shortcuts are encouraged by the fact that the portal vein contains no valves.

Clinical presentation

Ectopic variceal bleeding can be life threatening with a high mortality rate (5,9). At the other end of the spectrum of clinical presentation, ectopic varices can be accidentally discovered during investigation for positive faecal occult blood testing, melena or obscure anaemia. But the way of clinical presentation of ectopic varices can vary in a multitude of ways due to their localization (8). The most recognized clinical presentations of ectopic variceal bleeding are overt gastrointestinal bleeding of obscure origin, occult gastrointestinal bleeding, haematemesis, haematochezia, haemorrhagic pleural effusion, haemoperitoneum, iron-deficiency anaemia, vaginal bleeding or accidental findings at autopsy (Table 1) (5).

Diagnosis

Due to the wide spread localization of ectopic varices, diagnostic strategies varies widely (Table 2). First of all, the presence of ectopic varices should always be considered in patients with stigmata of portal hypertension and in patients with known cirrhotic liver disease presenting with one of the above described symptoms. Because ectopic varices are most frequently localized in the rectum and the duodenum, urgent endoscopy (EGD or ileocolonoscopy) is the first diagnostic strategy that has to be considered, especially in patients presenting with symptoms of haematemesis or hematochezia. Intravenous contrast enhanced CT is

the next step to perform if endoscopy fails to identify the bleeding source (5,8,10-12).

Spiral CT scan is optimally performed in multiple phases. Non-contrast scan is followed by scanning the entire abdomen in the arterial and portal venous phase of contrast perfusion. Furthermore, in case of suspected intra-abdominal hemorrhage it is important that the patient is not prepared with a positive (gastrografin, barium) peroral contrast, otherwise intraluminal contrast extravasation can be easily missed. Elective capsule endoscopy is successful in detecting the presence of small bowel varices, however without any therapeutic potential in acute bleeding (5,8,13,14). Color Doppler ultrasound is another technique that has proven to be helpful in the diagnosis. However, topography of the extent of the varices is best demonstrated by CT or Magnetic Resonance Imaging (MRI) (5,8,15-18). Double balloon enteroscopy is useful as well in the diagnosis as in the treatment of ectopic varices but is locally not always available (5,8,19,20). Other imaging techniques like technetium TC-99m red blood cell scintigraphy, contrast-enhanced MRI and endoscopic ultrasound have proven their usefulness in detecting ectopic varices (5,8,21-24).

Management of variceal bleeding

Currently, there are no guidelines nor randomized trials available concerning the treatment of ectopic variceal bleeding because most of the literature consist of case reports and case series of small numbers (1,5,8,24-43). Therefore, treatment should be guided

Table 1. — Clinical presentation of ectopic variceal bleeding

Overt gastrointestinal bleeding
Occult gastrointestinal bleeding
Haematemesis
Haematochezia
Melena
Haemorrhagic pleural effusion
Haemoperitoneum
Iron-deficiency anaemia
Vaginal bleeding
Accidental findings at autopsy

Table 2. — Diagnostic tools

Endoscopy	
	Esophagogastroduodenoscopy
	Ileocolonoscopy
	Double balloon enteroscopy
	Endoscopic ultrasound
	Videocapsule endoscopy
Radiological imaging	
	Intravenous contrast enhanced computed tomography
	Color doppler ultrasound
	Intravenous contrast enhanced magnetic resonance imaging
Nuclear imaging	
	Technetium TC-99m red blood cell scintigraphy

Table 3. — Therapeutic options in the treatment of ectopic variceal bleeding

Initial management	
	Resuscitation, stabilisation
	Urgent localization of the bleeding site
	Consider urgent transfer to tertiary referral center
Pharmacological treatment	
	Fluid resuscitation
	Vasoactive drugs
Endoscopic interventional treatment	
	Injection sclerotherapy
	Band ligation
Surgical treatment	
	Direct surgical action or local devascularization
	Indirect surgical action or chirurgical development of non-selective portosystemic shunts
Interventional radiological treatment	
	Embolization therapy
	Transjugular Intrahepatic Portosystemic Shunt
	Balloon Occluded Retrograde Transvenous Obliteration

by several parameters : presentation of the bleeding (massive, obscure ... bleeding), localization of the bleeding ectopic varices, diagnostics and therapeutic tools that are locally available and the underlying cause of PHT. The treatment of ectopic variceal bleeding is in the first place a multidisciplinary team approach guided by the knowledge of gastroenterologists, hepatologists, intensivists, surgeons and interventional radiologists (Table 3) (5,8).

Initial management of ectopic variceal bleeding

The first approach in the treatment of an ectopic variceal bleeding is similar to any other acute gastrointestinal bleeding, namely resuscitation, stabilization of the patient, urgent localization of the bleeding site or source and suitable direct therapy. In patients with suspected ectopic variceal bleeding, an urgent transfer to a tertiary referral center has to be considered as soon as possible.

Pharmacological treatment

Pharmacological treatment includes both fluid resuscitation and the use of vasoactive drugs such as terlipressin or octreotide. It is known that these vasoactive drugs are beneficial in bleeding from esophagogastric varices because of their capability to reduce splanchnic blood flow and variceal pressure (5,28,44-45). Whether the role of vasoactive agents in the initial treatment of ectopic variceal bleeding is the same as in bleeding from esophagogastric varices is current not well established.

When we address to the role of using b-blocking agents in the primary and secondary prophylaxis of ectopic variceal bleeding, again, we are faced with limited data, but their efficacy seems plausible, especially after other therapeutic management (endoscopic, interventional radiological or surgical therapy) (5,46-48).

Endoscopic interventional treatment

Due to the fact that many ectopic varices are within reach with endoscopic strategies, all patients with suspected ectopic variceal bleeding should undergo emergency endoscopy as a first-line investigation and if possible, depending on their localization, subsequent specific endoscopic hemostatic therapy should be attempted. Review of the literature, once again based on limited data obtained from case reports, reveals three potential endoscopic treatment modalities : injection sclerotherapy, band ligation or their combination.

Injection sclerotherapy

Several case reports have reported successful treatment of ectopic varices in the duodenum, jejunum, colon, rectum and also stomal varices by injection sclerotherapy with histoacryl, cyanoacrylate, ethanolamine oleate, sodium tetradecyl sulfate, polidocanol or thrombin (4,29,49-60).

Band ligation

Another endoscopic therapeutic modality is band ligation. However, most studies are based on case reports and involve mostly the duodenum and rectum, probably due to their reachability by standard endoscopy (4,5,7,8,28,61-69). However, there are some disadvantages with this technique in the control of ectopic varices. It has been recommended to limit the use of band ligation to ectopic varices with a diameter less than 15 mm because of the risk of developing a wide defect in the varix by not banding the entire varix (4,5).

Interventional radiological procedures

When endoscopy fails to reach and treat an ectopic variceal bleeding, interventional radiological techniques have to be considered as the next step prior to surgery. These procedures includes embolization, shunt creation procedures such as TIPS and shunt occlusion procedures such as balloon occluded retrograde transvenous obliteration (B-RTO).

Embolization therapy

Direct percutaneous access to varices is possible by interventional radiological techniques with subsequent injection of different kind of materials like thrombin, gel foam, steel coils, collagen or autologous blood clot (70). Embolization therapy does not affect directly the bleeding problem, but will occlude the feeding vessel of the bleeding ectopic varix and so it can be an indirect

treatment of ectopic variceal bleeding with success rates ranging from 80% up to 94% (5,8,71,72). Because this technique does not resolve PHT as the origin of the ectopic varices neither decompress the portal venous system, high rebleeding rates up to 65% within 5 months are reported and repeating of the procedure or subsequently TIPS is often required (5,8,71). Most evidence for this technique of embolization has been obtained from studies of treatment of esophagogastric variceal bleeding (70-72) and study of case reports in ectopic variceal bleeding (73-83).

Transjugular intrahepatic portosystemic shunt (TIPS)

Because embolization therapy does not resolve the problem of PHT and decompression of the portal venous system is mostly needed, TIPS is a better alternative with a good control of ectopic variceal bleeding, but with an increased risk of liver decompensation and developing hepatic encephalopathy and the procedure itself is more complex (4,5,8,28,84-91). The decision making for a TIPS intervention is far more important in the situation of intrahepatic portal hypertension (focal venous obstruction is not a good reason for TIPS) and should be depending on local expertise and the severity of the underlying liver disease and comorbidities (e.g. Model of End Stage Liver Disease or MELD, Child-Pugh classification, hepatic encephalopathy, advanced cardiac or renal disease etc.) (8). TIPS is a good procedure for the acute ectopic variceal bleeding and prevention of rebleeding, nevertheless, there is a 21 to 37% risk of rebleeding after TIPS (25,28,92). Several case reports have reported a good control of ectopic variceal bleeding by decompression of the portal venous system as well in the situation of duodenal, small bowel, colonic, anorectal, stomal, umbilical, urinary as cutaneous variceal bleeding (93-106). Vangeli *et al.* concluded in a small study of case reports that the combination of embolization and subsequently TIPS as a treatment for ectopic variceal bleeding was better than TIPS alone in the prevention of rebleeding (107).

Balloon occluded retrograde transvenous obliteration (B-RTO)

This technique was initially developed for the treatment of gastric variceal bleeding with a success rate of 89% without risk of deterioration of the liver capacity and development of hepatic encephalopathy (5,8,108-110). Theoretically, it's an opposite procedure when comparing to TIPS because B-RTO is a shunt occlusion procedure (4,8). It can be an alternative therapeutic method, especially in patients with bleeding at lower portal pressure, in the absence of a patent portal vein or in patients with hepatic encephalopathy where TIPS is no option (5,109,111-114). The risk of rebleeding after B-RTO for the treatment of ectopic variceal bleeding is almost equal to that after TIPS, 17 to 31% (28,61,84,115-120). Because B-RTO has no influence on the problem of portal hypertension, there is a risk at increased portal

venous pressure with subsequently risk at an ectopic variceal bleeding at other places (for example : it is known to develop an increase in esophageal varices after B-RTO for gastric variceal bleeding) and also risk at development of ascites (8,110). The evidence for this strategy is once again an extrapolation of data from the treatment in gastroesophageal varices and case reports of ectopic variceal bleeding (108-126). Currently, the use of B-RTO is limited due to the low availability and the lack of expertise in most centers.

Surgical treatment

If all other therapeutic strategies have failed, surgical management remains an option to be considered as treatment for ectopic variceal bleeding. The choice of surgical treatment is depending on the liver function (based on the Child-Pugh classification), the cause of PHT and of course the expertise of the medical center. Surgical treatment in cirrhotic patients is known to be associated with a high morbidity and mortality, and therefore, the preferable patients for surgery are patients with Child-Pugh class A cirrhosis and patients with an extrahepatic portal venous obstruction (5,28).

Surgical treatment can be divided in two groups. First of all, there is the direct surgical action or local devascularization. For example, oversewing of the duodenal varices through a duodenotomy, a surgical resection of the involved bowel segment (in the case of duodenal varices), surgical resection of varices, surgical ligation, surgical stapling in the case of rectal varices or even abortion of an ileostomy or colostomy (in cases of peristomal bleeding) are described (4,5,28,127-134). The other surgical therapeutic strategy is an indirect action by making surgical non-selective portosystemic shunts such as portocaval, mesocaval or splenorenal shunts which leads to an adequate decompression of the venous portal system and therefore control of the bleeding. However, because of the high operative risk, the major surgery and the risk for hepatic decompensation, these procedures are rarely used in common practice and therefore, case reports are scarce (4,5,28,135).

CONCLUSION

Ectopic varices is a broad and complex entity with great variations in clinical presentation, localization, diagnostic workup and therapeutic strategies.

We report here an unusual case of an ectopic variceal bleeding, presented as an acute small intestine bleeding, due to a portosystemic shunt via dilated mesenteric veins and a varicous left ovarian vein in a patient with alcoholic cirrhosis. The involvement of an ovarian vein in ectopic variceal bleeding is rarely described.

At present, there is no consensus well established on diagnostic workup of ectopic variceal bleeding and their therapeutic strategies. Most data nowadays available are extrapolated from esophagogastric varices which are better understood and also from small studies of

case reports. Further investigation of large series or randomized-controlled trials is needed.

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