INTRODUCTION
Upper gastrointestinal haemorrhage (UGIH) secondary to fundal (gastric) variceal bleeding is an uncommon and life-threatening complication of portal hypertension. Gastric varices bleed less frequently than esophageal varices, but bleeding from gastric fundal varices (GV) tends to be more severe and is associated with a high mortality rate.

Endoscopic variceal ligation of esophageal varices is recognized as a main stay of treatment modality now a days. Endoscopic treatments with tissue glue cyanoacrylate (N-butyl-2-cyanoacrylate) has been used successfully in many countries for 20 years and is considered by many clinicians to be the optimal initial treatment for bleeding gastric varices. Many physicians may be unaware of glue embolization because of its rarity. Important risk factors for first gastric variceal bleeding are child pugh class B and C, red wale marks, multiple and large size of the varices located in the fundus.2

We report a case of pulmonary embolization of N-butyl-2-cyanoacrylate that occurred after endoscopic injection therapy for gastric variceal bleeding.

CASE REPORT
This 65-year-old lady, who was a cirrhotic secondary to hepatitis C infection (child turcotte pugh class C) presented to the emergency department with a 4 days history of coffee coloured vomiting and melena. She had stable vital signs with normal respiratory and cardiovascular systems. Physical examination revealed normal lung examination, abdominal ascites with umbilical hernia and mild splenomegaly.

Laboratory testing revealed haemoglobin level of 7.5 g/dl; leukocytes count of 5.5 x 10^9/l; platelets count of 71 x 10^9/l; prothrombin time of 17/9 seconds; and serum creatinine level of 1.2 mg/dl. Chest X-ray did not reveal any abnormality.

On admission to the gastroenterology ward, the patient was given intravenous (I/V) ceftriaxone, I/V sandostatin infusion and packed red blood cells. Upper GI endoscopy showed non-bleeding small esophageal varices, mild portal hypertensive gastropathy and a large gastric fundal varix (Figure 1).

Endoscopic sclerotherapy was performed with a solution containing 4 ml of N-butyl cyanoacrylate and 8 ml lipoidol (a lipid based radiological contrast agent to prevent premature polymerization of the glue). A 19-guage needle with 10 ml syringe was used to inject the large gastric varix. Injection sclerotherapy was completed successfully and haemostasis confirmed.

During the procedure, she was hemodynamically stable with an oxygen saturation of 98%. Immediately after the procedure, she went into cardiopulmonary arrest; cardiopulmonary resuscitation (CPR) was started, but she could not be revived. A provisional diagnosis of pulmonary embolism was made. X-ray chest showed linear hyperdense shadows in both pulmonary arteries and in some of their branches, which were not seen on pre-procedural chest X-ray. The patient died of massive pulmonary embolism as confirmed on X-ray chest.

ABSTRACT
N-butyl-2-cyanoacrylate is widely used to sclerose bleeding gastric varices. We report the case of a 65-year-old lady, known case of cirrhosis secondary to hepatitis C infection, who presented to the emergency department with coffee ground vomiting and melena for four days. Gastroscopy showed non-bleeding small esophageal varices, mild portal hypertensive gastropathy and a large gastric fundal varix. Injection sclerotherapy was completed successfully and haemostasis was secured. During the procedure, she was hemodynamically stable with an oxygen saturation of 98%. Immediately after the procedure, she went into cardiopulmonary arrest; cardiopulmonary resuscitation (CPR) was started, but she could not be revived. A provisional diagnosis of pulmonary embolism was made. X-ray chest showed linear hyperdense shadows in both pulmonary arteries and in some of their branches, which were not seen on pre-procedural chest X-ray. The patient died of massive pulmonary embolism as confirmed on X-ray chest.

Key words: Glue embolism. Pulmonary embolism. Varices. Hepatitis C. Cyanoacrylate embolism. Chest X-ray.

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DISCUSSION

Fundal (gastric) varix oblitative therapy with N-butyl-2-Cyanoacrylate is the treatment of choice for the management of acute gastric variceal bleeding and its relation with decompensated liver cirrhosis was first published in German literature in 1913.\(^3\,^4\) The incidence of UGIH secondary to fundal (gastric) varices is relatively low, varies from 10% to 36% despite the fact of its high prevalence rate in patients with decompensated liver cirrhosis ranging from 18% to 70%.\(^5\) Procedure-related complications of fundal varix obturation (FVO) are fever, recurrent bleeding, chest pain and ulceration. Although, more life-threatening complications are embolization to the cerebral arteries, portal vein, lung, and splenic arteries have also been reported.\(^6\) Systemic embolization most likely occurs via the gastrorenal and splenorenal veins, as it was also observed in this patient. Atrial septal defect is also another potential route for paradoxical glue embolization. Splenic infarction is compromised by exposure to histoacryl (NBC) because of splenic vasculature involvement.\(^7\)

Other less common, but potentially serious complications include abscesses and bacteremia. Rupture of esophagogastric varices is one of the most severe complications of portal hypertension in patients with liver cirrhosis. Multidisciplinary approach and close coordination among gastroenterologists, surgical team and interventional radiologists will be required for the proper management of FVO.

Obturation of bleeding fundal varices is technically difficult and demanding because of its location and size.\(^8\) Sohendra et al. first described in 1986 that hemostasis of bleeding gastric varices could be achieved by injecting the tissue adhesive agent with butyl cyanoacrylate.\(^9\)

Various other treatment modalities are transjugular intrahepatic portosystemic shunts (TIPS), balloon occluded retrograde transvenous obliteration techniques (BORTO) and gastric variceal ligation, although this modality is falling out of favour. Intra-gastric balloon tamponade is used as a bridge to further therapy. Liver transplantation is the final option.

N-butyl-2-cyanoacrylate (NBC) is the only promising agent. In Pakistan, the rate for primary haemostasis with cyanoacrylate injection is consistent with the reported rate of 90% to 97% even as in other countries.\(^10\)

Pulmonary embolism is a rare and potentially serious complication, but systemic (arterial) embolization has also been reported. An important cause of increased risk of embolism during procedure is instillation of more than 1 ml of the histoacryl/lipiodol mixture per injection. Cyanoacrylate, when used to obliterate esophageal and gastric varices, has been reported in the endoscopy and radiology literature to cause pulmonary emboli. Most fundal gastric varices are supplied by short gastric and epiploic veins and drain to the left renal vein through a large gastrorenal shunt.

Pulmonary glue embolism is difficult to diagnose and manage. So because of diagnostic dilemma gastroenterologists should have a high index of suspicion for embolism in the setting of tachycardia, chest pain, or hypoxia after an endoscopic FVO therapy.

REFERENCES


