

PULMONARY SPARING - MULTI ORGAN GLUE EMBOLISM

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ABSTRACT

Histoacryl endostasis is used in patients with large varices and not amenable to surgery or admitted to centers that do not have TIPSS. This case report describes a 49 year old patient who developed glue embolism to multiple organs ;but lungs were spared; following endoscopic haemoeostasis. . She was known to have Child-Pugh class C liver cirrhosis secondary to alcoholic liver disease requiring multiple ascitic taps and OGD within past 3 months. She was admitted to with a two-day history of coffee coloured vomitus and *melaena*. She was then taken to theatre for urgent OGD - where gastric varix glued and esophageal varix were banded however, still being unable to achieve haemostasis so, Sengstaken Blakemore tube was also placed. On repeat bleeding from a banded varix, within 12 hours, she required further glue mix injected to another esophageal varix. Upon return to the ITU she rapidly deteriorated in terms of her oxygen requirements ,cardiovascular stability, neurology and renal functions. CTPA revealed embolisation of glue material scattered throughout the liver, small foci within the inferior spleen, bilaterally within the renal cortices and lower pole of right kidney and both the consolidated lung bases. There were also small foci within the left ventricle and within the coronary arteries. CTH CAP two days later showed: Evidence of bilateral occipital infarcts with evidence of widespread embolisation in the brain. Patient was referred to specialized centre. However, she deteriorated rapidly and died.

Key words: Histoacryl endostasis, endoscopic haemoeostasis, glue embolism, lipidol / histoacryl glue

INTRODUCTION

Histoacryl endostasis is useful in patients with large varices and not amenable to surgery or admitted to centres that do not have TIPSS. Most patients are managed with initial endoscopy and attempted hemorrhage control with saline/adrenaline injection combined with endoclip or heater probe application. Other contributory factors include the rate of injection, volume of injection and ratio of the constituent components of the sclerosant (i.e. n-butylcyanoacrylate and lipidol).

Though, there have been a few case reports that have reported embolization to lungs, but multiorgan embolism (liver , spleen , heart , kidney) without affecting lungs is rarer and can lead to delay in diagnosis .

Case report

This rare case report describes a 49 year old patient who developed glue embolism to multiple organs following endoscopic haemoeostasis. The distinguishing element of this case is that , that glue embolization occurred to various organs (liver , spleen , heart) with pulmonary sparing. The patient was admitted to the ED with a two-day history of coffee coloured vomitus and *melaena*. She was known to have Child-Pugh class C liver cirrhosis secondary to alcoholic liver disease requiring multiple ascitic taps and OesophagoGastroDuodenoscopies over last 3 months.

Upon admission, the patient was hypotensive, tachycardic, icteric and Glasgow Coma Scale of 8. A physical examination revealed a distended abdomen due to *ascites*. CXR was clear.

As she had two further episodes of hematemesis, emergency OGD was performed- wherein gastric varices were glued and esophageal varix were banded however; still being unable to achieve haemostasis: Sengstaken Blakemore tube was placed. Patient required extensive transfusions as part of resuscitation and was transferred to ITU for further support where she was managed with terlipressin, antibiotics, IV omeprazole.

Ten hours later, she further bled and was taken back to theatres for repeat OGD- SSBT was punctured to facilitate removal. Endoscopy was reported as moderate Portal hypertensive Gastropathy. Three columns of large

esophageal varices, three bands applied to the varices. However, due to active bleeding from a banded varix which was injected with glue mixture that helped cessation of bleeding.

Upon her return to the ITU, she was found to have MOD within 12 hours. These included higher O2 requirements, oliguria with worsening RFTs, higher inotropic support and worsened neurology.

Bedside ultrasound showed evidence of echogenic structure seen floating in LV, attached to anterior cusp of MV. Formal ECHO showed an echogenic mobile mass attached to the chordae.

With high suspicion of embolism, she was taken for CT chest, abdomen , pelvis and brain that showed embolization material scattered throughout the liver, small foci within the inferior spleen ,bilaterally within the renal cortices and lower pole of right kidney and both the consolidated lung bases. There were also small foci within the left ventricle and within the coronary arteries.

There was evidence of bilateral occipital infarcts with evidence of widespread embolization in the brain. No evidence for pulmonary embolism. There was bilateral basal consolidation and pleural effusion.

Embolc material within the left ventricle was seen as before with likely embolic high density within the liver and spleen. Patient was kept intubated due to presence of bilateral lower lobe consolidation/ collapse and need for ongoing ventilatory support. She was discussed with higher centre to explore possibility of TIPSS.

Patient was reviewed by neurology and ophthalmology given CT head findings.

Within 24 hours she had another episode of fresh hematemesis with hypotension. She underwent endoscopy with placement of Sengstaken tube. Also, she received massive blood transfusion and was transferred for emergency TIPSS procedure/ further management where she passed away a few days later.

Case discussion

Variceal hemorrhage is a challenging medical emergency for intensive care team from initial resuscitation, airway compromise, circulatory collapse and the need for definitive haemorrhage control. A less talked aspect is also transfer of these patients. The most preferred mode for definitive management is endoscopic treatment. Of these, sclerotherapy, that involves injection of a sclerosant into a varix. Second one, Band ligation is application of a rubber band to a varix in order to strangulate the blood flow. Glue embolisation is a variant of sclerotherapy that uses a glue injection in place of a sclerosant and is well accepted worldwide. Glue is a liquid monomer called cyanoacrylate glue which is injected via a needle into the varix. The glue polymerizes and solidifies into a hard substance, plugging up the varix on contact with blood.

Non-thrombotic pulmonary embolism is defined as the embolisation of pulmonary circulation by any material other than thrombus including different cellular types (adipose, amniotic, neoplastic), micro-organisms, gas and foreign body (6).

Histoacryl endostasis especially in patients with large varices and not amenable to surgery or admitted to centers that do not have TIPSS. However, the glue can flow through the blood stream before it solidifies posing a risk of embolism. The risk of embolization is low, but it has occurred and can result in serious morbidity and mortality. The coil is a response to this limitation(5).

Our patient developed a systemic embolization to multiple organs. Systemic embolization most likely occurs via the gastrosplenic 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.

Although, more life-threatening complications are embolization to the cerebral arteries, portal vein, lung, and splenic arteries have also been reported(4). An important cause of increased risk of embolism during procedure is instillation of more than 1 ml of the histoacryl /lipiodol mixture per injection(3).

Pulmonary glue embolism is difficult to diagnose and manage. So because of diagnostic dilemma gastroenterologists should have a high index of suspicion for embolism. The imaging modality of choice for diagnosis of embolism is contrast enhanced angiography.

The main deterrent of outcome is number of failing organs rather than the specific severity of liver disease. In addition, those presenting with bleeding may represent a subgroup with lower mortality when compared to other presentations of decompensation(2).

CONCLUSION

Pulmonary glue embolism is difficult to diagnose and manage. So, because of diagnostic dilemma gastroenterologists should have a high index of suspicion for embolism. The imaging modality of choice for diagnosis of embolism is contrast enhanced angiography.

There have been a few case reports that have reported embolization to lungs, but multiorgan embolism (liver, spleen, heart, kidney) without affecting lungs is rarer and can lead to delay in diagnosis.

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