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Case Report

Pulmonary embolism after sclerotherapy treatment of bleeding varices

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Abstract

We describe a case of pulmonary embolism after sclerosant injection for bleeding oesophageal varices. The patient was managed successfully with enoxaparin. Systemic embolization after sclerotherapy is rare and depends upon a number of factors including the amount of sclerosant agent used. The incidence of this complication could be as high as 6% which warrants careful post procedure monitoring of patients.

Key words: Pulmonary embolism, sclerotherapy, varices, portal hypertension.

Case report

A 56-year-old male was admitted with haematemesis & melaena. He had a background history of gastric ulcer, alcohol misuse, appendicectomy and shingles.

On examination he was tachycardic with blood pressure of 99/50 mmHg and respiratory rate of 14/min. His oxygen saturation was 100% on 10 liters of O_2. Clinical examination revealed no signs of chronic liver disease and melaena on per rectal gloved-finger examination. Initial labrotary investigations showed haemoglobin (Hb) of 9.1g/L, white cell count (WCC) $7.1x10^9$/L, platelets (PLT) $202x10^9$/L, urea 8.3, creatinine 85μmol/L (ref range: 55-120), bilirubin 45 μmol/L (ref range: 2-17), alkaline phosphatase 245 U/L (ref range: 40-125), ALT 29 U/L (ref range:10-35), AST 58U/L (ref range: 10-35), albumin 32 g/L prothrombin time(PT) 19 sec, APTT 29 sec, fibrinogen 1.80 g/L. His chest x-ray was normal.

The patient continued to have melaena, although there was no further haematemesis. His Hb dropped further to 7.8 g/L and thrombocytopenia developed (PLT: $82x10^9$/L). He was transfused 3 units of red blood cells, 3 units of Fresh Frozen Plasma (FFP) and 1 unit of platelets. Oesophagogastroduodenoscopy (OGD) showed large oesophageal varices, which were banded and injected with sclerosant agent (sodium tetradecyl sulphate). Further management included intravenous glypressin and cephalosporin antibiotics. For twenty-four hours he remained haemodynamically stable with no further episodes of haematemesis or melaena. Abdominal ultrasound scan showed shrunken liver and enlarged spleen with moderate ascites; findings consistent with chronic liver disease with portal hypertension.

Thirty hours post-endoscopic therapy, the patient complained of acute onset right sided pleuritic chest pain. He was tachycardic and tachypnoeic and his oxygen saturation dropped to 82% on inhaled room air. The chest auscultation was otherwise normal. ECG showed atrial fibrillation with ventricular rate of 143/min. His PT

Figure 1.

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was 17 sec, APTT 26 sec and fibrinogen 4.00 g/L. A repeat chest x-ray showed atelectasis on both lung bases and bilateral small pleural effusions.

A CT pulmonary angiogram *(Figure 1)* confirmed suspected pulmonary embolism. The patient was started on enoxaparin. His further stay in the hospital was complicated by antibiotic related diarrhea. A repeat OGD showed grade 2 oesophageal varices *(Figures 2, 3)* and evidence of ulceration secondary to sclerotherapy. The patient was discharged home on proton pump inhibitor (PPI) and enoxaparin; he is currently waiting for his first follow-up clinic visit.

Discussion

Up to 30% of cirrhotic patients with portal hypertension will bleed from the upper gastrointestinal varices at 2 years; esophageal varices account for three-quarters of these bleeds. Sclerotherapy has been established as very effective and life-saving modality for the treatment of acute variceal bleed. Radiographically evident pulmonary embolisms (PE) are uncommonly observed following endoscopic sclerotherapy and it appears to be more common in patients receiving a higher volume of sclerosant agent *(Table I)*.[1-5]

Table I. Case reports of pulmonary embolism due to variceal sclerotherapy.

Publication reference	Title of the report	Authors	Sclerosant used
Endoscopy 988;20:91-4	Scintigraphic detection of pulmonary embolization of esophageal variceal sclerosant	DePuey EG, Richards WO, Millikan WJ, Henderson JM	Sodium morrhuate
Ugeskr Laeger 1989;151:1249	Pulmonary embolism as a complication of sclerosing treatment of esophageal varices	Fruergaard P, Launbjerg J	
Nihon Kyobu Shikkan Gakkai Zasshi 1993;31:833-9	Pulmonary circulatory disturbance following endoscopic injection sclerotherapy	Uchibori S	5% ethanolamine oleate (EO)
Eur Respir J 1998;11:560-4	Prognostic factors in restoration of pulmonary flow after submassive pulmonary embolism: a multiple regression analysis	Menéndez R, Nauffal D, Cremades MJ	
Dtsch Med Wochenschr 1998;123:691-5	Fatal pulmonary embolism after endoscopic embolization of downhill esophageal varix	Tsokos M, Bartel A, Schoel R, Rabenhorst G, Schwerk WB	Cyanoacrylate
Endoscopy 1998;30:S89-90	Pulmonary, cerebral and coronary emboli during bucrylate injection of bleeding fundic varices	Roesch W, Rexroth G	Bucrylate
Gastroenterol Clin Biol 1999;23:1095-6	Severe pulmonary embolism after obturation of gastric varices with a butylcyanoacrylate and lipoidol combination	Kull E, Hernandez M, Richer JP, Borderie C, Silvain C, Beauchant M	Butylcyanoacrylate lipoidol
Endoscopy 2000;32:S1-2	Multiple pulmonary glue emboli following gastric variceal obliteration	Palejwala AA, Smart HL, Hughes M	
J Comput Assist Tomogr 2001;25:16-22	N-butyl-2-cyanoacrylate pulmonary embolism after endoscopic injection sclerotherapy for gastric variceal bleeding	Hwang SS, Kim HH, Park SH, Kim SE, Jung JI, Ahn BY, Kim SH, Chung SK, Park YH, Choi KH	n-butyl-2-cyanoacrylate
J Radiol 2001;82:583-5	Pulmonary embolization from migration of sclerotherapy material	Nassif A, Coevoet V, Resten A, Aikem N, Maitre S, Musset D	
Z Gastroenterol 2004;42:383-6	Massive pulmonary embolism after endoscopic therapy for gastric variceal bleeding	Witthöft T, Homann N, Dodt C, Ludwig D	n-butyl-2-cyanoacrylate and lipiodol
Endoscopy 2005;37:687	Fatal N-butyl-2-cyanoacrylate pulmonary embolism after sclerotherapy for variceal bleeding	van Beek AP, van Erpecum KJ	Cyanoacrylate
Gastroenterol Hepatol 2006;29:60	Massive pulmonary embolism after endoscopic sclerosis with N-butyl-2-cyanoacrylate	Felipe V, Forner A, Mata A, Llach J, Bordas JM	N-butyl-2-cyanoacrylate
Rev Gastroenterol Mex 2006;71:350	Clinical images in gastroenterology. Pulmonary embolism secondary to endoscopic application of cyanoacrylate	Chávez-Tapia NC, Cervantes-Solís C, Ramírez-Arias F	Cyanoacrylate
Endoscopy 2007 Feb 7; [Epub ahead of print]	Pulmonary embolism after sclerotherapy treatment for variceal bleeding	Escardo JC, Cosenza SJ, Alvarez JH, Pratesi P, Parra GG, Hita A	4% polidocanol

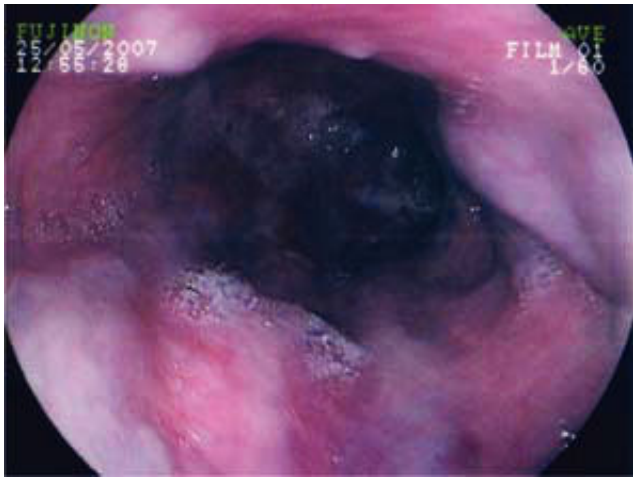

Figure 2.

Figure 3.

Pulmonary Embolism as complication of scelrotherapy is thought to occur from the migration of the sclerosant into the pulmonary vasculature[5] causing an acute inflammatory reaction or chemical injury of the vessel wall resulting in an embolism.[6] In a retrospective study by Hwang et al., the volume of injected mixture was shown to be a predictor of embolisation.[6] Six out of 140 patients (4.3%) with pulmonary emboli were given a mean volume of more than 4.2 mL as opposed to 1.8 mL for those without pulmonary emboli. Four of these six patients had respiratory symptoms, although there were no direct deaths as a result of pulmonary embolization. Other factors implicated are the area injected and the use of repeated injections.

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