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Case Report

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Pulmonary Embolism Following 2-Octyl-Cyanoacrylate/Lipiodol Endoscopic Sclerotherapy: A Rare Complication

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Introduction

Since its first description by Soehendra in 1986, endoscopic sclerosis by a biological glue is widley used as a treatment of bleeding oesophageal varices. This technique has many temporary side effects: hyperthermia, dysphagia, and retrosternal burning sensation. However other side effects are more dangerous, for instance major thrombo-embolic events which can be deadly in many cases. We describe a case of bilateral pulmonary embolism.

Clinical case

A male, 21 years old, with liver cirrhosis of unknown origin, has repeated hematemesis from the rupture of gastric varices along with portal hypertension. After several ligations of the varices the patient still has hematemesis and then a sclerotherapy by biological glue was indicated.

The patient is conscious GCS 15/15, without any sensory-motor deficit, blood pressure 120/60 mmHg, heart rate 78 ppm, respiratory rate 18 bpm, SpO2 level 97%. His blood tests shows: hemoglobin level 14.9 g/dl, platelets count 70000/mm3, PR 62%, APTT 36.6 s.

Under general anesthesia, with oro-tracheal intubation and after 4 units of platelets transfusion, we discover at the fibroscopy a massive gastric varice without noticeable red signs.

Secondly, we managed to inject at two points 2 mL of butyl2-cyanoacrylate (glubran) and a radioactive substance (lupiodol). During the process, the patient had a bronchospasm managed by deepening the anesthesia, salbutamol nebulization and perfusion of 1.5g of magnesium sulfate.

After extubation, the patient is stable with a blood pressure 125/65 mmHg, heart rate at 97/min, respiratory rate at 28 bpm, SpO2 89%. A chest X-ray showed diffuse bronchial opacities (Figure 1).

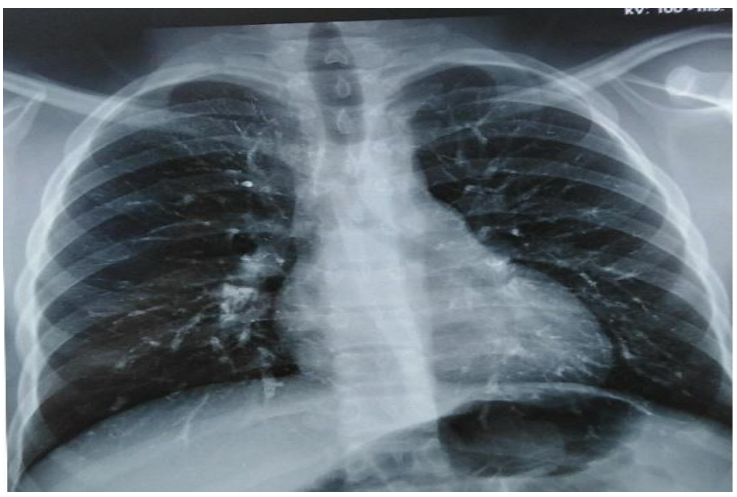

Figure 1: Chest X-ray: The pulmonary vasculature is significantly more prominent and appears to demonstrate intravascular contrast despite a lack of intravenous contrast administration.

A chest scan revealed the presence in the inferior right lobar arteries, segmental and sub-segmental, in both pulmonary lobes, of a spontaniously hyperdense material indentifed as the biological glue, but also the presence of ground-glass pulmonary contusion areas due to alveolar hemorrhage. The glue was also found in the right cardiac cavities (Figure 2).

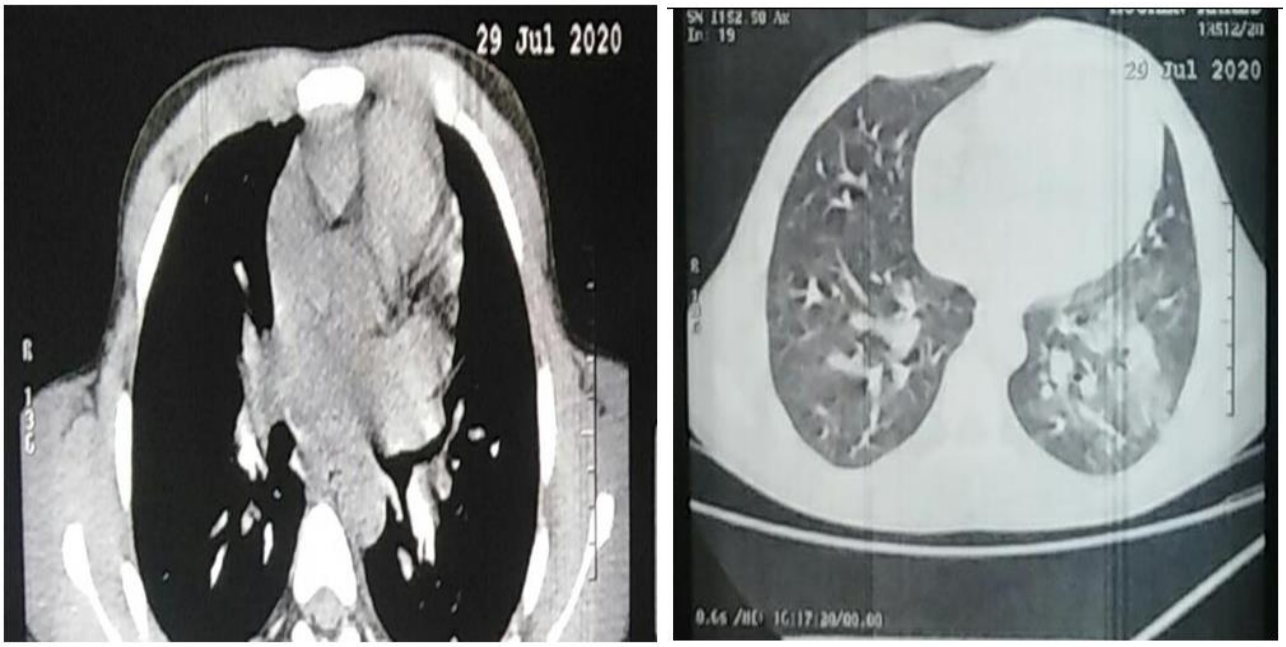

Figure 2: Bone and mediastinal windows showing persistent hyperdense glue emboli following endoscopic sclerotherapy for the treatment of gastric varices.

The echocardiography showed pulmonary hypertension at 65 mmHg without any signs of acute pulmonary embolism. The oxygen was fed to the patient by nasal cannula at 3l/min with an oxygen saturation at 98%. The patient received low-molecular-weight heparin at 0,4UI per day and amoxicillin/clavulanic acid 80 mg/kg per day. Hypoxemia persisted 48 hours before the patient could recover a normal oxygen saturation in the open air.

A week later, the patient presented a bronchial infection with a cough and expectorations treated with ceftazidim and moxifloxacin. Three weeks afterwards the patient regained a normal respiratory function and stopped the anticoagulant treatment.

Discussion

The sclerosis by a biological glue is nowadays considered to be the first-choice treatment for hemorragia from the rupture of gastric varices, even though it has a recurrence rate at 31% and a complication rate at 7%. The product used is butyl-2-cyanoacrylate, a tissular monomer liquid glue, which polymerize and becomes solid once in touch with the ionic charges of blood. Many complications may occur: hyperthermia, hemorrhagic recurrence by expulsion of the glue, cerebrovascular accidents and pulmonary embolism. Bilateral pulmonary embolism probably occurred due to the passage of an important amount of glue in the venous circulation then in the right cardiac cavities even though the butyl-2-cyanoacrylate creates an immediate local vascular filling. This passage in the pulmonary circulation was either promoted by lipiodol, which lowers the butyl-2-cyanoacrylate stickiness, or by the presence of gastro renal shunts. Hwang proved by a retrospective study that the injected volume (> 1 ml by injection site) was a risk factor of embolization, wich probably what happened in our case. The size of the varice and slow injection, especially in case of a high flow big size varice, and the excess of lipiodol (the rate butyl-2-cyanoacrylate/lipiodol < 5/8) are also considered risk factors of embolization.

Conclusion

A pulmonary glue embolism should be suspected among patients who develop acute respiratory distress syndrome following endoscopic sclerotherapy. In the current case, the cause of the pulmonary glue embolism was likely a combination of the large size of the gastric varices and the large volume of cyanoacrylate needed to treat them.

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