

Letter to the Editor

Alveolar hemorrhage after parenteral injection of industrial silicone

Hemorragia alveolar após injeção parenteral de silicone industrial

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To the Editor:

A previously healthy 24-year-old male-to-female transsexual presented with a 48-h history of dyspnea, fever, and signs of severe hypoxemia (SpO_2 , 72%). The patient reported having undergone an illegal procedure 10 days prior, when industrial liquid silicone had been injected into her buttocks for cosmetic purposes. The patient had previously received silicone breast implants. After admission, the patient rapidly evolved to severe respiratory failure and required mechanical ventilation. During intubation and throughout the period on mechanical ventilation, pulmonary bleeding was observed. Her hemoglobin level was 6 g/dL (hematocrit, 18%), and she was given a blood transfusion. Her platelet count, partial thromboplastin time, and prothrombin time were all normal.

Chest CT scans showed patchy, bilateral ground-glass opacities, suggestive of alveolar hemorrhage, and bibasilar consolidations (Figure 1). Mild bilateral pleural effusion was also observed. Ultrasound examination of the site of the injection showed no abnormal liquid collection that would require drainage or any other type of surgical intervention. Because of the severe hypoxemia, bronchoscopy and BAL were not performed. Blood cultures were negative throughout the treatment period.

The patient was given a diagnosis of silicone pulmonary embolism with alveolar hemorrhage, which was initially treated with mechanical ventilation, accompanied by methylprednisolone pulse therapy, together with a 14-day course of empirical antimicrobial therapy (with oxacillin and ceftriaxone). The evolution was favorable, her hemoglobin level gradually returning to a value that was within the normal range (11.4 g/dL). On post-admission day 14, she was extubated and her SpO_2 was 91%. On post-admission day

21, her overall health status was good and she was discharged.

Silicone is the chemical and commercial name for polydimethylsiloxane (dimethicone), an organic compound comprising a chain of alternating silicon and oxygen atoms bonded to other organic groups. The chemical state of the polymer—gel (elastomer), liquid, or solid—is determined by the number of cross-links in the molecule.⁽¹⁾ It has been long considered an inert compound with good thermal stability, favoring its use in medicine in various implantable devices. In its pure form, silicone has been used in cosmetic and esthetic procedures for the last five decades, and it is known to produce minimal tissue reactions and no significant immune response, although, in many countries, it is approved only for use in breast augmentation devices and is prohibited as an injectable liquid.⁽²⁾ However, the widespread underground practice of industrial liquid silicone injection within the transsexual community worldwide has produced various cases featuring a variety of severe reactions, mainly involving the lungs and the central nervous system.^(2,3) That is probably related to impurities present in, or the adulteration of, industrial silicone, which can provoke subcutaneous infection (cellulitis) and distant mass formation due to silicone migration, as well as nodules, necrosis, granulomatous hepatitis, regional lymphadenopathy, and lung injury due to pulmonary embolization, alveolar hemorrhage, pneumonitis, and acute respiratory distress syndrome.⁽³⁾

The lung injury seen in some individuals who have received silicone injections appears to be triggered by pulmonary embolism. The embolism might be related to the high pressure promoted by the injection of large amounts of the product, local massage in order to accommodate the content, regional migration, or direct

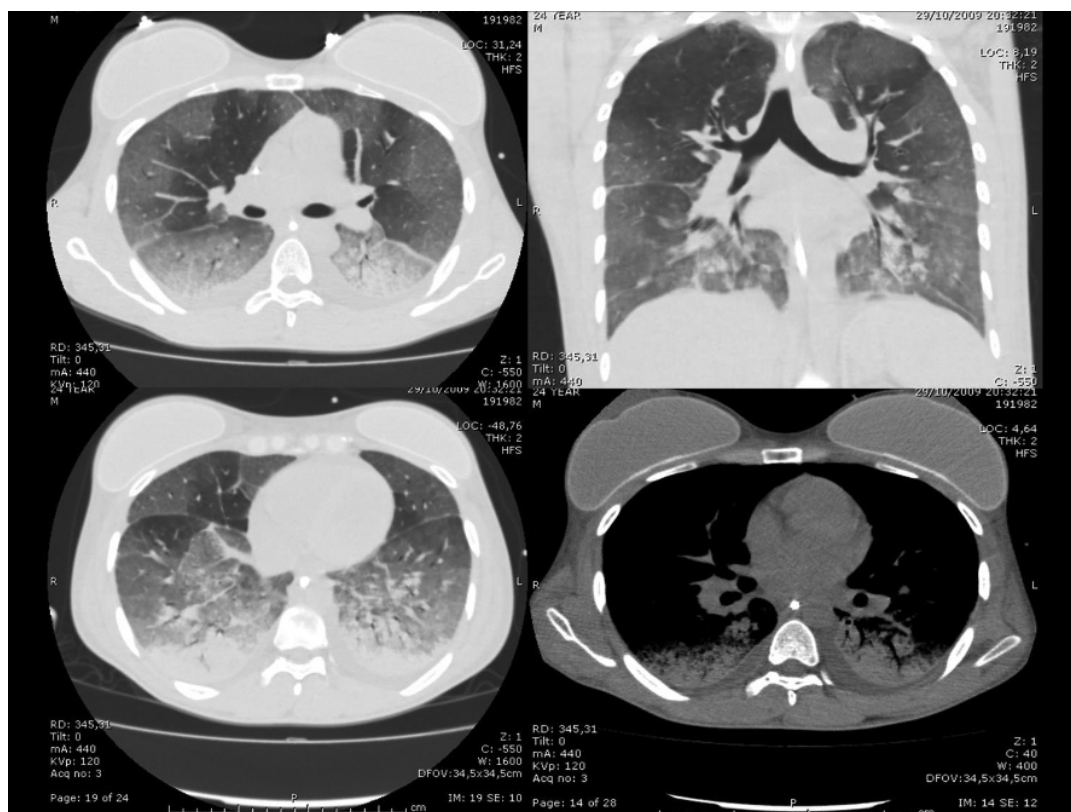


Figure 1 – Chest CT scans showing patchy, bilateral ground-glass opacities suggestive of alveolar hemorrhage, bibasilar consolidations, and mild bilateral pleural effusion.

intravascular injection. Histological examination can show distended capillary vessels filled with homogeneous, clear globular material that resists staining (presumably silicone), macrophages showing cytoplasmic inclusions of the same substance, with a pathologic pattern ranging from the mere presence of vascular emboli to congestion, hemorrhage, acute pneumonitis, and diffuse alveolar damage.⁽⁴⁾

The pneumonitis seen after silicone injection can be acute or latent. The acute form, in which the symptoms appear within the first few days (in some cases as early as two hours after the injection), is more common. In the latent form, symptoms appear 6–13 months after injection.⁽⁵⁾ Mortality can be as high as 24%.⁽⁶⁾ There appears to be a relationship between mortality and the total amount of embolized material.⁽⁶⁾ For cases in which there are neurological manifestations, the prognosis is poor.

In the present case, the clinical evolution was quite typical of the acute form of the

condition (with dyspnea, cough, fever, and signs of hypoxemia), and pronounced alterations were seen on chest X-rays and CT scans. The images were quite suggestive of alveolar filling. The presence of bleeding during intubation and the decrease in hemoglobin levels were indicative of hemorrhage.⁽⁴⁾ Lung biopsy was unnecessary because of the history of silicone injection, and the clinical and radiological aspects were highly suggestive of alveolar hemorrhage. Ventilatory support treatment was established. Due to the rapid evolution to respiratory failure, we administered methylprednisolone pulse therapy, despite the fact that there is no clinical evidence in the literature to support its use in such cases.

The case presented here highlights the risk of serious complications resulting from the clandestine use of silicone injections for cosmetic purposes. Despite the severity of the clinical status of the patient at admission, the clinical evolution was favorable. A history of illicit cosmetic procedures involving silicone, especially industrial liquid silicone,

should be considered in cases of acute pulmonary involvement in previously healthy adults.

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