

Pneumonitis secondary to silicone lung embolism in transgender women living with HIV

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ABSTRACT

Dimethylpolysiloxane (silicone) has been widely used in the last decades in soft tissue augmentation procedures. In Argentina, approximately 54% of transgender people had liquid silicone or industrial oil injection and 91% of them were applied outside the health system. Silicone particles may migrate into lung vessels generating a syndrome similar to fat embolism, usually starting within 72 hours following silicone injection, although it has been described months to years after. We hereby present two cases of pneumonitis secondary to silicone lung embolism in transgender women living with HIV. Both patients were diagnosed through CT scan and bronchoalveolar lavage and received supportive therapy with favorable outcome. Silicone lung embolism should be included as a differential diagnosis of pneumonitis, especially in transgender population.

KEYWORDS

HIV; Lung Diseases, Interstitial; Dimethylpolysiloxane; Silicones; Pulmonary Embolism.

INTRODUCTION

Dimethylpolysiloxane (silicone) has been widely used in the last decades in soft tissue augmentation procedures owing to its scarce immunogenicity, low surface tension and the stability of its physical properties over time.⁽¹⁾

However, silicone injection (Si) is associated with complications such as injection site infections, tissue necrosis, regional lymphadenopathies and systemic embolism.⁽¹⁻³⁾ Silicone particles migration into lung vessels generates a syndrome similar to fat embolism, usually starting within the 72 hours following Si, although it

has been described months to years after Si. (4, 7-8)

Two cases of late onset silicone embolism pneumonitis (SEP) in transgender women living with human immunodeficiency virus (HIV) with favorable outcome are described.

CASE REPORT

First case

The first patient is a 37 years old female transgender patient with HIV infection diagnosed 16 years ago. She started highly active antiretroviral treatment (HAART) with emtricitabine, tenofovir disoproxil fumarate and darunavir plus ritonavir one year before the current hospitalization. Her T CD4+ lymphocyte count was 272 cells/ml and her HIV viral load < 40 copies/ml. She had a liquid industrial Si on mammary region 7 years ago. Referred to be a current smoker and an inhaled drug user (including “pasta base”, a drug similar to crack made with cocaine residues and processed with sulfuric acid and kerosene). She had a history of lung tuberculosis, with complete treatment, and multiple lung infections, including a presumptive pulmonary pneumocystosis (PCP) treated with trimethoprim-sulfamethoxazole (TMS) and corticosteroids the year before the current hospitalization.

She was admitted to a general ward referring 5 days of fever, resting dyspnea and productive cough. At admission, she had a partial pressure of arterial oxygen of 62.5 mmHg (oxygen saturation 90%), laboratory test results where normal. Lung CT showed signs of bilateral centrilobular emphysema, ground-glass opacity and peripheral small lung nodules on left lung (Figure 1).

Empiric broad-spectrum antibiotics (piperacilin/tazobactam and clarithromycin), oseltamivir and PCP treatment (TMS and meprednisone) where initiated.

PCR and direct immunofluorescence for respiratory viruses on nasopharyngeal swab where negative. Bronchoalveolar lavage (BAL) was performed, and specimen was transported at 4°C and processed 20-40 minutes after.

Cytological examination of BAL fluid showed macrophages with anthracitic inclusions and translucent vacuoles compatibles with silicone oil. No microbiological organism was isolated from BAL fluid (Figure 2).

Treatment with supplementary oxygen and fast acting bronchodilators was initiated with favorable clinical evolution; she was discharged after 9 days.

Figure 1. CT scan: bilateral centrilobular emphysema and ground-glass opacity; small lung nodules on left lung (circle).

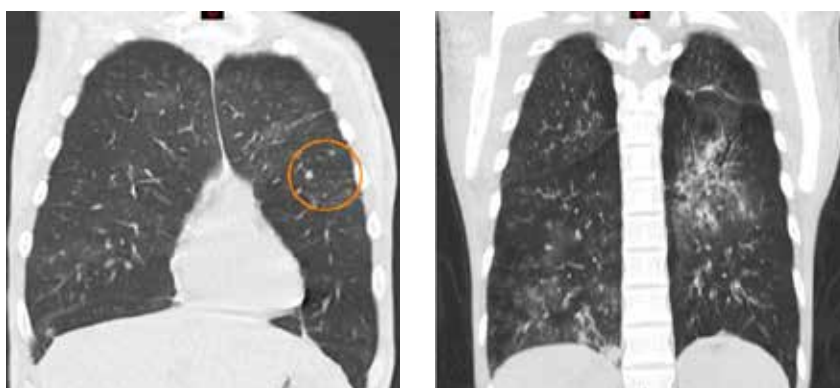
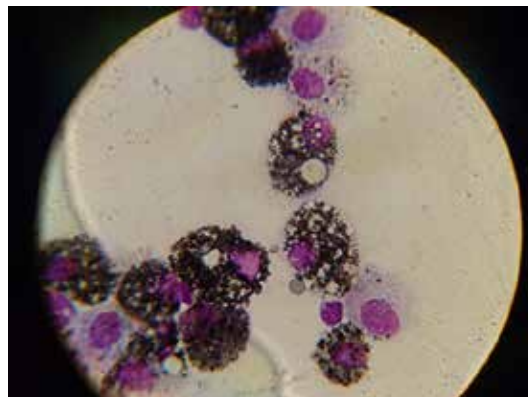
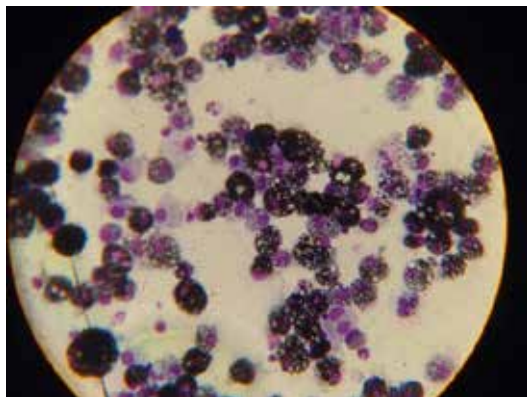


Figure 2. BAL fluid, May Grünwald Giemsa stain (40X - 100X): macrophages with anthracitic inclusions and translucent vacuoles compatibles with silicone oil.



Second case

A 35 years old female transgender patient with a history of liquid industrial Si six years ago and heavy smoker was hospitalized with a PCP and HIV infection diagnosis. She completed PCP treatment with TMS and was discharged.

Two months later, she attended the emergency ward referring fever, progressive dyspnea and productive cough of 15 days of evolution. A bilateral reticulonodular interstitial pattern was seen on chest x-ray, functional respiratory test showed a restrictive pattern and hypoxemia (PaO₂ 69mmHG) was found.

A BAL was made; no microbiological organisms were isolated, cytological examination showed silicone particles inside macrophages. The sample was processed as described in first case. The patient received supportive therapy with favorable clinical response.

DISCUSSION

In Argentina, the transgender population has a life expectation lower than the general population, mainly due to HIV/AIDS.⁽⁵⁾ Approximately 54% of transgender people had liquid silicone or industrial oil injection as shown in a survey carried out in Argentina, and 91% of them where applied outside the health system.⁽⁶⁾ This composes a high-risk scenario for developing complications, as it has already been reported in other countries.^(13, 15)

Si adverse events incidence is estimated around 1-2%.^(1, 9) Si embolism reports have drastically increased during the last decade, nevertheless few cases of SEP in people living with HIV (PLHIV) can be found in the literature.^(2, 4, 8, 11)

Large volumes, traumatism and massage in the Si site, and inadverted intravenous inoculation have been associated with SEP.^(7, 10) Its clinical features include abruptly development of fever, dyspnea, cough, chest pain, hemoptysis and hypoxemia,^(3, 7, 8, 10, 14) although a more progressive development has been described.⁽¹²⁾ Diminished sate of consciousness is associated with greater mortality.^(7, 8) Even though SEP usually takes place within 72 hours of the procedure,^(2-4, 7, 8) the cases described here developed SEP years later, as it has been scarcely reported.^(3, 4) Although the clinical presentation in PLHIV does not differ from seronegative patients the number of differential diagnosis increases, requiring a more complex approach.

Ground glass opacities, interlobular septal thickening and peripheral airspace disease are usually present on CT scan.⁽¹⁰⁾ Diagnosis requires lung biopsy where congestion, hemorrhage and granulomatous inflammatory reaction with neutrophils and eosinophils can be seen (18). As previously described,^(3, 18) the presence of silicone particles inside macrophages on BAL fluid examination was used to make a SEP diagnosis in these cases. Treatment consists on supportive therapy; the use of corticosteroids may be beneficial on early stages.⁽¹¹⁾ SEP mortality is estimated between 18-34%, patients with favorable outcome usually recover within three weeks.^(7, 8, 10, 14)

Growing evidence demonstrates humoral and cellular response induction by dimethylpolysiloxane.^(11, 16, 17) Silicone particles migrate into lung microvasculature inducing its obstruction, developing an inflammatory response and hemorrhages. Immune reconstitution might have had a role on the clinical presentation in the first case; this has been previously suggested.⁽⁴⁾

CONCLUSIONS

SEP is a rare but potentially deadly complication of Si; it should be included as a differential diagnosis of pneumonitis, especially in transgender population. BAL is an essential diagnostic procedure.

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CONFLICTS OF INTEREST

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