Cosmetic silicone injection causing pneumomediastinum and respiratory failure

Sir,

Silicone, a chemically inert substance that has historically been used as a “filler” injected subcutaneously to achieve body contouring effects, can have dangerous respiratory sequelae in a subset of patients. Here, we report a case of silicone-related pneumonitis and diffuse alveolar hemorrhage resulting in hypoxemic respiratory failure in a young
transsexual patient who underwent illicit subcutaneous silicone injections. The patient had pneumomediastinum on initial imaging, a finding that has not previously been described as a result of silicone injection.

A 25-year-old male-to-female transgender woman presented with 3 days of hemoptysis. Previously, she had received subcutaneous silicone injections, with the last injection reportedly performed 2 years ago. She denied the use of cigarettes, alcohol, or drugs. She had no recent travel, tuberculosis exposure, or occupational exposures; she was HIV negative.

On presentation, the patient was tachypneic and hypoxic to 87% on room air. While subcutaneous fullness was noted in the breast and buttock region, there were no needle marks or induration. A computed tomography scan of the chest showed reticulonodular and ground-glass opacities with pneumomediastinum [Figure 1]. Fiberoptic bronchoscopy revealed diffuse alveolar hemorrhage. In the hours after the bronchoscopy, the patient developed progressive respiratory failure requiring endotracheal intubation.

Due to concerns that the clinical picture represented silicone pneumonitis, treatment with high-dose methylprednisolone (60 mg intravenously, administered every 6 h) was initiated. Transbronchial biopsy performed after intubation showed scattered lipoid vacuoles in the interstitium [Figure 2]. Collateral information obtained from the patient’s sister revealed that administration of subcutaneous silicone was performed more recently than the patient initially reported, 1 week before presentation. Based on history, clinical presentation, and supportive histopathological findings, a diagnosis of silicone pneumonitis was made.

Cases of lung injury resulting from the subcutaneous injection of silicone have been noted since the 1970s. In the first reported case, the patient suffered acute pulmonary edema and hemorrhage after receiving an injection.[1] Since then, a spectrum of pulmonary manifestations including acute respiratory distress syndrome, diffuse alveolar hemorrhage, acute small-vessel pulmonary emboli, and organizing pneumonia has been described.[2]

Various mechanisms could explain the pathophysiology of lung injury secondary to subcutaneous silicone injection. One mechanism is through silicone emboli: subcutaneously injected material can infiltrate the bloodstream through lymphatic uptake or by phagocytosis and dissemination through macrophages.[3] Subsequent obstruction of the small pulmonary vessels can lead to capillary leak and hemorrhage by hydrostatic forces. Pneumonitis can occur secondary to spillage of the silicone into the alveoli, or through a more systemic cell-mediated inflammatory reaction.[2-3]

Our patient presented with pneumomediastinum on presentation, a novel finding in this syndrome. Pneumomediastinum occurs when increased intra-alveolar pressure results in alveolar rupture and dissection of air along the interstitium and into the mediastinum.[4] In our patient, silicone-induced pneumonitis could have decreased lung compliance, increasing the intra-alveolar pressure and causing alveolar rupture.

Although there are no controlled studies regarding treatment of silicone pulmonary embolism syndrome, case reports suggest some benefit to high-dose steroid administration.[5] Additional care is supportive, as per treatment of any adult patient with acute respiratory distress syndrome.

**Figure 1:** Representative sections from computed tomography scan of the chest, with contrast. Images are presented cranially to caudally. Note the presence of silicone in subcutaneous tissue (arrows in images a-c); also note the presence of pneumomediastinum (arrowheads in images c-e)

**Figure 2:** Histopathology of transbronchial lung biopsy. (a) Many red blood cells within the alveoli, with organizing pneumonia present (H and E, ×100). (b) Multiple lipoid vacuoles within the interstitial space, a finding which is commonly seen in cases of the silicone pulmonary emboli syndrome (H and E, ×400)
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There are no conflicts of interest.

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