

A 26-year-old transsexual male with acute respiratory distress and haemoptysis

Case report

A 26-year-old male pre-operative transsexual presented to the emergency department of the University of Texas Southwestern Medical Center (TX, USA) with complaints of acute dyspnoea and frank haemoptysis. The patient did not use intravenous or illicit drugs, alcohol or tobacco, but had a history of unprotected homosexual intercourse. On physical examination, the patient was in severe respiratory distress, with a respiratory rate of 38 breaths per minute and accessory muscle use. The physical examination revealed subcutaneous emphysema, diffuse bilateral crackles, and mediastinal crepitus consistent with a Hamman's crunch. The patient had decreased facial and body hair, moderate breast augmentation and male genitalia. Arterial blood gases on room air revealed a pH 7.43, carbon dioxide tension (P_{CO_2}) 4.66 kPa (35 mmHg), arterial oxygen tension (P_{a,O_2}) 4.39 kPa (33 mmHg) and 65% saturation. The patient was placed on a high-flow oxygen mask (non-rebreather mask), and subsequent arterial blood gases showed a pH 7.43, P_{CO_2} 5.05 kPa (38 mmHg), P_{a,O_2} 7.98 kPa (60 mmHg) and 89% saturation.

Laboratory data revealed a haematocrit of 27% (0.27), a normal white blood cell count and an unremarkable coagulation profile. Serum chemistries revealed an elevated lactic dehydrogenase of 252 U·L⁻¹ (normal range 100–190 U·L⁻¹). A urinary toxicology screen was negative for cocaine or opiates. The patient was empirically treated for *Pneumocystis carinii* pneumonia (PCP) and severe community-acquired pneumonia, with intravenous methylprednisolone, trimethoprim/sulphamethoxazole and ticarcillin/clavulanate.

Blood, sputum and urine bacterial cultures were negative. Sputum samples were negative for *P. carinii* by direct fluorescent antibody and stains for acid-fast bacilli (AFB). An HIV antibody test was negative. The CD4 count was 103 cells·mm⁻³ (normal range 416–1,751 cells·mm⁻³) and HIV viral load was <400 copies·mL⁻¹ (limit of detection <400 copies·mL⁻¹). Serial bronchoalveolar lavage (BAL) revealed increasingly

bloody returns consistent with diffuse alveolar haemorrhage. The first aliquot contained 465,000 red blood cells· μ L⁻¹ and 800 nucleated cells· μ L⁻¹ (67% neutrophils, 25% monocytes, 3% lymphocytes, 2% mesothelial cells, 3% eosinophils), while aliquot number four contained 510,000 red blood cells· μ L⁻¹ and 300 nucleated cells· μ L⁻¹ (77% neutrophils, 15% monocytes, 2% lymphocytes, 3% mesothelial cells, 2% eosinophils). BAL stains were negative for PCP, AFB, and fungal and bacterial pathogens. Serum anti-neutrophil cytoplasmic antibody and anti-glomerular basement membrane antibodies were negative.

A computed tomography (CT) scan was performed on the patient and is shown in figure 1.

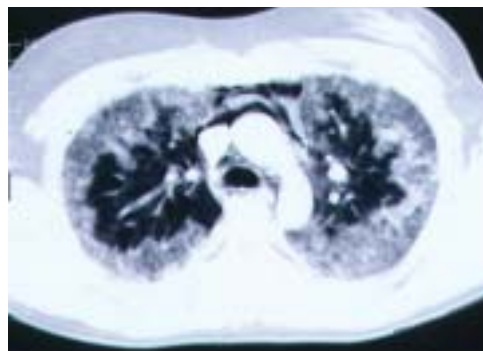


Figure 1
CT scan.

The patient's original BAL fluid was further examined with Sudan stain and an example of this is shown in figure 2.



Figure 2
BAL fluid stained with Sudan stain.

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Task 1
Interpret the CT scan.

Task 2
Interpret the results
of the BAL fluid stain.

Task 3
Based on your inter-
pretation, and after
reviewing the case
history, suggest a
possible diagnosis.

Answer 1

CT scan of the chest demonstrated a pneumomediastinum, subcutaneous emphysema, a small right-sided pneumothorax, and extensive, peripheral ground-glass opacities and consolidation.

Answer 2

The BAL fluid stain demonstrated the presence of mineral oil, with numerous rounded, red-stained oil droplets and alveolar macrophages filled with similar rounded cytoplasmic inclusions.

Further history

As the initial BAL suggested diffuse alveolar haemorrhage, the patient was repeatedly questioned about illicit and intravenous drug use, specifically cocaine, which he denied. Surprisingly, the patient then admitted to injecting approximately 60 cm³ of mineral oil into the upper inner quadrants of each breast on the morning of admission. Within 1 minute of injecting the second breast, the patient experienced the sudden onset of dyspnoea, followed by haemoptysis 60–90 minutes later. The patient initially withheld this important piece of history due to his fear of being ridiculed.

Answer 3

Diffuse alveolar haemorrhage and respiratory distress caused by mineral oil pulmonary embolism after subcutaneous injection.

Clinical course

Antibiotics were discontinued once final bacterial cultures were negative. The patient did not require intubation and rapidly improved on a high-flow oxygen mask. Steroids and oxygen were tapered over 6 days, and the patient was discharged on hospital day 7. The patient did not keep several follow-up appointments, but relatives reported that he had returned to Mexico without any adverse effects.

Discussion

Mineral oil is derived from petroleum and is sometimes referred to as paraffin oil or “lamp oil”. The first use of mineral oil injection for cosmetic purpose was described by Gersuny in 1899 and involved the scrotal injection of paraffin oil in a

young male [1]. Throughout the latter half of the 20th century, various case reports emerged, describing the complications related to local inflammatory reactions from the subcutaneous injection of paraffin oil at various body sites (penis, breast, cheek, eyelids and nose) [2–5]. Acute pneumonitis from mineral oil embolism has been sporadically reported after the intentional or accidental injection of mineral oil or as a complication of lymphangiography [6]. Pneumonitis and embolism from intravenous injection of mineral oil has been described in suicide attempts [7, 8] and in an intravenous drug abuser who injected a mineral oil-containing solution in the mistaken belief it contained cocaine [9].

The best clinical descriptions of inadvertent pulmonary embolism of inert oils come from case reports or case series of subcutaneous silicone injection, describing patients attempting feminisation of the breasts, buttocks, hips or face [10–12]. Pulmonary complications include acute pneumonitis, pulmonary oedema and adult respiratory distress syndrome [13, 14]. In a large case-controlled series reported in 1987, 13 transsexual males with pneumonitis secondary to subcutaneous silicone injections underwent BAL, demonstrating the presence of alveolar macrophages containing large, rounded, cytoplasmic inclusions that were composed of silicone, as confirmed by infrared spectrometry. The authors concluded that the injected silicone entered the bloodstream with embolism into the pulmonary circulation [11].

In the patient presented here, it is hypothesised that the injected mineral oil entered the veins draining the breast with embolism into the pulmonary circulation. This venous drainage originates in the circulus venosus, an anastomotic circle around the base of the papilla of the breast, and ends in the axillary and internal mammary veins [15]. The pneumomediastinum and subcutaneous emphysema are hypothesised to have resulted from the increased intrathoracic pressure due to severe coughing in the setting of bronchiolar obstruction caused by an inflammatory airway exudate [16], similar to a well-described occurrence among cocaine users [17, 18].

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References

1. Gersuny R. Harte und weiche paraffinprothesen. *Zentralbl Chir* 1903; 30: 1–5.
2. Quenu J, Perol E. Paraffinomas of the penis. *Int Abstr Surg* 1948; 86: 174.
3. Newcomer VD, Graham JH, Schaffert RR, Kaplan L. Sclerosing lipogranuloma resulting from exogenous lipids. *AMA Arch Derm* 1956; 73: 361–372.
4. Khoo B-C. Paraffinoma. *Plast Reconstr Surg* 1965; 36: 101.
5. Urbach F, Wine SS, Johnson WC, Davies RE. Generalized paraffinoma (sclerosing lipogranuloma). *Arch Dermatol* 1971; 103: 277–285.
6. Davidson JW, Kaufman SD. Pulmonary complications of lymphography. *N Engl J Med* 1971; 285: 237–238.
7. Perings SM, Hennersdorf M, Koch JA, et al. [Lipoid pneumonia following attempted suicide by intravenous injection of lamp oil]. *Med Klin (Munich)* 2001; 96: 685–688.
8. Drent M, Cobben NA, Henderson RF, Jacobs JA, Wouters EF, van Dieijen-Visser MP. BAL fluid LDH activity and LDH isoenzyme pattern in lipoid pneumonia caused by an intravenous injection of lamp oil. *Eur Respir J* 1996; 9: 2416–2418.
9. Marschke G, Glenchur H. Oil embolism, self induced. *JAMA* 1973; 226: 81.
10. Hage JJ, Kanhai RC, Oen AL, van Diest PJ, Karim RB. The devastating outcome of massive subcutaneous injection of highly viscous fluids in male-to-female transsexuals. *Plast Reconstr Surg* 2001; 107: 734–741.
11. Chastre J, Brun P, Soler P, et al. Acute and latent pneumonitis after subcutaneous injections of silicone in transsexual men. *Am Rev Respir Dis* 1987; 135: 236–240.
12. Chastre J, Basset F, Viau F, et al. Acute pneumonitis after subcutaneous injections of silicone in transsexual men. *N Engl J Med* 1983; 308: 764–767.
13. Coulaud JM, Labrousse J, Carli P, Galliot M, Vilde F, Lissac J. Adult respiratory distress syndrome and silicone injection. *Toxicol Eur Res* 1983; 5: 171–174.
14. Houben MH, Drent M, Jacobs JA, Schrey G, Ramsay G. Multiple organ dysfunction syndrome (MODS) after an intravenous injection of lamp oil (liquid paraffin). *Intensive Care Med* 1998; 24: 87–88.
15. Gray H. *Anatomy of the Human Body*. 20th Edn. Philadelphia, Lea & Febiger, 2000.
16. Macklin MT, Macklin CG. Malignant interstitial emphysema of the lungs and the mediastinum as an important occult complication in many respiratory diseases and other conditions: an interpretation of the clinical literature in the light of laboratory experiment. *Medicine* 1944; 23: 281–358.
17. Shesser R, Davis C, Edelstein S. Pneumomediastinum and pneumothorax after inhaling alkaloidal cocaine. *Ann Emerg Med* 1981; 10: 213–216.
18. Wiener MD, Putman CE. Pain in the chest in a user of cocaine. *JAMA* 1987; 258: 2087–2088.

The article gives an example of the importance of patient–physician communication, a topic which will be covered by Postgraduate course 22, held at the ERS Congress in Copenhagen. See page 190 for more details.