Talc Embolism: A Case of Extrapulmonary Complications

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A rare finding is a timely lesson for all clinicians who are touched in one way or another by the injectable drug crisis in the US.

A 34-year-old woman presented to the emergency department with diffuse, dull, aching chest pain, partly relieved with pain medications, associated with weakness and worsening shortness of breath over a couple of weeks. She had episodes of syncope as well. Her past medical history included myocardial infarction. She had diabetes mellitus complicated by severe gastroparesis that was managed with IV fluids and erythromycin, for which she had a peripherally inserted central catheter (PICC) in her left arm. There was no reported history of intravenous drug use. Her grandfather had pulmonary tuberculosis 4 years before her admission. Her medications included sublingual nitroglycerin, lisinopril, metoprolol, gabapentin, aspirin, clopidogrel, insulin, metformin, 1 liter normal saline infusion daily, and erythromycin IV.

The patient was admitted to the intensive care unit. Her maximum temperature was 36.5°C; pulse, 118 beats/min; BP, 104/57 mm Hg; RR, 22 breaths/min; O₂ saturation, 99% on 3L nasal oxygen. She was tachypneic, not diaphoretic, and had no heart murmurs, gallops, or rubs. Chest examination revealed occasional wheezes, no pleural rub. The rest of the examination was normal. Her troponin level was 1.14 ng/mL; white blood cell count, 9900/µL with no left shift; hematocrit, 32.2%; platelet count, 104,000/µL; aspartate aminotransferase, 26 units/L; alanine aminotransferase, 41 units/L; albumin, 3.3 g/dL; and glucose, 300 mg/dL. Electrolytes were normal. Urinalysis showed no pyuria or glucose. Blood cultures were negative. EKG showed sinus tachycardia, left atrial enlargement, and inverted T waves in inferior leads.

Chest X-ray findings were unremarkable. CT of the chest with contrast (Figure 1) showed diffuse micronodular infiltrates throughout both lung fields, a large nodule in the right middle lobe, and scattered mediastinal nodes. The main pulmonary artery was 3.2-cm in diameter. The radiologist called the intensivist and expressed a concern about miliary tuberculosis. The patient was placed in airborne isolation, and infectious diseases service was consulted to evaluate for miliary tuberculosis. AFB smears and cultures were ordered and PPD was placed.
Continued on next page>>

On the second day of hospitalization she reported a painless black spot in the left eye and major loss of vision. A dilated fundoscopy demonstrated embolization of the left central retinal artery. MRI of the brain (Figure 2) showed multiple emboli to the cerebrum and cerebellum. She denied injecting through her PICC.
Figure 2.
Transesophageal echocardiography showed a small patent foramen ovale. No vegetation was seen. Video-assisted biopsy of the right upper and lower lobes showed numerous talc granulomas distributed along the arterial tree (Figure 3). Biopsies from right upper and lower lobes showed multiple nodular foreign body granulomas (Figure 4). Foreign thromboembolic material was identified within lumen of small and medium pulmonary arteries (Figure 5). Foreign material was opaque, showed birefringence under polarized light characteristic of talc (Figure 6). PPD was negative.

The patient’s condition gradually stabilized and she was discharged home. However, she continued to have visual loss in the left eye.

Discussion
Talc-induced granulomatosis is rare and is mainly caused by injection of oral medication, ie, tablets, crushed and mixed with water.\textsuperscript{1-3} Finding pulmonary granulomata in an intravascular or perivascular location should alert one to the possible abuse of oral drugs administered intravenously.\textsuperscript{4} Pulmonary talc granulomatosis has masqueraded as a massive pulmonary embolism.\textsuperscript{5} However, extrapulmonary manifestations of talc embolism, such as those seen in our patient, have not been reported elsewhere. There are few publications in the medical literature about talc granulomatosis, and these focus mainly on pulmonary manifestations. What is unique about our patient was that she developed a sudden painless left eye visual loss on the second day of her admission, before a diagnosis had been made, which presented a significant challenge to the critical care team. A patent foramen ovale was subsequently diagnosed; through it, talc particles crossed to the left side of the heart and embolized to the systemic circulation causing central retinal artery occlusion and cerebral and cerebellar embolism.

Conclusion
Given the increased prevalence of intravenous use of oral medications, we present this case to raise clinical awareness of extrapulmonary talc granulomatosis as a complication. This rare condition should be considered in patients with risk factors or known history of IV drug use since the diagnosis...
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requires a high level of suspicion.

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