

Title: A Lethal Secret: A Deadly Complication of IVDA

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Case Report: 48 year old male with PMHx of Seizures presents to the ED with a 4 day history of shortness of breath. Patient states he was working on installing a new sink at home 4 days ago, when the sink fell onto his right chest and arm filled with water. He held the sink for approximately 20 minutes while his wife dumped the water. Patient recently saw his PMD for same complaint and was prescribed an albuterol inhaler without relief. He awoke this morning with worsening pleuritic chest pain radiating to the center of his back. The pain was aggravated by supine position and unrelieved by movements or medications. Patient's spouse stated he has had intermittent low-grade fevers for the past four days. Patient denied nausea, vomiting, cough, abdominal pain, syncope, focal neurological deficits, or LE edema. He denied having similar symptoms in the past.

ED Course: Vitals; T:101^oF, BP: 134/108, P: 146, RR: 24, 96% RA. Patient was in severe distress with continuous chest pain and SOB. Presenting complaint and physical exam were concerning for aortic dissection, so after bedside chest x-ray, patient was sent for emergent chest CT. His respiratory status continued to worsen and patient was placed on mechanical ventilation. Patient became hypotensive and was unresponsive to fluid boluses, so the patient was started on vasopressors. CXR revealed bilateral pleural effusions with scattered pulmonary nodules. Despite a thorough initial history from the patient, on re-evaluation prior to intubation, the patient was questioned on his social history secondary to the concerning pattern on CXR. He reluctantly admitted to IVDA for the past 6 months, a secret he had kept from his family. Chest CT showed bilateral scattered cavitory pulmonary nodules consistent with septic pulmonary emboli presumably secondary to his IVDA. Patient was admitted to MICU on multiple vasopressors, broad-spectrum antibiotics, and sedatives with the diagnosis of Septic Shock secondary to Septic Pulmonary Emboli.

Introduction: Septic pulmonary emboli are a rare, but well recognized disease process. It occurs with right-sided endocarditis or septic thrombophlebitis from dental, pelvic or tonsillar infections as well as infected central venous catheters. This uncommon pathological process generally presents with insidious onset of fevers, respiratory symptoms and lung infiltrates. The diagnosis of septic pulmonary emboli is rarely made in the ED due to the nature of progression and the vague symptoms that accompany the disorder on initial presentation.

Septic pulmonary emboli is not a diagnosis exclusive to the adult population. Data has shown more cases in children due to physicians recognizing risk factors in the pediatric population. Risk factors in children include soft tissue infections, osteomyelitis, and intravenous catheters. An uncommon complication of pharyngitis in the United States has been linked to septic pulmonary emboli as an uncommon cause. Lemierre's syndrome has been described for decades in the literature, but has rarely been recognized. There is a male predominance and usually affects the young, healthy individual with a primary HEENT infection being either pharyngitis, sinusitis, mastoiditis, or odontogenic infections. These infections lead to septic thrombophlebitis of the internal jugular vein, which subsequently leads to emboli formation and disseminated metastatic abscesses such as septic pulmonary emboli. Pulmonary involvement has been noted in up to 97% of cases with pulmonary abscesses and empyema. The primary microbiological source of infection is different in Lemierre's than other septic emboli. *Fusobacterium*, an anaerobic microbe, is the most common cause of Lemierre's syndrome, where as *Staphylococcal* species are the most common microbe of septic pulmonary emboli.

A study from, *Chest* 2005 described the initial presenting complaints for confirmed cases of septic pulmonary emboli. Fever was the most common symptom (93%) followed by dyspnea (36%), pleuritic chest pain (29%), sore throat (21%), cough (14%), and hemoptysis (7%). Most cases were not initially diagnosed in the ED with the median time to diagnosis being 3 days from time of admission. Due to the generality of symptoms, clinicians must be astute paying particular

attention to diagnostic imaging studies to make the diagnosis in the ED.

According to *Chest*, all confirmed cases of septic pulmonary emboli had CXR abnormalities. All CXR were read as patchy infiltrates or nodules. Cavitations were seen in 23% of CXR and bilateral or unilateral effusions were noted in 54% of the x-rays. Chest CT scans are good follow-ups in toxic appearing patients or those with patchy infiltrates and possible cavitory lesions. A 2006 study from the Journal of Roentgenology states the most common CT finding in septic emboli are multiple nodules in various stages of cavitation. Another clinical pearl that has been mentioned throughout the literature is to look for the "feeding vessel sign" on CT. A "feeding vessel" is a prominent central vessel within a nodule. These vessels have been traced back to the left atrium on CT and the latest studies support pulmonary veins being the "feeding vessels."

Septic pulmonary emboli are a rare and difficult diagnosis for an ED physician to make on admission due to the generality of symptoms. From symptom onset to diagnosis has a median time of 18 days, proving the difficulty of diagnosis for all clinicians. Eliciting a good history and discovering hidden risk factors for septic emboli may mean the difference between a hospital admission or morgue disposition.

Citations:

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