H152 The Speckled Polarized Lung: Microcrystalline Cellulose Pulmonary Granulomatosis as a Complication of Intravenous Drug Abuse

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The goal of this presentation is to examine the histopathologic findings of microcrystalline cellulose pulmonary granulomatosis from intravenous drug abuse.

This presentation will impact the forensic science community by discussing the case of a lung transplant patient with histopathologic findings of intravenous drug abuse. This case also emphasizes the necessity of suspecting intravenous drug abuse in patients without a reported history in the setting of lung transplantation. Additionally, the pulmonary complications and histopathologic findings of intravenous drug abuse in the setting of lung transplantation will be discussed.

The medical complications of drug abuse are diverse, involving almost any organ and varies with the type of substance and route of administration. Pulmonary foreign body granulomatosis is caused by intravenous injection of pulverized pharmaceutical tablets or more uncommonly by nasal inhalation of drugs. Oral medications commonly contain insoluble binding filler agents that may include microcrystalline cellulose, talc (magnesium silicate), or potato or corn starch. Respiratory complications may involve lung parenchyma, upper airways, pleural space, and pulmonary vasculature.

This study presents a case of a 42-year-old female with a history of chronic obstructive lung disease status post-single lung transplant. Post-operative complications were related to anastomosis, granulation tissue, and narrowing of the right bronchus intermedius requiring frequent dilatation. She was admitted for worsening dyspnea on exertion six months following transplantation. Her hospitalization was complicated by appendicitis, Cytomegalovirus (CMV) viremia, and *Klebsiella* bacteremia. Additionally, she experienced symptoms of non-specific chest pain and tightness. An echocardiogram showed normal Left Ventricular Ejection Fraction (LVEF) with no wall motion abnormalities. Chest radiographs demonstrated non-specific changes. The decedent fell in her room striking her head and was found pulseless. Despite extensive cardiopulmonary resuscitation, the patient expired and an autopsy was requested by her family.

Histopathologic examination revealed diffuse polarizable crystalline deposits with numerous foreign body granulomatous changes involving both the native and transplanted lung due to diffuse microvascular pulmonary microemboli. The rodlike particle shape and size and birefringence with polarized light were consistent with microcrystalline cellulose. No evidence of acute inflammation or rejection was identified in the transplant lung. A review of numerous sequential transbronchial biopsies demonstrated foreign body type granulomatosis beginning three months following transplantation. The presence of microcrystalline cellulose in the lungs was highly suspicious of intravenous drug abuse despite a negative clinical history of abuse.

Intravenous drug abuse can cause numerous pulmonary complications including pulmonary granulomatosis and microemboli with severe respiratory compromise. Histopathologic examination is of paramount importance in determining cause of death in patients who reportedly have no history of drug abuse. This presentation discusses a case of serendipitous intravenous drug abuse in a lung transplant patient.

Lung Transplantation, Pulmonary Granulomatosis, Intravenous Drug Abuse