



H107 Fatal Excipient Lung Disease: An Autopsy Case Series

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Learning Overview: The goal of this presentation is to delineate the spectrum of clinical presentations and autopsy findings encountered in patients with fatal excipient lung disease and the need for careful scrutiny of deaths in patients receiving prescribed opioids.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating a non-specific spectrum of gross, histologic, and circumstantial findings that are associated with excipient lung disease, further decreasing the misclassification and underreporting of this entity.

Introduction: Excipients are described as filler or binder materials found in oral tablets or pharmaceutical substances. These materials are inactive, inert, insoluble, and added to pharmaceutical compounds to enhance the lubrication effect, form, absorption, solubility, and/or shape of the tablet. Some excipients found in oral tablets include talc (magnesium silicate), magnesium stearate, fumed silica, microcrystalline cellulose, crospovidone (a form of Polyvinylpyrrolidone [PVP]), and starch. Excipients and adulterants similar to those listed may be found in illicit drugs, such as heroin formulations representing typical contaminants or dilutants.

When pharmaceutical-grade tablets are crushed and injected intravenously, the excipient may induce a foreign body angio-granulomatous reaction within the lung, known as “excipient lung disease.” This foreign body granulomatous reaction is typically histopathologically similar to the described reactions in illicit intravenous drug user injection. Clinically, the patient can present with a toxidrome, as well as acute, subacute, or chronic signs and symptoms, such as sudden or unexpected death, pain, dyspnea, fever, pulmonary fibrosis, acute lung injury, thromboembolism, pulmonary hypertension, and/or non-specific centrilobular nodularity on imaging. As this medication may be prescribed to the patient for a legitimate medical reason or diagnosis, in the setting of positive detection by toxicologic studies, the pulmonary findings can be overlooked or attributed to another disease process and, therefore, left unchecked, resulting in respiratory failure. Identification of this pathologic process at autopsy is usually not difficult; however, attributing the disease to excipients and the correlation with the toxicology and circumstances can make the cause of death determination challenging. Furthermore, lack of recognition by clinicians and radiologists will leave many cases of excipient lung disease underreported and, therefore, misclassified as frequently the injection of the crushed tablets is clandestine. Reported herein is the autopsy findings in three cases of excipient lung disease in patients with complex medical histories and a range of clinical presentations.

Methods: Three cases from the Miami-Dade Medical Examiner and Las Vegas Clark County Coroner were identified during the period of 2015–2018. Autopsy reports and case files were reviewed, and pertinent gross and histologic findings were tabulated.

Results: All toxicology levels were either within therapeutic range and/or not considered fatal.

	Age; Sex	Medical Conditions	Known Intravenous Drug Use	Clinical Diagnostic Suspicion	Polarizable Foreign Material in Lungs	Postmortem Toxicology	Cause of Death
1	22; F	Sickle Cell Anemia, Depression, Opioid Dependence	No	None	Large Quantity	Oxycodone	Excipient Lung Disease
2	28 F	Asthma, Substance Abuse, Endocarditis, Arm Deep Vein Thrombosis	Yes	Mycobacterial Infection	Large quantity With Granulomas	Oxycodone, Quetiapine, and Venlafaxine	Excipient Lung Disease
3	44; F	Bipolar Disorder, Asthma, Obesity, Crohn’s and History of Hodgkin Lymphoma	No	Atypical Mycobacterial Infection	Large Quantity With Granulomas And Fibrosis	Fentanyl, Codeine, and Promethazine	Excipient Lung Disease

Conclusion: Excipient lung disease can be a difficult clinical and radiologic diagnosis due to the non-specific diagnostic findings and the range of clinical presentations along with potentially complex competing diagnoses. All three patients were prescribed opiates for underlying medical conditions. Both typical and atypical mycobacterial infection were considered in two of the three cases as the probable cause of the underlying lung disease. The cases described herein further delineate the potential spectrum of clinical presentations and autopsy findings encountered in patients with fatal excipient lung disease and the need for careful scrutiny of deaths in patients receiving prescribed opioids.

Excipient, Lung, Angiogrammatous Inflammation

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