



H78 A Case of Necrotizing Pneumonia From a Marijuana Water Pipe: A Recreational Experience Gone Wrong

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Learning Overview: After attending this presentation, attendees will better understand the potential complications that can result from habitual marijuana consumption via a water pipe or “bong” and similarly used devices for inhaled marijuana usage.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by showing a rare association between rapidly fatal bacterial necrotizing pneumonia and habitual marijuana use with water pipes. This presentation will also add to the knowledge of those conducting medicolegal death investigations and forensic autopsies in cases of sudden deaths in young persons with no medical history and drug history limited to marijuana usage.

A 34-year-old White female with only a known history of chronic marijuana use, was complaining of flu-like symptoms (vomiting, chills, and fever) for two days prior to death. The decedent was found obtunded and in cardiac arrest when Emergency Medical Services (EMS) arrived. The decedent was successfully resuscitated, transported to the hospital, and immediately intubated due to respiratory failure. She presented with multi-organ system failure, lactic acidosis due to prolonged downtime, and a clinical suspicion of Disseminated Intravascular Coagulopathy (DIC). A chest radiograph was performed with comment limited to endotracheal tube position. Limited point of care testing revealed a critical anemic state with markedly decreased hemoglobin levels (5.4g/dl). Influenza A/B screens were negative. No other clinical workup was performed due to the grave prognosis, and the decedent expired approximately four hours post-admittance. Further investigation revealed that the decedent preferred a water pipe or “bong” when using marijuana.

At autopsy, the decedent had a diffuse vesicular rash with petechial hemorrhages over the conjunctivae and chest. Cloudy effusions were in the pleural cavities. The lungs were heavy (lung combined weight: 2,910 grams) and consolidated. The pulmonary parenchyma of both lungs was diffusely necrotic and purulent. Other notable gross findings included an enlarged liver with diffuse steatosis, petechial hemorrhages over the pleural surfaces, epicardial surface, and renal calyces.

Postmortem blood and lung tissue cultures were obtained and submitted. Microbiology results showed growth of an isolated bacterial species (*Streptococcus pneumoniae*) in both submitted lung and blood specimens. Postmortem toxicology testing was significant for common marijuana metabolites, indicating chronic usage.

Histopathological examination of the lungs revealed diffuse areas of dense neutrophilic inflammation with alveolar septal destruction and perivascular infiltration. Additionally, the lungs were diffusely involved with large clusters of pigmented macrophages within the alveolar air spaces and septae. Microscopic examination of the skin from the chest showed sub-epidermal blister with thrombi in the dermal blood vessels. Microthrombi and fragmented red blood cells (schistocytes) were identified in the kidney. The liver showed diffuse hepatosteatosis with thin strands of fibrosis.

The manner of death was natural, and the cause of death was Thrombotic Thrombocytopenic Purpura (TTP) due to Necrotizing Pneumonia due to *Streptococcus pneumoniae* bacteremia, with marijuana abuse listed as a contributing factor.

A review of the medical literature shows few case reports demonstrating a possible correlation between necrotizing pneumonia or related conditions and marijuana usage with a water pipe.¹⁻³ However, this is the first reported case of *Streptococcus pneumoniae* as the causative bacteria species of necrotizing pneumonia presenting with TTP.

The purpose of this case study is to present evidence to the medical community of potential complications of habitual marijuana usage in the hopes of preventing unfortunate circumstances such as this one, as well as to make the forensic community aware of this unique but known complication to better assist in determining cause and manner of death.

Reference(s):

1. Kumar, Agni Nhirmal, Chun Ian Soo, Boon Hau Ng, Tidi Hassan, Andrea Yu-Lin Ban, and Roslina Abdul Manap. Marijuana “Bong” Pseudomonas Lung Infection: A Detrimental Recreational Experience. *Respirology Case Reports*, no. 2 (2017). doi:10.1002/rcr2.293.
2. Munchhof, W.J, Konstantinos, A., Wamsley, M., Mortlock, M., Gilpin, C. A Cluster of Tuberculosis Associated With Use of a Marijuana Water Pipe. *The International Journal of Tuberculosis and Lung Disease*, (September 2003): 7(9):860-865.
3. Thu, K., Hayes, M., Miles, S., Tierney, L., Foy, A. Marijuana “Bong” Smoking and Tuberculosis. *Internal Medicine Journal*, (April 2013): 43(4):456-458. Doi:10.1111/imj.12089.

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