



### H76 A Ten-Year Retrospective Study of Risk Factors Associated With Deaths Due to Pulmonary Emboli in Washington, DC

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**Learning Overview:** After attending this presentation, attendees will be acquainted with the risk factors of pulmonary emboli and be familiar with potential new risk factors based upon a ten-year review of pulmonary emboli cases that were investigated at the Washington, DC, Office of the Chief Medical Examiner (OCME).

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by increasing awareness and diagnosis of pulmonary emboli based upon the recognition of additional risk factors, therefore potentially decreasing the number of deaths that occur yearly from this preventable disease process.

Pulmonary emboli are thrombi that obstruct the pulmonary arteries and most commonly originate from blood clots that form in the deep veins of the extremities. Common and established risk factors include decreased mobility, pregnancy, obesity, and genetic predisposition. Potential new risk factors will also be looked at, such as drug abuse and decedents who are intellectually delayed. Although detectable and treatable, according to recent CDC data, it is estimated that 60,000–100,000 Americans die each year from pulmonary emboli.<sup>1</sup>

In 2006, the DC OCME investigated 879 natural deaths, of which there were two deaths that were caused by pulmonary emboli.<sup>2</sup> In 2015, four decedents died from a pulmonary embolism out of 477 natural deaths.<sup>3</sup> During this ten-year review, it was found that 43.9% ( $n=40$ ) of the decedents that died from pulmonary emboli were females, while 56% were males ( $n=90$ ). It was discovered that 92% of the decedents were African American and 8% were Caucasian.

During this study, the most common risk factors were examined. Obesity, with the average body mass index of 33.2, was mostly seen in this population. New risk factors were also revealed. It was found that 12% ( $n=11$ ) of the decedents had a history of drug abuse. Crack/cocaine ( $n=5$ ) and alcohol abuse ( $n=4$ ) were most commonly seen among these decedents. Interestingly, there was only one case where drug intoxication was officially listed as a contribution to the decedent's cause of death (acute cocaine intoxication followed by prolonged hospitalization and pulmonary emboli). Therefore, this evidence may or may not support a correlation between pulmonary emboli and drug abuse, but it proves that a certain population may be at risk. Other risk factors that came out of this study were intellectual disabilities ( $n=3$ ), fetal alcohol syndrome ( $n=1$ ), autoimmune diseases ( $n=3$ ), and inability to ambulate ( $n=5$ ).

The OCME has a responsibility to report its data to the public and health care agencies to prevent further deaths from occurring. Although this study resulted in small numbers, new risk factors were revealed. People with drug abuse history or who are intellectually disabled have an increased chance of developing pulmonary emboli. If their intellectual and physical disability prevents ambulation, then their chances will increase further. Analyzing data and promoting discussions about this subject allow agencies to create programs that can reach out to at-risk populations. This research warrants an investigation to ascertain the correlation between drug abuse and the risk for pulmonary emboli.

#### Reference(s):

1. *Venous Thromboembolism (Blood Clots)*. Centers for Disease Control and Prevention. April 18, 2018. Accessed August 01, 2018.
2. Government of District of Columbia. Office of the Chief Medical Examiner. *2006 OCME Annual Report*. By Roger A. Mitchell. 2006. Accessed July 24, 2018.
3. Government of District of Columbia. Office of the Chief Medical Examiner. *2015 OCME Annual Report*. By Roger A. Mitchell. 2015. Accessed July 26, 2018.

#### Pulmonary Emboli, Thrombi, Autoimmune Diseases