H68 An Uncommon Fatal Ruptured Pseudoaneurysm of the Brachial Artery in an Injected Drug Abuser

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Learning Overview: After attending this presentation, attendees will understand a rare case of fatal ruptured pseudoaneurysm of the brachial artery occurring just before heroin self-injection in a chronic drug abuser.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by stressing the importance of scene investigation, autopsy findings, and toxicology results to determine the cause and manner of death in chronic drug abusers.

Intravenous (IV) drug abusers are a population at risk for pseudoaneurysm, an aneurysmal sac with a single layer of fibrous tissue and blood clots present in its wall. In IV drug abusers, this occurs due to traumatic damage by the repeated injections and infections and mostly involves femoral arteries.[1,2]

A 41-year-old man with a previous history of heroin-cocaine abuse presented twice to the hospital emergency room with a painful and swollen arm. The first time, with a clinical suspicion of thrombophlebitis, he refused a surgical consultation and was then discharged with a prescription for anticoagulant therapy. Two days later, he returned to the hospital, and a venous doppler was recommended but the man never did it. Ten days later, he died in his flat in a pool of blood, with an empty syringe and a pre-filled syringe beneath his body; traces of cocaine powder were found in the apartment. At autopsy, there were numerous circular scars on the surface of his arms and legs. A swelling in the right antecubital fossa with a central 3.5cm x 2.6cm defect, exposition of vascular tissue, and clotted blood on the surface was observed. Accurate postmortem examination with a right forearm incision demonstrated a pseudoaneurysm of the right brachial artery with a 1cm x 0.4cm tear on its anterior wall.

Other findings on internal examination included an edematous brain, edematous and anthracotic lungs, and diffuse lymphadenopathy. The section of the pulmonary artery showed scarce blood, as well as in the vena cava; there was no blood in the aorta. Microscopic examination of the vascular wound samples confirmed layers of fibrin-hematic tissue with infiltration of acute inflammatory cells into the surrounding skin specimen. General drug screening by Gas Chromatography/Mass Spectrometry (GC/MS) on the blood sample provided negative results for opiate derivatives, revealing instead the presence of cocaine, opioids, and methadone in the urine sample.

According to medicolegal, histological, and toxicological findings, the cause of death was ruled as hemorrhagic shock due to spontaneous rupture of brachial artery pseudoaneurysm in a chronic drug abuser. Given these results, a direct correlation with acute drug intoxication was excluded. In this presentation, the uncommon role that the intent to self-administer a drug just before vascular rupture could have on the manner of death will be discussed.

Reference(s):

1. Lardi C., Fracasso T. Spontaneous External Rupture of Femoral Pseudoaneurysm–Fatal Hemorrhage Related to Drug Abuse. *Am J Forensic Med Pathol*, 2012:33(4):319-321.
2. Behera C., Naagar S., Krishna K., Taraporewalla D.R., Garudadhri G.V., Prasad K. Sudden Death Due to Ruptured Pseudoaneurysm of Femoral Artery in Injected Drug Abusers–Report of Four Cases at Autopsy and Review of Literature. *J Forensic Leg Med*, 2014:22:107-111.

Pseudoaneurysm, Brachial Artery, Drug Abuse