H99 Right Atrial Infarction With Rupture

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After attending this presentation, attendees will better understand rarely seen acute atrial infarction cases.

This presentation will impact the forensic science community by providing information concerning the importance of examination of the atrium in cardiac death cases.

Cardiac death usually occurs as a result of severe atherosclerosis of coronary arteries dependent left ventricular myocardial infarction induced ischemic heart disease; however, infarction can occur outside of the ventricles and in the other parts of the heart. Atrial infarct is a rare condition in ischemic heart disease. It is characterized by insidious advancement and non-specific electrocardiographic findings that make its diagnosis prior to death a rare occurrence.

This presentation discusses the case of a 33-year-old male victim with a rare case of non-atherosclerotic, unruptured, aortic intima separated, disruption of coronary blood supply dependent atrial infarction.

The case of a 33-year-old male with moderate mental retardation (IQ=40) with right atrial infarction dependent rupture of the transmural is presented. On a winter day, the man felt ill on the street and, following Cardiopulmonary Resuscitation (CPR) by first responders, died in the ambulance while being transported to the hospital. An autopsy was performed due to the sudden, unexpected death. On external examination, there was no sign of trauma to the chest or to either of his arms beyond CPR-related injuries. A CPR-related broken sternum and bruises were found. There was no gross pathology in the trachea or lungs. Six hundred milliliters of clotted fluid was emptied from the pericardial sac. The heart weighed 390 grams. A rupture measuring 4cm x 3cm was detected in the rear wall of the right atrium of the heart. Heart valve circumference measurements were within normal limits. Thickness of the right ventricular wall was measured at 0.7cm and the left ventricular wall at 1cm. Aortic dissection was found in the first 2.5cm-3cm of the aorta which was the cause of the bleeding found in the region. The lumen of the coronary artery was found to be clear.

In the histopathological examination, the area neighboring the right atrium rupture section showed early signs of fibroblastic activity consistent with three-day to seven-day-old Myocardial Ischemic (MI) findings. Myocardial fibers had signs of bleeding which is a characteristic of 4-12 hour post-MI. In sections of the vessel wall of the aorta, signs of bleeding and segregation in the media layer, foci of mononuclear inflammatory cells in adventitia, and hemorrhage foci were detected.

Toxicological examination revealed the presence of chlorpheniramine, ephedrine, pseudoephedrine, phenylpropanolamine, acetaminophen, and naproxen. The quantity of these ingredients was not at a toxic level. After examination of all toxicological, histopathological, and autopsy findings, a conclusion of "acute right atrium infarction dependent atrium rupture and cardiac tamponade" as cause of death was made. Despite the openness of the coroner artery lumen, separation of the ascending intimal aorta caused narrowing of the right aortic ostia and therefore resulted in an infarct in the right atrium.

Atrial Infarction, Atrial Rupture, Autopsy

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