



### **G88 Aortic Aneurysm Rupture Into the Lung With Formation of Pseudoaneurysm**

*Carlos F. Chavez-Arias, MD, Puerto Rico Institute of Forensic Sciences, PO BOX 11878, Caparra Heights Station, San Juan, PR 00922-1878; and Javier G. Serrano, MD\*, and Edda Rodriguez, MD, Puerto Rico Institute of Forensic Sciences, Calle Maga Esquina Casia #9, Urb. Reparto Metropol, San Juan, PR 00921*

The goal of this presentation is to describe and discuss a case of aortic aneurysm rupture into the lung parenchyma with formation of pseudoaneurysm.

This presentation will impact the forensic science community by demonstrating a rare complication of a thoracic aortic aneurysm.

Rupture of thoracic aneurysm into the lung with formation of pseudoaneurysm is rare. There are few reported cases discussing the diagnostic approach and management of this complication. In the researched literature there are no reports of this complication as an autopsy finding.

This case involved 72-year-old, black Hispanic male with history of poorly controlled arterial hypertension and two cerebrovascular accidents. He was a heavy smoker and occasional alcohol drinker. He was found lying supine on the street. The paramedics pronounced him dead at scene after evaluation. There were no signs of violence or foul play at scene.

At autopsy the body corresponded to a well-developed and well-nourished adult male. He was 66-inches tall and weighed 152 pounds. External examination showed no significant evidence of trauma. Reflection of the skin over the anterior thorax showed no significant hemorrhagic infiltrates or fractures. On internal examination the left thoracic cavity contained 700 grams of clotted blood and 600 ml of liquid blood. Examination of the thoracic organs revealed that the source of bleeding was a ruptured aneurysm of the middle third of the descending thoracic aorta. The aortic aneurysm ruptured into the parenchyma of the lower lobe of the left lung forming a pseudoaneurismatic structure that contained a fusiform mural organized thrombus that measured 16.5 x 6.5 x 5.0 cm. Cut sections of the affected pulmonary parenchyma demonstrated that the cavitory lesion was surrounded by a well formed and circumscribed wall. Sections of the thrombus showed a surface with a multilayered arrangement. Focal areas of hemorrhage were present in the pulmonary parenchyma surrounding the cavity. The aorta showed severe atherosclerosis with calcification and focal ulceration of the atherosclerotic plaques. Histopathologically the aorta had no evidence of inflammation; however, degenerative changes were recognized near the possible rupture site. The heart weighed 300 grams and had mild left ventricular hypertrophy. The rest of the thoracic and abdominal organs had no remarkable macroscopic pathology. Postmortem toxicological evaluation was negative for alcohol, cocaine, opioids, and cannabinoids. Serological test for syphilis was negative.

Reports of patients with aortic aneurysm rupturing into the lung with formation of pseudoaneurysm are few. There are no reported cases in the researched literature describing the presence of this condition as an autopsy finding. An aortic aneurysm or dissection that ruptures into the lung parenchyma or erodes into a bronchus can lead to acute, massive hemoptysis, hemothorax and death. This case is particular because the aneurysm ruptured into the visceral pleura and lung parenchyma forming a pseudoaneurismatic structure where the blood lodged. Two factors appeared to combine and contribute in the formation of this pseudoaneurismatic structure, delaying the free extravasation of blood to the pleural cavity and imminent death. First is the anatomic location of the aortic aneurysm. In this case the aneurysm was located in the mid portion of the descending segment, adjacent to the medial aspect of the lower lobe of the left lung. The second factor is the elasticity of the lung parenchyma that cushioned the aortic aneurysm wall, allowing a slow passage of blood with formation of the cavity. Rupture and extravasation of blood to the pleural cavity occurred when the intracavitary pressure exceeded the elastic capacity of the tissues surrounding the pseudoaneurismatic structure. Fibrous tissue attachment between the lung and aorta could have also played a role, but it was not clearly demonstrated at autopsy.

**Aortic Aneurysm, Pseudoaneurysm, Lung Parenchyma**