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"Multidisciplinary Approach to Iatrogenic Pulmonary Artery Pseudoaneurysm Treatment: A Case Report"

Introduction: An iatrogenic pulmonary artery pseudoaneurysm (PA PSA) is a rare, often fatal complication that can be induced by a medical procedure such as Swans Catheter placement. Recognizing the signs of a possible pulmonary artery pseudoaneurysm and consulting multiple hospital teams is crucial to inducing effective intervention and treatment plans.

Case Presentation: We present a 69-year-old female with a history of advanced heart failure, coronary artery disease, and multiple myocardial infarctions. The patient underwent an elective, minimally invasive CardioMEMS procedure in which an implantable wireless device (carried by a Swans Catheter) was placed in the pulmonary artery (PA) to measure pressure and monitor progression of Heart Failure. The procedure was completed at an outside hospital. The patient then developed acute onset hemoptysis from the left lung. The patient was emergently intubated and given supportive medications to control bleeding. The patient was transferred to our tertiary referral hospital for further evaluation and management. On arrival, the patient was hemodynamically stable. At this time, Medical Intensive Care Unit (MICU), Cardiothoracic Surgery (CT), and Interventional Radiology (IR) were consulted. A computed tomography pulmonary angiogram (CT PE) obtained demonstrating a pulmonary artery pseudoaneurysm (PA PSA). The patient was admitted to MICU. Immediately following coil embolization, the patient was hemodynamically stable with no further hemoptysis. However, the patient could not be extubated. Two days later, the patient developed volume overload, renal failure, and sepsis. The patient was then transitioned to comfort and died. A post mortem examination confirmed the cause of death as septic shock; autopsy showed no signs of inflammation around the pseudoaneurysm or signs of unsuccessful coil embolization.

Discussion: Iatrogenic injury (caused by medical examination or treatment) is the most common acquired cause of PA pseudoaneurysm. Incidence of PA PSA is a rare (0.2%), but often fatal (50% mortality rate) following complication after Swans Catheter placement. Heart failure weakens all walls of the PA which makes perforation complication during CardioMEMS likely. Appropriate and timely diagnosis is essential for intervention in heart failure patients with suspected pseudoaneurysms. If PSA has an infectious origin and size is small, aggressive antibiotics may prevent need for surgical intervention. A full patient history is essential to consider when assessing risk for rupture pre-PSA formation and post-PSA intervention. Endovascular repair is the preferred treatment for PA PSA. Glidewires have high risk of perforation; proper placement and technique of devices is essential to preventing iatrogenic PSAs.

Conclusion: The presented case emphasizes a multidisciplinary approach to treatment of iatrogenic pulmonary artery pseudoaneurysms and the epidemiological importance of addressing risk factors for CardioMEMS procedures.