

PICC'ing Your Way into the Pericardium: A Potential Catastrophic Complication of a PICC Line

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Abstract

This is a rare case of a peripherally inserted central catheter (PICC) that was found to be in the pericardiophrenic vein on a post-procedure chest X-ray. An 82-year-old man was admitted to the medical ICU for severe sepsis with shock and a PICC was placed for vasopressor support. Malpositioning of a central venous catheter can lead to catastrophic results including, perforation, pericardial effusion and tamponade.

Keywords: Peripherally inserted central catheter; PICC; Pericardium; Central venous catheter

Introduction

There is an epidemic increase in use of central venous catheters. Malposition of these catheters can lead to catastrophic results [1]. Obtaining a post-procedure chest radiograph is common practice in an attempt to prevent these disasters. However with ultrasound guidance and EKG confirmation, more hospitals are moving away from obtaining post-procedure radiographs. This is a rare case demonstrating the importance of a confirmatory radiograph post-procedure.

Case Report

An 82-year-old man was admitted to the medical ICU for severe sepsis with shock due to Gram-negative pneumonia. Attempts to establish peripheral venous access were unsuccessful and thus a peripherally inserted central catheter (PICC) was placed using ultrasound guidance for prolonged antibiotic administration. A subsequent chest radiograph demonstrated the PICC traversing the left hemithorax and terminating in a position overlying the left ventricle. An arterial placement was initially suspected but venous placement was confirmed by measuring central venous pressure of 8cm H₂O and pO₂ of 32 mmHg from the PICC line while simultaneous peripheral arterial O₂ saturation on pulse oximetry was 97%. A computed tomogram (CT) confirmed the PICC terminating in the pericardiophrenic vein. The PICC was not used and removed without incident (Figures 1 and 2).

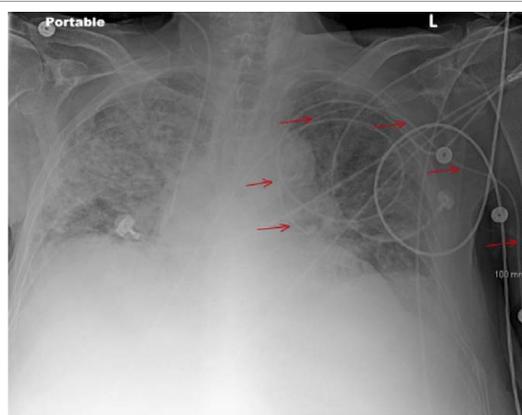


Figure 1: PICC line coursing through the left mediastinum with tip near the paracardiac space.

Discussion

Complications related to PICC lines can occur during insertion, while indwelling or after discontinuation. This case is a complication related to the insertion of the PICC into the pericardiophrenic vein. The pericardiophrenic vein traverses the mediastinum with its accompanying artery and phrenic nerve; it is a branch of the internal thoracic vein, draining into the brachiocephalic vein. Infusion of medications or fluids in a malpositioned central venous catheter may result in perforation and possible pericardial hemorrhage and tamponade [2]. These complications from malpositioned catheters are mostly described in literature relating to neonates. The incidence of this complication for adults is unknown. Although our patient developed no problems during a one-day cannulation, it is important to recognize the possibility of PICC

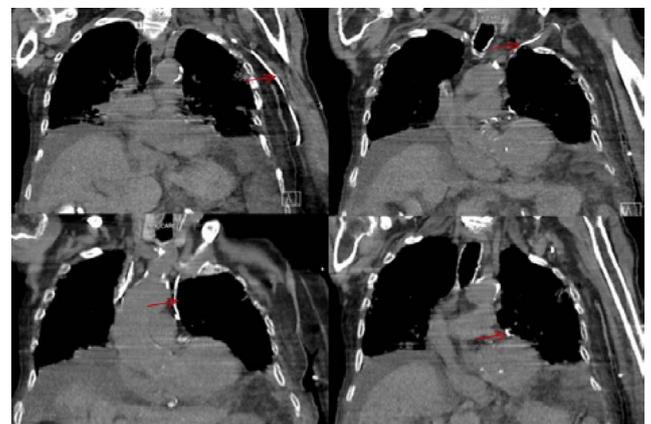


Figure 2: Computed tomogram demonstrating the PICC coursing through the central venous system with its tip in the pericardiophrenic vein.

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placement in the left paramediastinal space and its consequences even with ultrasound guidance [3,4]. This emphasizes the importance of radiography after insertion. A CT may be helpful to differentiate central venous line malposition, such as described in our case, from occasionally noted venous anomalies such as an aberrant left-sided superior vena cava. In the latter case, the central venous line may be used safely.

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