Wandering peripherally inserted central catheter tip: an under-recognised intensivist challenge

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DESCRIPTION

A 75-year-old man with a history of atrial fibrillation presented with altered mental status. He was intubated in the emergency department for airway protection. A CT scan of the brain revealed multiple embolic strokes. He also developed aspiration pneumonia after 48 h in the intensive care unit. In view of poor peripheral intravenous access and stable haemodynamics, a peripherally inserted central catheter (PICC) was placed using the micro-introducer technique from the right side via the basilic vein. The position of PICC tip was found at the junction of the superior vena cava (SVC) and the right atrium and was confirmed with a standard technique of real-time ECG monitoring during insertion and chest X-ray (CXR) postinsertion (figure 1A). A routine CXR performed 2 days post-PICC insertion for the evaluation of cardiopulmonary status revealed an intact PICC with its tip in the left innominate vein (figure 1B). PICC tip

was repositioned utilising the standard technique and was found to be at the SVC junction by a CXR. A repeat CXR 3 days after repositioning of the PICC again revealed tip migration to the left innominate vein, requiring placement of a new PICC via the right cephalic vein.

PICCs are well-established methods for long-term venous access. PICCs as opposed to regular central venous catheters can be managed in the acute in-hospital settings as well as skilled nursing facilities.¹ However, the location of the catheter tip is rarely re-examined after the initial confirmation on a routine basis perhaps based on the assumption that PICC tip migration is rare. Nonetheless, catheter tip migration to other veins is a unique complication as in our case and sometimes may be life threatening. It could lead to injection of caustic substances into low-flow, small calibre veins. Infusion into veins of a smaller calibre may cause local phlebitis, venous thrombosis and vessel wall rupture.²⁻³ Reports of catheters in the pericardiophrenic vein causing cardiac tamponade and in the internal mammary vein causing chest or back pain, have been previously described.

Catheter fragmentation and detachment that can lead to migration of the loose portions have also been reported.⁴ Migration of intact PICC tip is however quite rare, and to the best of our knowledge, it is not very well reported in the literature. One may speculate that central catheter malposition may occur either due to patient's physical movements or due to nursing manipulation while providing catheter care to unsutured catheters. Since our patient was well sedated and the catheter external distance was largely unaltered, we postulate that combined physical forces from bucking on the endotracheal tube (ETT) and negative intrathoracic pressure during ETT suction could have been the most likely mechanisms of spontaneous intact PICC tip migration.

Figure 1 (A) Chest X-ray obtained immediately after the insertion of peripherally inserted central catheter (PICC) revealed PICC tip at the junction of superior vena cava and right atrium. (B) A routine chest X-ray performed 2 days after the PICC insertion revealed an intact PICC with its tip in the left innominate vein.

Learning points

- ▶ Peripherally inserted central catheter (PICC) tip migration is rare. It is important to be cognisant about this complication as it can impose serious life-threatening complications.
- ▶ Physical forces play a significant role in the migration of PICC tip in intubated patients.
- ▶ A consensus for catheter position monitoring, especially for out-of-acute hospital settings is required.

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