Central venous catheter fracture and migration to the right pulmonary artery: a potentially life-threatening condition

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DESCRIPTION
A middle-aged woman presented with acute chest pain after a saline flush was applied to her central venous catheter (CVC). It had been placed 12 months earlier, through the left subclavian vein to perform adjuvant chemotherapy treatment on her stage IA HER2-positive invasive breast cancer. No complications had been reported during surgical insertion, and the treatment was performed without any resistance to infusion. However, at this moment, a CVC blockage was noted, with no forward and backward flow. A chest X-ray was performed, showing a fracture of the CVC after the cuff with its migration to the pulmonary trunk, right pulmonary artery and its inferior branch (figure 1). She remained asymptomatic after the diagnosis, and no dysrhythmic events were recorded during cardiac monitoring. A chest CT scan confirmed the migration of the fractured catheter to the right main and interlobar pulmonary arteries (figure 2). After a multidisciplinary team discussion, the migrated catheter was removed percutaneously through the right femoral vein without complication.

Figure 1 Chest X-ray showing the fracture of the central venous catheter right after the cuff (arrowhead) with migration to the right pulmonary artery (circle). Diagram illustration from right pulmonary arterial anatomy adapted from Radiology KeyFastest Radiology Insight Engine, Pulmonary Embolism and Other Pulmonary Artery Lesions, available at https://radiologykey.com/pulmonary-embolism-and-other-pulmonary-artery-lesions/.

Figure 2 Chest CT scan reconstruction with evidence of migration of the central venous catheter through the right pulmonary artery and its inferior branches with kicking of the proximal extremity (arrow). Diagram illustration from right pulmonary arterial anatomy adapted from Radiology KeyFastest Radiology Insight Engine, Pulmonary Embolism and Other Pulmonary Artery Lesions, available at https://radiologykey.com/pulmonary-embolism-and-other-pulmonary-artery-lesions/.

Fragmentation of the catheter with embolisation through the heart into the pulmonary artery is a rare but serious complication of the CVC, occurring in 0.6%–9.7% of patients1 2 The most frequent causes of intravascular catheter embolisation are pinch-off syndrome, catheter injury during implantation, catheter disconnection and catheter rupture.3 In this case, CVC fracture may have occurred due to repeated compression of the catheter between the first rib and clavicle, since it had functioned well for 12 months without any episodes of occlusion or resistance to infusion, and with no history of...

Patient’s perspective
I was terrified when the diagnosis of catheter fracture with migration to the lungs and arteries was made. Fortunately, nothing bad happened to me. The procedure was a success, and now I have no symptoms. I am so glad that the doctors will learn more on this subject from my clinical case.

trauma. Percutaneous retrieval through the femoral vein is the method of choice to remove the migrated catheter.4

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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REFERENCES

Learning points
► Catheter fracture and embolisation is a rare, potentially life-threatening condition, and has no specific clinical signs.
► Catheter fracture and embolisation can occur without any obvious precipitating cause.
► Clinicians have to keep it in mind with a high grade of suspicion to diagnose this complication of central venous catheter placement.