Migration of a central IV catheter into the pulmonary artery
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Section: Cardiovascular
Imaging Technique: CT
Case Type: Clinical Cases
Patient: 55 years, male

Clinical History:

The patient was admitted for surgical removal of a gastric tumour. The surgeon tried to remove a dysfunctional totally implantable venous device before the operation.

Imaging Findings:

The patient was admitted for surgical removal of a gastric tumour. The surgeon tried to remove a dysfunctional totally implantable venous device before the operation, but unfortunately he extracted only the proximal part of the implantable venous device. A chest radiograph indicated that the distal part of the catheter had migrated into a right distal branch of the pulmonary artery. A CT scan was performed to confirm the localisation of this distal part of the catheter.
A detailed history elicited from the patient revealed that he had had a totally implantable venous device placed at another hospital one year previously for treatment of his gastric tumour, but then he had refused the chemotherapy and failed to return for follow-up. He had not advised other physicians of this situation. Apparently the catheter had fractured and migrated into the right pulmonary artery, where it remained until discovered incidentally on the chest radiograph performed at our hospital.

The fragment was successfully retrieved by a percutaneous endovascular technique, and another central venous catheter with implantable port was implanted for future chemotherapy.

Discussion:

Central venous catheterisation (CVC) has become an important manoeuvre both for measuring central venous pressure and for the treatment of patients requiring long-term chemotherapy, total parenteral nutrition or fluid replacement.
Catheter fracture represents a rare problem among non-infectious complications following the insertion of totally implantable long-term central venous access systems. A literature survey revealed a total incidence of catheter fractures of 0-2.1%.

Catheter fatigue from prolonged use contributes to in situ fracture, fragmentation, and distal embolisation. The catheter fragments migrate distally along the blood stream, finally lodging in the vena cava, right atrium, right ventricle, or the main pulmonary artery or one of its branches. The final site of lodgment depends on the length,
weight, and stiffness of the fragment.

The possible complications of centrally embolised foreign bodies include pericardial tamponade due to myocardial perforation, sepsis, endocarditis, thrombosis with subsequent pulmonary embolism, myocardial infarction, and arrhythmias.

According to Blair et al., mortality is highest when the catheter is located in the right side of the heart, lower when it is in the vena cava, and lowest when it is in the pulmonary artery.

Srihari et al. reported a case of a patient in whom a catheter fragment was retrieved from the pulmonary artery 11 years after embolisation without complications.

Reynen et al. described a 14-year history of central embolisation by a guide wire with no pulmonary symptoms for 12 years. Extraction was not attempted in this case as the guidewire was adherent to the vascular wall.

For extraction of iatrogenic foreign bodies causing central embolisation, percutaneous removal is preferable. Loop snares, Dormia baskets, and hooked guide wires and catheters may be used. Thoracotomy is indicated if nonsurgical removal fails.

The patient in this case was asymptomatic, with no adhesions of the catheter to the vessels walls. The catheter fragment was retrieved easily, without complications.

**Differential Diagnosis List:** Migration of a central IV catheter into the pulmonary artery

**Final Diagnosis:** Migration of a central IV catheter into the pulmonary artery

**References:**


Description: A radiograph shows the catheter in the trunk and the right pulmonary artery. Origin:
Figure 2

Description: CT scan demonstrates the position of the catheter in the distal branch of the pulmonary artery. Origin:
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