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IMAGE

Right-Sided Pneumothorax After Cardioverter-Defibrillator Implantation

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A 27-year-old woman was hospitalised after cardiopulmonary resuscitation for an out-of-hospital cardiac arrest. After post-arrest intensive care leading to a favourable recovery, a dual-chamber implantable cardioverter-defibrillator (ICD) was inserted on day 5 for long Q-T syndrome. This was well tolerated until day 6 when dyspnoea and pleuritic pain ensued. A chest X-ray (Figure 1A) showed the new left-sided ICD and a contralateral moderate-sized pneumothorax. The patient underwent insertion of a small-bore pigtail chest drain with prompt resolution of symptoms and the pneumothorax. The possibility of ICD lead or set-screw related atrial perforation was entertained. ICD-leads impedances, sensing, and capture thresholds, however, remained normal. Similarly, transthoracic echocardiogram failed to disclose evidence of perforation or pericardial fluid. Four (4) days later, new-onset scant haemoptysis prompted a thoracic computed tomography (CT) (Figure 1B-C), demonstrating ground-glass opacities (GGO) adjacent to the right atrial lead, suggesting lead perforation through the pericardium and directly into the pleural cavity. Still, there was no pericardial fluid, or changes, in the ICD parameters. The right atrial lead was repositioned the same day without complications. The patient was subsequently discharged and did well on follow-up.

Ipsilateral pneumothorax is a well-described complication of the subclavian vein approach during ICD or pacemaker implantation [1]. Contralateral pneumothorax, in contrast, is a much rarer complication and most often due to atrial lead perforation [2,3]. It is usually noted within hours to a few days after device implantation. The chest X-ray and echocardiogram rarely disclose the cause, and the absence of pericardial effusion does not rule out a micro-perforation. Computed tomography scan can be useful by showing surrogate markers of the perforation but it is hard to image the lead-tissue interface directly due to motion and metallic artifacts. In this CT image, the presence of GGO adjacent to the lead, likely as a result of parenchymal blood or inflammation, provided indirect evidence of lead or set-screw related micro-perforation extending through the pericardium and the visceral pleura in close proximity.

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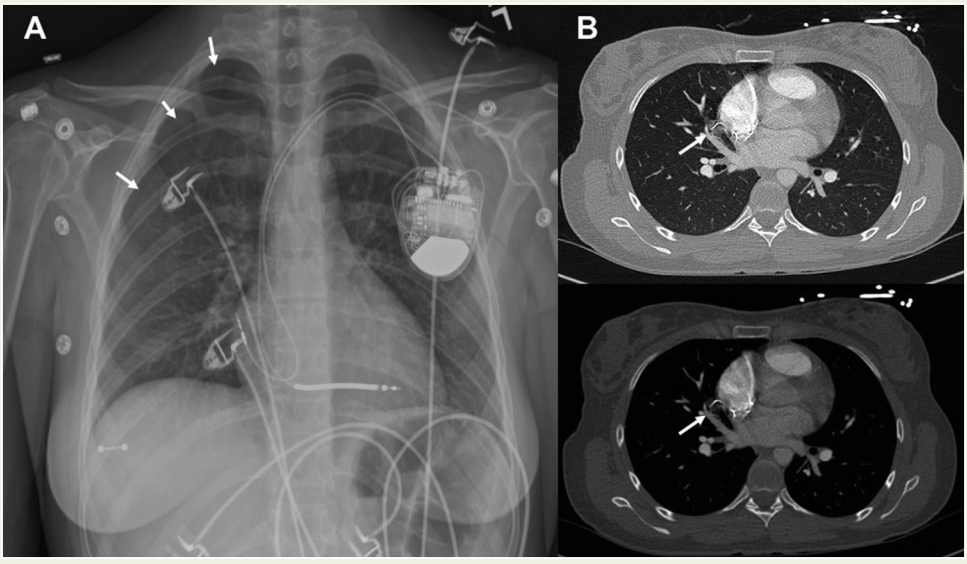

Figure 1 Anteroposterior view of the chest x-ray following ICD placement (A) and Helical computed tomography scan of the chest with intravenous contrast (B-C). A moderate right apical pneumothorax is observed. New left-sided ICD placed with pulse generator in the anterior chest wall and transvenous leads extending via the left subclavian vein and superior vena cava into the right atrium and right ventricle. (B-C) Thin-slice axial images in the lung window at the level of the pulmonary veins (B) and in bone window (C). Focal, minimally consolidative and ground-glass opacity in the medial right middle lobe, in close proximity to the right atrial ICD wire. Accurate delineation of the atrial lead tip is limited by motion and metal artefact.
Abbreviation: ICD, implantable cardioverter-defibrillator.

Conflicts of Interest and Sources of Funding

None.

Declaration of Interests

None.

Images have not been previously published.

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