Right pneumothorax resulting from an atrial lead inserted through the left cephalic vein

Pneumothorax droit secondaire à une sonde atriale introduite par la veine céphalique gauche

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An 81-year-old hypertensive woman underwent dual chamber permanent pacemaker implantation for sinus node disease at another hospital. Both atrial and ventricular leads were active fixation leads (Tendril ST Optim 1888TC, St Jude Medical, St. Paul, MN, USA) and were inserted via the left cephalic vein. The atrial lead was screwed into the right atrial free wall. Chest X-ray after implantation showed adequate lead position and no pneumothorax. After initial unremarkable postoperative monitoring, the patient complained of sudden onset of chest pain and shortness of breath on the second day. Auscultation revealed diminished breath sounds on the right. Chest X-ray and computed tomography scan demonstrated right-sided pneumothorax and extrusion of the helix of the atrial lead through the right atrial wall (Figs. 1 and 2). Transthoracic echocardiogram revealed no evidence of pericardial effusion. A chest tube was inserted to drain the pneumothorax. The atrial lead was successfully extracted percutaneously with surgical backup readily available, and a new lead was implanted without complications.

Pneumothorax complicates approximately 1–2% of pacemaker implantations, usually after puncture of the subclavian vein. When pneumothorax occurs after cephalic vein approach, cardiac perforation must be suspected and promptly evaluated. Reported risk factors for cardiac perforation using an active-fixation atrial lead are overscrewing of the lead, distal stylet insertion, abrupt lead withdrawal with extended screw or inadvertent displacement of the atrial lead during ventricular lead positioning. Although no definite cause of perforation could be ascertained in the present case, caution is always advised while screwing the lead into the very thin atrial free wall.

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**Figure 1.** Panel A: chest X-ray obtained during CT scan showing extrusion of the atrial lead through the right atrial wall. Panel B: zoom on lead tip.

**Figure 2.** Chest CT scan revealing atrial perforation and right-sided pneumothorax.

**Conflict of interest statement**

None.