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Pneumopericardium Develops After Pacemaker Implantation

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A 72-year-old man with coronary artery disease presented for implantation of a dual-chamber pacemaker to treat complete heart block. His medical history included coronary artery bypass grafting (CABG) of the left internal mammary artery to the left anterior descending coronary artery 8 years previously. At operation, the patient's challenging venous anatomy made it difficult to gain left axillary venous access, so we opted for venous access by fluoroscopic-guided puncture of the left subclavian vein. After access was obtained, the pacemaker implant procedure was completed uneventfully.

A chest radiograph obtained immediately after operation was unremarkable. The next morning, a routine chest radiograph showed a moderately sized pneumothorax in the patient's left lower hemithorax and pneumopericardium (Fig. 1). Noncontrast computed tomographic images of the chest confirmed these findings (Fig. 2).

During the next 3 days, as seen on serial chest radiographs, the pneumothorax and pneumopericardium gradually resolved without treatment. On postoperative day 4, the patient was doing well and was discharged from the hospital.

Comment

Pneumopericardium, a rare complication of pacemaker implantation, usually results when an atrial lead perforates the myocardium, enters the lung parenchyma, and establishes communication between the lung and pericardial space.[1,2] Occasionally, pneumopericardium results when the right ventricular lead perforates the myocardium.[3] In this case, there was no echocardiographic or imaging evidence of myocardial perforation.

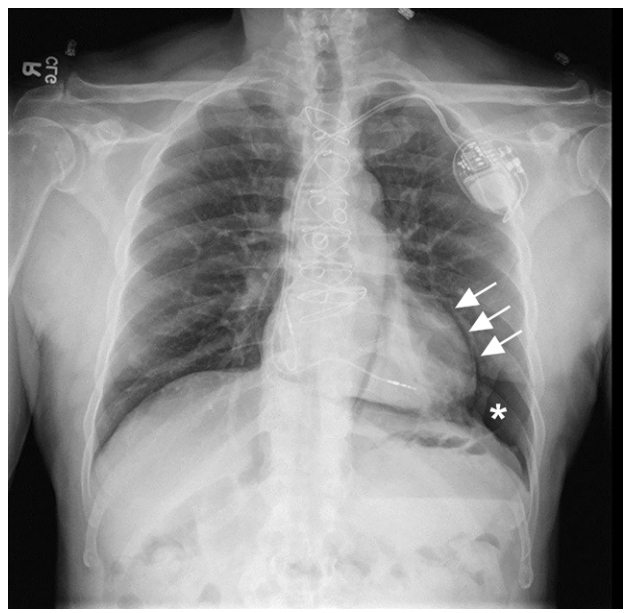

Fig. 1 *Chest radiograph shows pneumothorax in the left lower hemithorax (asterisk) and pneumopericardium (arrows) as a thin silhouette along the cardiac border.*

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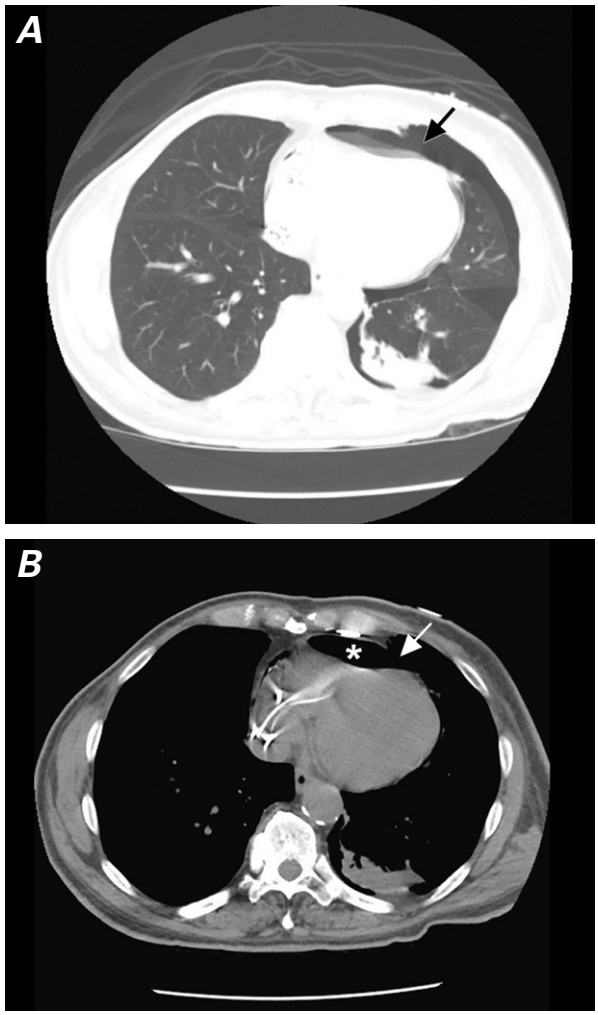

Fig. 2 *Noncontrast computed tomographic images of the chest obtained through* ***A****) parenchymal and* ***B****) mediastinal windows show left basal pneumothorax, collapse of the ipsilateral lung parenchyma, and pneumopericardium (asterisk) resulting from communication between the pleural and pericardial spaces (arrows).*

The pneumothorax likely resulted from a needle-stick injury to the left lung during attempts to access the left axillary vein. The cause of the pneumopericardium was not immediately apparent. We think that the patient's previous CABG may have caused a pleuropericardial fistula to form, allowing air to enter the pericardial space. A similar mechanism has been described.[4] The lung adhesions that formed after CABG probably limited the pneumothorax to its basal location.

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