A case of pneumomediastinum and pneumothorax after cardiac resynchronization therapy implantation

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Introduction: Cardiac resynchronization therapy (CRT) is known to be the most import treatment for patients with severe left ventricular (LV) systolic dysfunction and intraventricular conduction delay. According to recent studies, the incidence of cardiac perforation after CRT implantation is rare (0.32%), but the mortality is 10.6%, which can be fatal. We report a case of cardiac perforation, 6 days after CRT implantation.

Case report: A 65-year-old female visited hospital with New York Heart Association (NYHA) class III dyspnea. The patient had had heart failure for at least 5 years, and was in NYHA class III despite of optimal medical therapy. LV ejection fraction was 32% and QRS duration was 196 msec with left bundle branch block morphology. CRT-D implantation was performed, and an active-fixation (screw-in) right atrial lead was used. After 6 days of CRT implantation, the patient presented chest pain and dyspnea. Accompanied by fever, inflammatory marker was elevated and pneumomediastinum and pneumothorax seen on chest CT. Air was observed around the RA lead tip while the tip was positioned outside the heart chamber. The atrial lead threshold increased (0.5V to 2.2V) and impedance decreased (below 300). We thought the pneumomediastinum and the pneumothorax was developed due to right atrial lead perforation. Right atrial lead reposition was performed, and the active-fixation atrial lead was used again. Symptoms improved soon after the procedure, microperforation was blocked on CT, and pneumothroax and pneumomediastinum disappeared. The patient was discharged without further complication.

Conclusion: Cardiac perforation after endocardial pacing lead insertion is rare, but it is very fatal if it occurs in patient with severe heart failure. When non-specific symptoms such as chest pain appear after CRT implantation, the possibility of cardiac perforation should always be kept in mind. In addition, it is possible that the active fixation lead can be used again in reposition.