Title
Bronchoalveolar lung carcinoma manifesting itself as a swinging heart.

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A 59-year-old man with a history of resected adrenal adenoma presented with a 2-week history of progressive dyspnea on exertion, decreasing exercise tolerance, and pleuritic chest pain. On physical examination, his heart rate was 106 beats/min and his blood pressure was 79/61 mmHg. His jugular venous pressure was 12 cm H2O. Distant heart sounds and scattered rhonchi were heard on chest auscultation. An electrocardiogram showed sinus tachycardia, low frontal voltage, and electrical alternans (Fig. 1). A transthoracic echocardiogram showed a 3-cm circumferential pericardial effusion (Fig. 2), with both right atrial systolic and right ventricular diastolic collapse along with substantial pendular motion (Fig. 3). The patient underwent emergent pericardiocentesis. After 900 mL of hemorrhagic fluid was drained, his clinical condition improved. Results of cytology (Fig. 4) and electron microscopy (Fig. 5) revealed bronchoalveolar lung carcinoma. The patient was discharged from the hospital and began an outpatient chemotherapy regimen of carboplatin and pemetrexed.

Comment

Pericardial effusion and tamponade are known complications of many advanced malignancies; however, an initial presentation of malignancy with tamponade is rare.1 Investigators in several case series have reported that non-small cell adenocarcino-

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**Fig. 1** Twelve-lead electrocardiogram shows sinus tachycardia, low frontal voltage, and variation in the amplitude of the P wave and QRS complexes in successive beats, consistent with electrical alternans.

**Fig. 2** Transthoracic echocardiogram (apical 4-chamber view) shows a 3-cm circumferential pericardial effusion (arrow).
ma is the most common malignancy to present with tamponade. Metastases to the heart and pericardium develop mainly from the spread of tumor cells to the mediastinal lymph nodes, with subsequent spread to the epicardial lymphatic plexus. The slow accumulation of large volumes of fluid may then occur, due to obstruction of the lymphatic circulation. Other mechanisms include hematogenous spread, direct tumor invasion, or penetration through disseminated lesions on the mediastinal pleura adjacent to the pericardium. Recurrent malignant pericardial effusion occurs in up to 40% of patients after pericardiocentesis. In addition to pericardiotomy, treatment options to prevent reaccumulation include the instillation of sclerosing agents such as bleomycin, carboplatin, and minocycline, and more recently thiotepa. Retrospective data comparing surgical drainage with pericardiocentesis and intrapericardial sclerosis with thiotepa showed similar outcomes, including complication rates with a median survival of 97 days for all patients.

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References