High-Pressure Loculated Pericardial Effusion in Postpericardiotomy Syndrome

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An 81-year-old man presented with a 10-day history of progressively worsening dyspnea on exertion and decreased exercise tolerance 2 months after coronary artery bypass surgery for triple-vessel coronary artery disease; his pericardium was not closed at that time. Physical examination revealed blood pressure of 112/64 mm Hg, heart rate of 102 bpm, distant heart sounds, bilaterally decreased breath sounds and dullness on percussion of both lung bases, jugular venous pressure of 20 cm, 2+ bilateral lower extremity edema, and pulsus paradoxus of 23 mm Hg. Transthoracic echocardiogram was performed revealing large inferomedial loculated pericardial effusion (Figure 1, A systole, B diastole, and online-only Data Supplement Movie I), with biatrial and biventricular diastolic collapse (arrows in Figure 1B), bilateral large pleural effusions, and flow velocity paradox. Right heart catheterization and pericardiocentesis were performed. The right atrial pressure and the pericardial effusion tracings showed increased right mean atrial pressure (19 mm Hg) with respirophasic augmentation of the Y descents. The pericardial pressure tracing was ventricularized with unusually high pressure of 52/20 mm Hg (Figure 2) and was highly suggestive of right ventricular catheter placement; injection of agitated saline under echocardiographic guidance confirmed correct placement in the pericardial cavity. Ventricularized pressure curve was caused by the outward movement of the free wall of the left ventricle in systole (after diastolic collapse of the left ventricle); this is documented on the echocardiogram (Figure 1, A systole, B diastole, and online-only Data Supplement Movie I). After drainage of 700 mL of hemorrhagic fluid from the pericardium, mean right atrial pressure decreased to 10 mm Hg, and intrapericardial pressure normalized. Left ventricular diastolic collapse resolved as evident by postpericardiocentesis echocardiography (Figure 3). Bilateral ultrasound-guided thoracentesis was performed with complete symptom relief. Laboratory examination revealed negative cytology for malignancy, sterile cultures, and the pleural fluid by Light criteria was defined as an exudate; thyrotropin level was normal. The patient was diagnosed with postpericardiotomy syndrome and treated with colchicine and NSAIDs. He remained symptom free at 2-month follow-up.

Figure 1. Transthoracic echocardiogram (view from the back) revealing a large inferomedial loculated pericardial effusion (peri) (A, systole; B, diastole), with biatrial and biventricular diastolic collapse (arrows in B). LV indicates left ventricle; RV, right ventricle.
Cardiac tamponade late after cardiothoracic surgery is a serious but well-described condition, and it is linked to postpericardiotomy syndrome. Loculated effusions are generally amenable to echo-guided pericardiocentesis; loculated effusions may be more difficult to diagnose and may have unusually high pressures, causing atypical hemodynamic manifestations. NSAIDs remain the cornerstone treatment for postpericardiotomy syndrome, with colchicine occasionally being used for treatment and now considered for prevention of this syndrome.

Disclosures

None.

References


Figure 2. Hemodynamic tracing obtained from simultaneous recording of the right atrial pressure (showing respirophasic augmentation of the Y descents) and the pericardial pressure. The pericardial pressure is ventricularized and unusually high, 52/20 mm Hg.

Figure 3. Left, Parasternal short-axis echocardiographic view revealing on the left panel (pre) loculated pericardial effusion (peri) causing left ventricular diastolic collapse (arrows). Right, (post) effusion is no longer present after pericardiocentesis. LV indicates left ventricle, RV, right ventricle.
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