A transthoracic echocardiogram of a 72-year-old woman who was admitted to the hospital complaining of dyspnea at rest and peripheral edema showed severe pericardial effusion with right chamber and left atrial collapse, as well as left ventricular hypertrophy with systolic anterior movement of the septal mitral leaflet and systolic gradient through the left ventricular outflow tract (peak gradient of 70 mm Hg; online-only Data Supplement Movie I and Figure 1). A grade 3/6 systolic murmur was heard. The ECG showed sinus rhythm and respiratory phasic changes in QRS amplitude (Figure 2). The patient was referred to the catheterization laboratory for pericardiocentesis. Intrapericardial pressure was elevated (20 mm Hg) and equaled right atrial pressure. Simultaneous left ventricular and aortic pressure recording showed a systolic gradient (120 mm Hg) through the left ventricular outflow tract (Figure 3). Contrast left ventriculogram showed a narrowing of the left ventricular outflow tract. After removal of 200 mL of hematic pericardial fluid, intrapericardial pressure and right atrial pressure decreased to 8 mm Hg, and the left ventricular outflow tract gradient disappeared completely (Figure 4). Cytological study of fluid was positive for adenocarcinomatous pericardial cells, and thoracic computed tomography showed a left pulmonary hiliar node consistent with lung cancer. A pericardial drainage with indwelling catheter was established and maintained for 7 days. A posterior echocardiogram showed mild pericardial effusion, left ventricular hypertrophy with systolic anterior motion of the mitral valve, and a mild left ventricular outflow tract gradient (9 mm Hg; online-only Data Supplement Movie II and Figure 5).

A tense pericardial effusion can cause right chamber collapse, left atrial collapse, and, much more infrequently, left ventricular compression. Experimental works have shown pseudo left ventricular hypertrophy (increased wall thickness, reduced left ventricular cavity, and normal left ventricular total mass) provoked by injection of progressive amounts of fluid in the pericardial sac.\textsuperscript{1} A case of pseudo idiopathic subaortic stenosis provoked by tense pericardial effusion has been described.\textsuperscript{2} Another patient with idiopathic subaortic stenosis developed a left ventricular outflow tract gradient only in the course of an additional tamponade.\textsuperscript{3}

Disclosures

None.

References

Figure 2. ECG on admission.

Figure 3. Hemodynamic register before pericardiocentesis. A systolic gradient between aorta and left ventricle is apparent, together with elevated intrapericardial (A) and right atrial (B) pressures. Marked pulsus paradoxus in the aortic pressure curve is also apparent. LVP indicates left ventricular pressure; AP, aortic pressure; RAP, right atrial pressure; and IPP, intrapericardial pressure.
Figure 4. Hemodynamic register after pericardiocentesis. Intrapericardial pressure decreased to 8 mm Hg, and left ventricular outflow tract gradient disappeared completely. LVP indicates left ventricular pressure; AP, aortic pressure; RAP, right atrial pressure; and IPP, intrapericardial pressure.

Figure 5. Doppler continuous registry after pericardiocentesis. A peak gradient of 9 mm Hg was observed in the left ventricular outflow tract.
Left Ventricular Outflow Tract Obstruction Caused by Tamponade
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