Rapidly progressive dyspnea

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The electrocardiogram shown in *Figure 1* is from a 56-year-old man who came to the emergency department because of the recent onset of progressively worsening dyspnea. The tracing shows sinus tachycardia and striking alternation of the QRS complexes in every lead except aVL. More subtle changes are slight ST-segment elevation confined to leads V_3–V_5; slight PR-segment depression in leads 1, 2, aVF, V_3–V_6; alternation of T waves in leads 1, V_4–V_6; and alternation of P waves in lead V_1. The electrocardiogram is virtually pathognomonic of pericarditis with a large pericardial effusion and tamponade (1, 2), a diagnosis confirmed by his symptoms, markedly elevated neck veins and striking pulsus paradoxus. After pericardiocentesis of 1100 mL of serosanguineous fluid, the electrocardiogram continues to show sinus tachycardia and subtle ST-segment elevation and PR-segment depression *(Figure 2)*.

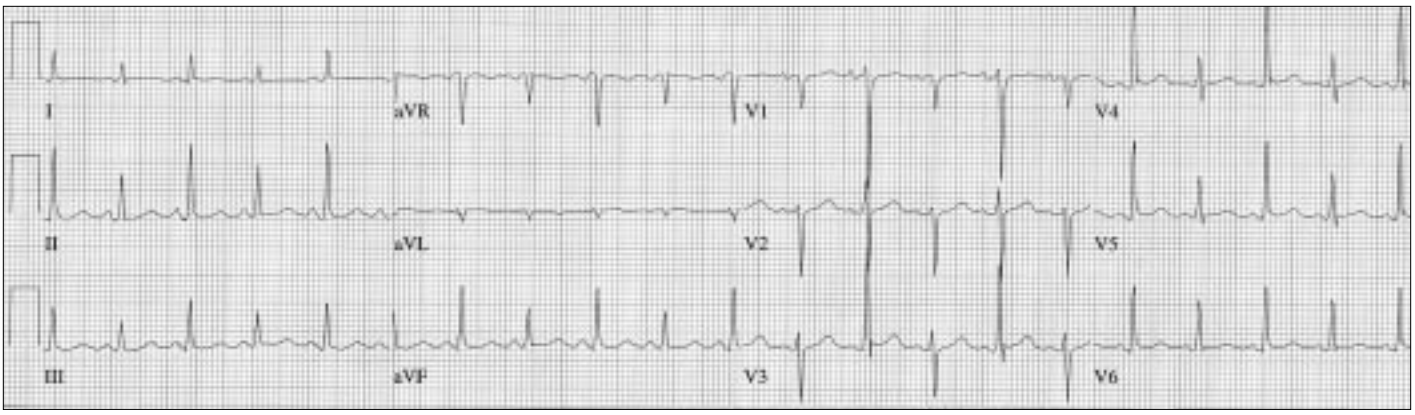

Figure 1. Electrocardiogram recorded immediately before pericardiocentesis.

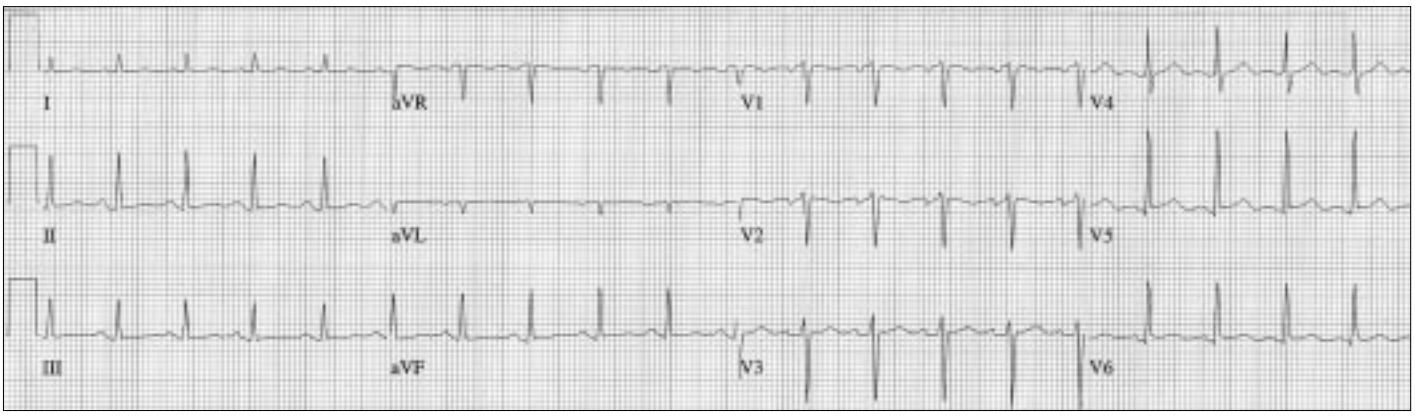

Figure 2. Electrocardiogram recorded immediately after pericardiocentesis.

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Although alternation of the QRS complex, especially when accompanied by P-wave and T-wave alternans, is highly specific for a large pericardial effusion, the finding lacks sensitivity. Resting sinus tachycardia and low QRS voltage, which may be appreciated only when the electrocardiogram is compared with earlier ones, are more frequent but far less specific findings. The combination of widespread ST-segment elevation and PR-segment depression is highly specific for acute pericarditis regardless of the presence or size of an effusion.

The list of causes of pericardial effusion is nearly endless and includes many malignancies. Among these, carcinomas of the lung and breast are the most frequent, both because these are common cancers and because the primary tumors and their lymphatic drainage are proximate to the heart. This patient had carcinoma of the lung as the cause of his pericarditis with large effusion and tamponade.

1. Bashour FA, Cochran PA. The association of electrical alternans with pericardial effusion. *Dis Chest* 1963;44:146–153.
2. Nizet PM, Marriott HJL. The electrocardiogram and pericardial effusion. *JAMA* 1966;198:189.