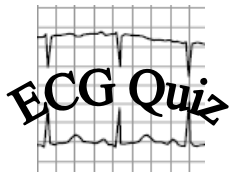

Unusual Stress ECG

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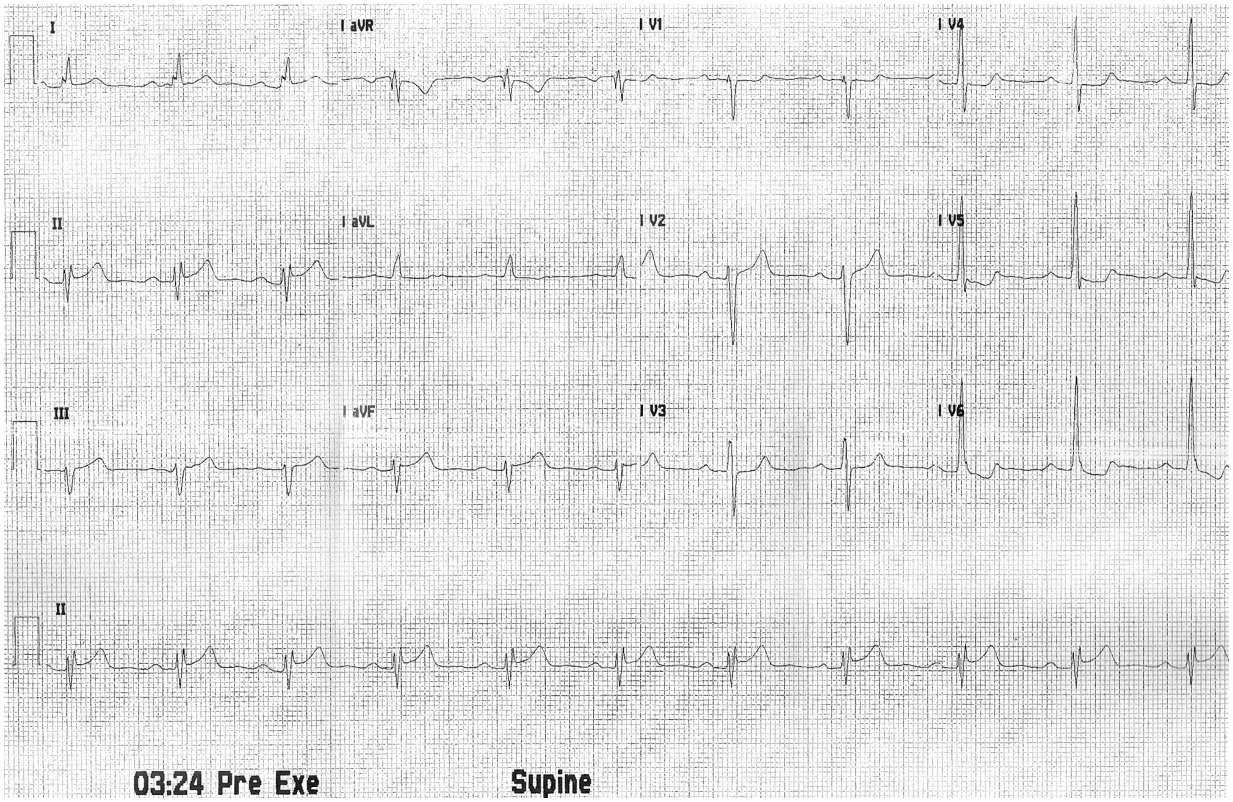
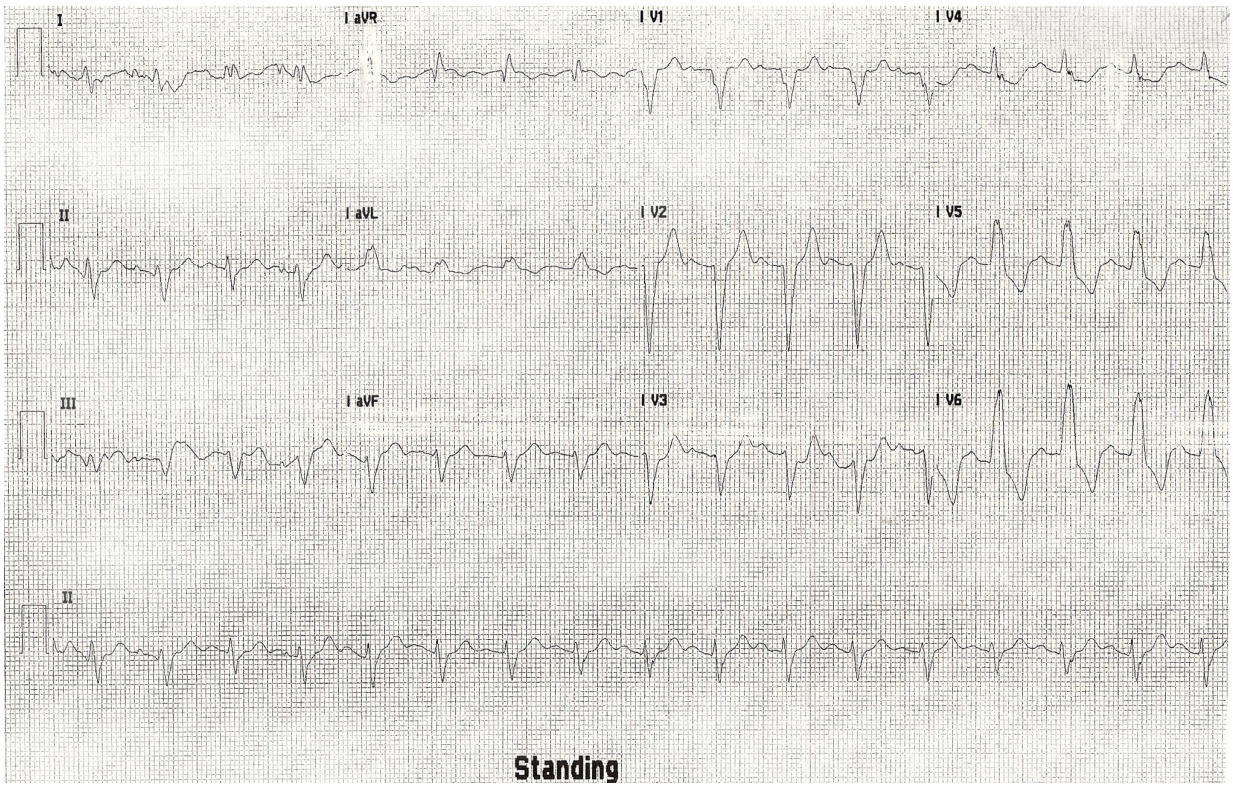
A 66-year-old white male was seen on follow-up with his cardiologist. He had a history of coronary artery disease and Percutaneous Transluminal Coronary Angioplasty with stent placement in the left anterior descending artery three years prior. His most recent echocardiogram showed a normal ventricular ejection fraction. He was hypertensive and had a history of hyperlipidemia. He also had a history of gastroesophageal reflux disease.

His ECG obtained at rest is shown below:



His ECG after 3 minutes of exercise on the treadmill is below:



What is the diagnosis?

(A) Ventricular tachycardia

(B) Multi-focal ventricular ectopy

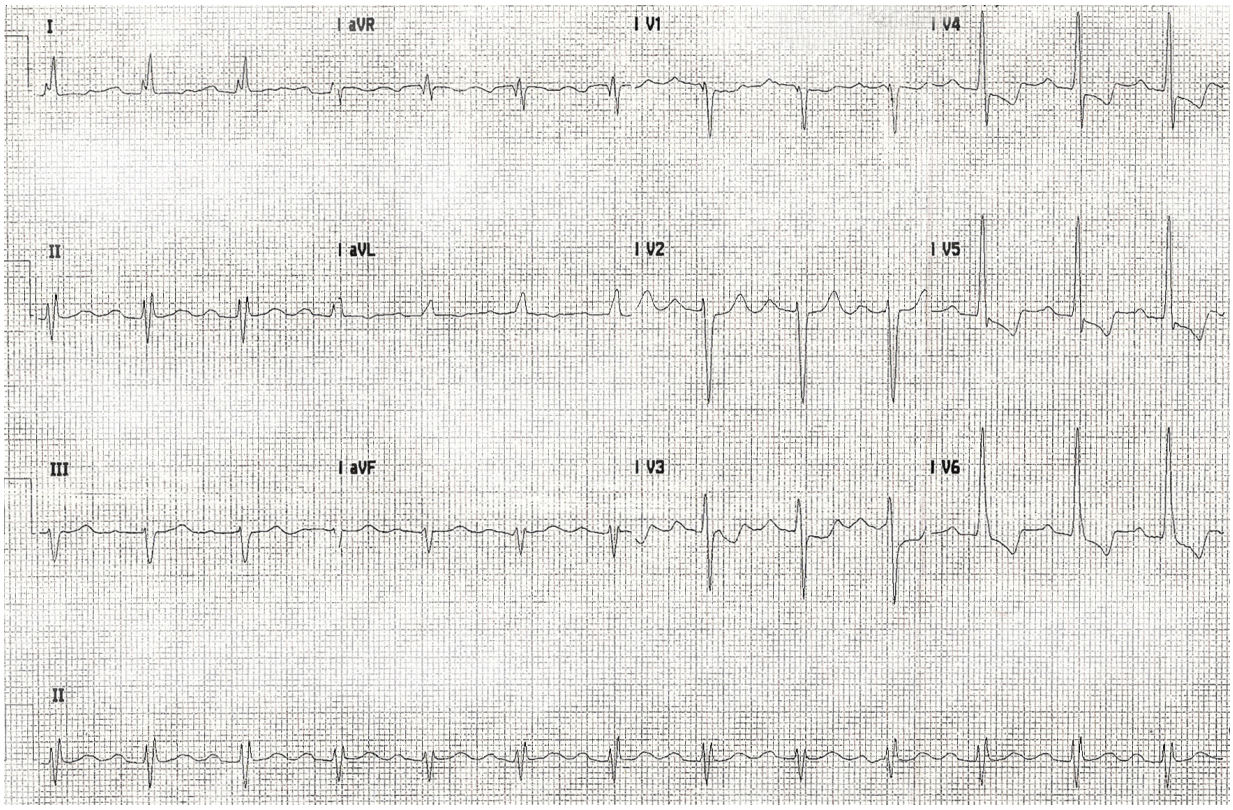
(C) Left bundle branch block

(D) Conduction through an accessory pathway.

Correct Answer: C

After the patient stopped the exercise, the left bundle branch block (LBBB) resolved and the QRS interval returned to baseline (see ECG after exercise below). Approximately 0.5% of all patients who undergo exercise testing develop a transient LBBB during exercise, but its prognostic significance is unclear.[1-3] Several published series of patients with this finding noted that exercise-induced LBBB occurs most commonly in the presence of underlying heart disease, particularly coronary artery disease (64% to 75%), but it has a variable incidence of cardiac events (36% to 50%).[3-5] Schneider and colleagues[1], based on their study with the Framingham population, noted that intermittent LBBB has the same mean age of onset and the same evolution and prognosis as those seen in subjects with fixed LBBB. A matched-control cohort study by Grady et al.[6] showed that exercise-induced LBBB independently predicted a higher risk of death and major cardiac events (adjusted relative risk, 2.78). Exercise-induced LBBB does not always denote the presence of underlying coronary artery disease. It has been described in patients with normal coronary arteries and was associated with a better prognosis.[7] It also has been described as a side effect of certain anti-arrhythmics and in the presence of other cardiac abnormalities, such as dilated cardiomyopathy, myocarditis and hypertrophic cardiomyopathy.[8-13] Although exercise-induced LBBB is rare, many new cases will be noted annually in the United States, where more than two million exercise stress tests are performed each year.[14] Therefore, exercise-induced LBBB and its prognostic significance warrants attention among physicians who request stress testing for their patients.

The ECG after exercise is below:



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Keywords: electrocardiography, bundle-branch block, coronary artery disease