

Reversible Thallium-201 Perfusion Defects of the Septal and Inferoapical Segments in a Patient with Incomplete Right Bundle Branch Block and Normal Coronary Angiogram

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Possible causes of reversible perfusion defect in exercise-rest ^{201}Tl myocardial images in a patient with a normal coronary artery angiogram include left bundle branch block, coronary spasm, myocardial bridges, hypertrophic cardiomyopathy, mitral valve prolapse, aortic valve disease and anomalous origin of the left coronary artery arising from the pulmonary artery. This case is a report of a 34-yr-old man with incomplete right bundle branch block and angiographically normal coronary arteries who was found to have reversible defects involving septal and inferoapical walls on stress-rest ^{201}Tl -chloride myocardial imaging.

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A false-positive ^{201}Tl myocardial perfusion scan, abnormal exercise ^{201}Tl -chloride myocardial perfusion in the absence of critical coronary artery lesions, may result from a variety of etiologies. One of the most common associations in the presence of a conduction abnormality is left bundle branch block (1–4). A patient with incomplete right bundle branch block and angiographically normal coronary arteries was found to have a stress-induced transient ^{201}Tl -chloride scintigraphic defect at the septal and inferoapical areas.

CASE REPORT

A 34-yr-old man began having chest pain 5 wk prior to this admission. He described a sharp substernal/left chest pain that lasted for approximately 1 min and then became dull and persistent for up to 5–10 min, radiating to the left arm and associated with mild nausea and diaphoresis at the time. His chest pain was not associated with exertion or shortness of breath. He denied cocaine or intravenous drug use. Evaluation in the emergency room revealed no definite cause for chest pain, and an incomplete right bundle branch block was noted on the ECG. Risk factors for coronary artery disease in the patient included smoking 1.50 to

2 packs/per day of cigarettes for 22 yr and a family history of heart disease. The patient's father underwent coronary artery bypass graft at age 53. Physical examination revealed BP 104/86, HR 76/min, normal jugular vein and carotids, PMI and S4 heart sound. Peripheral pulses were brisk without bruits. ECG showed incomplete right bundle branch block (QRS 108 msec). Echocardiogram was normal.

Thallium-201-chloride myocardial exercise testing was performed. The patient underwent stress for over 11 min, exceeding target heart rate. Exercise was stopped because of shortness of breath and fatigue. Thallium-201 images revealed transient defects also involving the septal and inferoapical wall consistent with an ischemic pattern (Fig. 1).

The patient underwent left cardiac catheterization, which revealed normal coronary arteries. (Fig. 2). The patient's chest pain was considered to be of noncardiac origin. Diagnostic evaluation of noncardiac causes of chest pain, including gastrointestinal evaluation, were also conducted.

DISCUSSION

Stress-induced ^{201}Tl defects have been observed in patients with left bundle branch block and with coronary

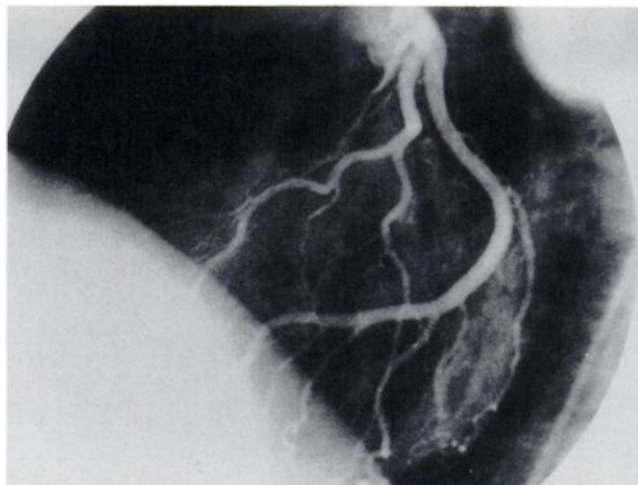


FIGURE 1. Thallium-201-chloride myocardial images on left anterior oblique views show decrease perfusion in the septal and inferoapical walls during stress (S) and redistribution of these areas at rest (R) consistent with an ischemic pattern.

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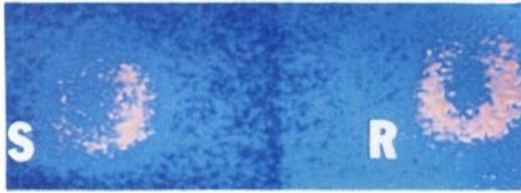


FIGURE 2. Left anterior oblique projection of coronary angiogram shows normal appearance of septal, left anterior descending, diagonal and circumflex arteries.

spasm in the absence of coronary artery stenosis (5,6), myocardial bridges (7-9), anomalous origin of the left coronary artery arising from the pulmonary artery (7,10,11), angina pectoris with angiographically normal coronary arteries (12,13), lesions limited to the secondary branches of the coronary arteries (14,15), hypertrophic cardiomyopathy (2,16,17), mitral valve prolapse (18) and aortic valve disease (18,19). Except for patients with left bundle branch block (20), conduction disturbances such as right bundle branch block, left anterior hemiblock, and Wolff-Parkinson-White Syndrome with normal coronary artery, have all shown normal exercise myocardial perfusion images.

The patient discussed here showed an essentially normal coronary angiogram (Fig. 2). A normal echocardiogram ruled out the probability of hypertrophic cardiomyopathy. The only finding in our patient was incomplete right bundle branch block on his ECG. As with left bundle branch block, reversible septal and inferoapical reversible defects may occur with right bundle branch block.

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