

# Disappearing Danger

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## Clinical Vignette

A 47-year-old female presented to the Emergency Department with a history consistent with atypical, non-exertional chest pain. The initial EKG showed LBBB at a rate of 70. (**Figure 1**) An old EKG from a year previous showed LBBB as well. The patient was admitted to the observation unit. A second EKG was obtained during her stay there. (**Figure 2**) The second EKG showed NSR at a rate of 55 and with deep T wave inversions from V1 to V3. The patient had a negative Troponin taken 8 hours after the onset of her pain. What happened to the LBBB?

## EKG Analysis

The change in EKG patterns demonstrates the phenomenon of intermittent Left Bundle Branch Block. Intermittent LBBB is usually rate dependent. The presence or absence of LBBB depends on slight differences in heart rate which are often well below the threshold for tachycardia (1). The rate at which a patient's EKG converts from one pattern to the other (critical heart rate) is not constant over time (2). The critical rate at which normal sinus rhythm converts to LBBB is often higher than the rate at which LBBB will disappear (3). Classically, as in the patient in the vignette, patients with Intermittent LBBB will have abnormal appearing T waves when their QRS conduction is of normal length. This is likely due to repolarization "memory" of periods in which the conduction system demonstrated a block (4). These abnormal T waves can be pronounced (as they are in **Figure 2**) and consideration must be made that this appearance could represent a critical LAD lesion, so called "Wellens" T waves (5).

The clinical significance of Intermittent LBBB is unclear. Several studies have reported finding normal coronary arteries in series of patients with Intermittent LBBB (6). However, one randomized controlled study of patients with Intermittent LBBB suggests that it may be a prognosticator of coronary artery disease. In patients with Intermittent LBBB occurring during exercise stress testing, this study found a higher risk of death and of major cardiac events (non-fatal MI, CABG, PTCA, placement of a pacemaker or AICD) within 5 years. The authors of this study postulate that since the blood supply to the Left conduction system is of a dual nature, emanating from the LAD and PDA, that exercise induced LBBB may be a prognosticator of coronary artery disease (7).

Emergency Physicians should be aware of this phenomenon, as we may be faced with either of the two abnormal EKG's on presentation. While the presence of intermittent LBBB in the ED alone is not an indicator of acute ischemia, its presence may be a risk factor for CAD. This is another instance in which obtaining serial EKGs in the Emergency Department benefit proper diagnosis and disposition.

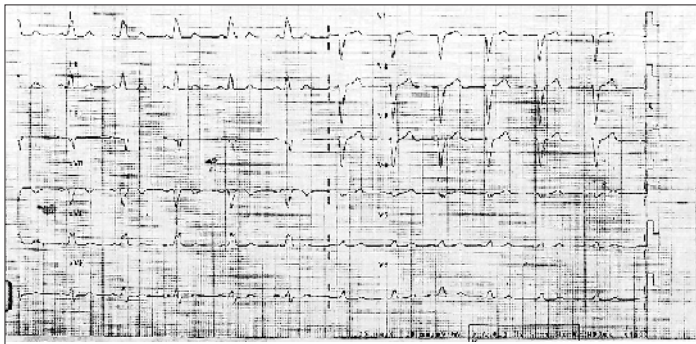


Figure 1



Figure 2

## References

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