



Letter to the Editor

Transient left bundle branch block – A sheep in wolf’s clothing!

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Sir,

CASE PRESENTATION

A 36-year-old female patient, not a diabetic or hypertensive, who was apparently healthy so far, was admitted with fever and cough for 3 days (in pre-COVID era). Her vital parameters, SpO₂ (oxygen saturation), were within normal limits and respiratory system examination was unremarkable. An initial electrocardiogram (ECG) done on admission at 3.30 pm as a part of routine workup showed sinus rhythm with heart rate (HR) ≈100 per min [Figure 1]. An ECG was repeated at 5.30 pm on the same day as the patient complained of uneasiness but no chest pain. She was febrile with temperature of 101°F and HR≈120 per min. Repeat ECG showed new-onset left bundle branch block (LBBB) with upright “T” wave with HR≈120 per min [Figure 2]. She was treated with oral paracetamol and antibiotics. ECG repeated again at 10 pm on the same day showed sinus rhythm with HR<100 per min; no LBBB [Figure 3]. What is the cause of transient LBBB in this case?

Is it acute coronary syndrome-myocardial infarction (ACS-MI)??

Since it is a new-onset LBBB, Is reperfusion therapy indicated?!

The answer is an emphatic no!!

New-onset LBBB in the presence of ischemic symptoms only is an indication for reperfusion therapy. New-onset LBBB patients should undergo reperfusion therapy only if the clinical picture is strongly suggestive of ACS. Clinical prediction and cardiac enzymes are safe and could be more accurate. Guidelines say that “LBBB is not an automatic STEMI equivalent” and that “new or presumably new LBBB at presentation occurs infrequently, may interfere with ST-elevation analysis, and should not be considered diagnostic of acute MI in isolation.”^[1] Guidelines do not recommend treating new or presumably new LBBB as a STEMI equivalent with planned emergent reperfusion therapy and guidelines do recommend evaluation using transthoracic echocardiography, cardiac troponin levels, and the clinical status of the patient to help in diagnosis.^[1]

Investigations

Cardiac enzymes – CK-MB and troponin I were within normal limits. Hb%, RBS, Se. creatinine, electrolytes, fasting lipid profile, Se. calcium, and magnesium (Ca⁺⁺ and Mg⁺⁺)

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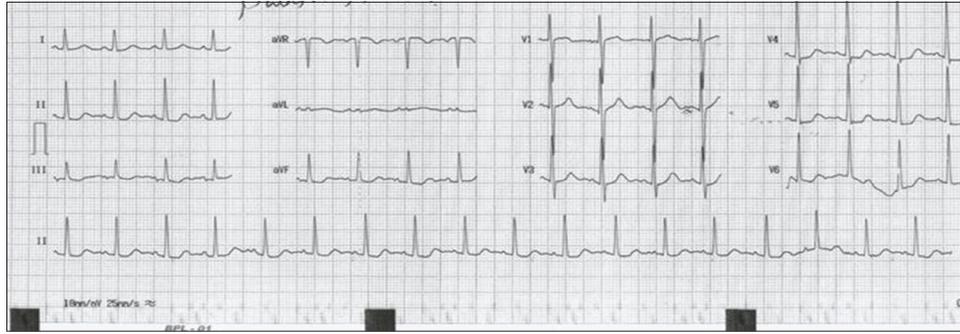


Figure 1: Initial electrocardiogram showed sinus rhythm with HR≈100 per min.

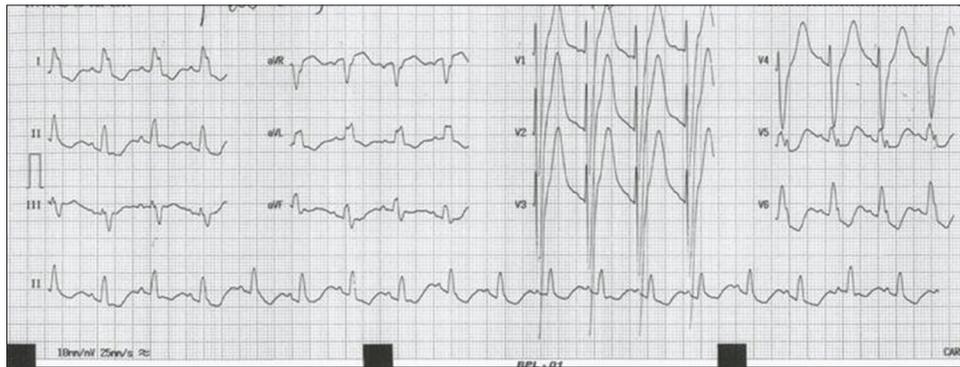


Figure 2: Repeat electrocardiogram during her febrile episode showed new-onset LBBB with upright “T” wave with heart rate ≈120 per min.

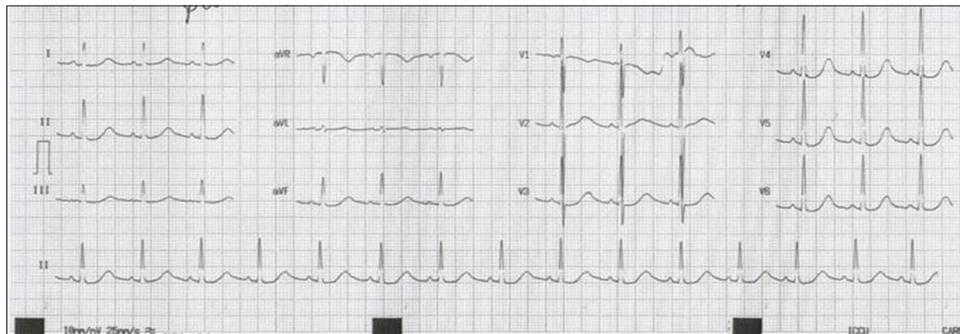


Figure 3: Electrocardiogram at 10 pm on the same day showed sinus rhythm with heart rate <100 per min; no left bundle branch block.

were within normal limits. Chest X-ray was unremarkable. Echocardiography done later was normal with NO regional wall motion abnormality and normal ejection fraction. After she recovered from her respiratory infection, treadmill test (TMT) was done which was negative for inducible ischemia and did not provoke a LBBB.

What is the most likely cause of transient LBBB in this case?

This patient is a 36-year-old lady with no obvious cardiac risk factors who developed a new-onset (transient) LBBB without any chest pain at all! The pretest-probability of ACS-acute MI is reasonably low. There was sinus tachycardia as a result of

fever and she developed LBBB during the spike of fever. Fever responded to paracetamol and hence the HR came down. Once the HR came down, the BBB resolved. Whenever there is tachycardia with BBB, one should suspect that it is rate-dependent BBB (RDBBB). RDBBB is BBB which occurs with the change of HR and the HR at which BBB occurs is called as critical HR.^[2,3] RDBBB may be either right (RDRBBB) or left (RDLBBB).^[3] RDBBB occurring at a faster HR is called as tachycardia dependent and at slower HR is called as bradycardia dependent.^[3] Etiology is unclear. RDBBB may be idiopathic or a manifestation of myocardial dysfunction, intrinsic disease of cardiac conduction, or a compromised

coronary circulation.^[3] Provocative tests may be performed in patients of RDBBB to find out critical HR. Provocative tests may be either pharmacological or TMT.^[3] Coronary angiography and nuclear perfusion studies may be performed to find out the cause.^[3] In this case, TMT was negative and hence further work-up was not done. RDLBBB should not be confused with new-onset LBBB and chest pain (new-onset LBBB with chest pain is an indication for reperfusion therapy).^[3] Hence, the most probable explanation for transient LBBB in this case is RDLBBB (rate-dependent LBBB) which may not be a sinister phenomenon but may mislead a physician toward MI (“A sheep in wolf’s clothing” indeed!).

Declaration of patient consent

Patient’s consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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