

Right Bundle Branch Block: A Masquerader in Acute Coronary Syndrome

Dear Editor,

We read with interest the recent case reported by Pozen *et al.* that was published in your esteemed journal.^[1] Physicians are often faced with a patient with suspected acute myocardial infarction (MI) and bundle branch block (BBB). There are different questions, depending on the presence of a left BBB (LBBB) or a right BBB (RBBB) that need to be answered in such scenarios. Is the conduction disturbance new or a presumably new occurrence? Often, this question cannot be answered with certainty. If at all the patient has acute coronary syndrome (ACS), does the BBB mask any electrocardiographic features of MI with ST-segment elevation? Is it possible to assess the area of myocardium at risk with the use of investigations such as echocardiography (ECHO)?^[2]

Although, an RBBB does not theoretically mask the repolarization phase; nor can a preexisting Q-wave, minor ST-segment elevation in the anterior leads (i.e., V1-V4) be missed, because these are “compensated” by the pseudonormalization of the negative T-waves.

RBBB as a consequence of the current anterior MI is most commonly related to the proximal occlusion of left descending coronary artery with compromise of circulation in the septal arteries supplying the bundle branches. Due to anterior location of the right ventricle than that of the left ventricle, activation of the right ventricular free wall can neutralize the abnormal septal forces associated with an anteroseptal MI. Therefore, in most patients with an anteroseptal infarction, abnormal Q waves in right precordial leads is mostly manifest during RBBB showing the classical qRBBB pattern, due to delayed activation of the right ventricle. Very rarely, early depolarization of the right ventricular free wall could mask the abnormal Q waves in some patients with an anteroseptal MI.^[3]

The analysis of HERO-2 demonstrated that in MI, RBBB occurs alone or in combination with left anterior hemiblock or left posterior hemiblock. In the setting of an anterior ST-segment elevation MI (STEMI), the presence of an RBBB is associated with a higher risk of death when compared with that of patients with normal conduction, as these patients experienced more extensive MI due to

involvement of the proximal left anterior descending artery or the left main coronary artery.^[4]

Rarely with the involvement of the atrioventricular (A-V) branch of the right coronary artery, can RBBB be associated with an inferior wall MI with ST-T changes in lead II, III, avF without the pathological Q waves in the anterior leads. The changes in the inferior leads can often be subtle and missed. The prognosis of RBBB due to the involvement of the A-V branch of the right coronary artery, RBBB associated with an inferior infarction, does not portend a worse prognosis as often a small amount of myocardium is jeopardized.^[4] This was observed in the case described by Pozen *et al.* as well.^[1]

In the case scenario described by Pozen *et al.*, it would have been interesting to know the ECHO findings and the presence of regional wall motion abnormalities, if any. The demonstration of regional wall motion abnormalities can help accelerate the treatment decisions in doubtful cases. The mystery of electrocardiographic findings of RBBB, borderline troponin levels, and atypical chest pain, especially in diabetics and the elderly patients, can be often solved by performing the screening ECHO to rule out the diagnosis of ACS.

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Conflicts of interest

There are no conflicts of interest.

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