A case of ‘Masquerading’ bundle branch block: A forgotten concept

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A B S T R A C T

‘Masquerading’ bundle branch block (right bundle branch block in the precordial leads with left bundle branch block in frontal leads and left axis deviation) is seen most commonly with coronary artery disease and hypertension. No definite explanation is available so far for these changes. We are presenting a case of rare congenital intranuclear inclusion myopathy with congestive heart failure and ‘Masquerading’ bundle branch block in ECG.

A 19-year-old boy admitted with congestive heart failure symptoms with biventricular dysfunction on 2D echocardiogram and cardiac MRI. He had dysmorphic facial features (prominent ears, long face, temporal hollowing), percussion myotonia over thenar muscle (no other myotonia demonstrable), nasal quality of speech. During neurology workup he was diagnosed to have congenital myopathy (intranuclear inclusion myopathy: filamentous body inclusion) on muscle biopsy. Chromosomal analysis showed normal male karyotype. Electrocardiogram (ECG) showed right bundle branch block with left axis deviation (Fig. 1). What is this ECG feature known as?

ECG features in Fig. 1 are suggestive of right bundle branch block (RBBB) in the precordial leads with left bundle branch block (LBBB) in frontal leads and left axis deviation (LAD). This feature is known as ‘Masquerading’ bundle branch block.

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'Masquerading' bundle branch block term was first used by Richman and Wolff. There are two types: (a) the standard type (b) the precordial type. In the standard type of 'Masquerading' bundle branch block, the precordial leads from V1 to V6 are suggestive of RBBB, whereas the frontal plane leads resemble left bundle branch block. This is due to loss of terminal deflections of RBBB in frontal leads, loss of R in inferior leads with deepening of S and resulting widened QRS. No definite explanation is available so far for these changes. Various possibilities are: presence of a very high degree of left anterior hemiblock (LAHB), concomitant left anterior parietal block, or concomitant left ventricular hypertrophy (LVH). Fig. 1 ECG also shows probably severe delay in conduction in left bundle with loss of Q in lead I. There is small diminutive R in inferior leads. QRS is wide and bizarre and mimics or ‘masquerades’ as left bundle branch block.

In the precordial type of ‘Masquerading’ bundle branch block the left precordial leads from V4 to V6 resemble LBBB pattern and RBBB in right precordial leads from V1–V3. Various hypotheses behind this are: mostly due to focal block in the anterolateral wall of the left ventricle combined with RBBB, or due to strong superiorly directed forces of LAHB (with a relatively high position of the left precordial electrodes) with concomitant RBBB.

The most common causes are coronary artery disease and hypertension. Combination of right bundle branch block and left anterior hemiblock is usually seen with anteroseptal myocardial infarction or combined septal & anterolateral myocardial infarction. Other causes are Lenegre’s disease, Lev’s disease, cardiomyopathy, and Chagas myocarditis.

‘Masquerading’ bundle branch block indicates a poor prognosis because of underlying diffuse & severe conduction system disease. All patients with Masquerading bundle branch block should be followed up closely, even if they are asymptomatic. Most of them usually require permanent pacemaker implantation.

Conflicts of interest
All authors have none to declare.

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