

Masquerading bundle branch block : A rare electrocardiographic finding

Le bloc déguisé : Aspect électrocardiographique rare

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SUMMARY

Masquerading bundle branch block is a rare finding on the Electrocardiogram (ECG). It indicates severe and diffuse conduction system disease and is usually associated with a poor prognosis. The precordial leads show a Right Bundle Branch Block (RBBB) pattern while the limb leads resemble a Left Bundle Branch Block (LBBB). This finding on an ECG is almost associated with severe underlying heart disease. We report the case of a 73-year-old gentleman, who presented with progressive dyspnea and a masquerading bundle branch block on ECG.

KEYWORDS

Electrocardiography, Heart failure, Left bundle Branch block, Masquerading bundle branch block, Right bundle branch block.

RÉSUMÉ

Le bloc de branche déguisé est une anomalie rare sur l'électrocardiogramme (ECG). Il indique une maladie grave et diffuse du système de conduction et est généralement associé à un mauvais pronostic. Les dérivations précordiales présentent un bloc de branche droit (BBD) tandis que les dérivations frontales ressemblent à un bloc de branche gauche (BBG). Cet aspect ECG est presque toujours associé à une maladie cardiaque sous-jacente grave. Nous rapportons le cas d'un homme de 73 ans, qui s'est présenté avec une dyspnée d'aggravation progressive et un bloc de branche déguisé sur l'ECG.

MOTS-CLÉS

Electrocardiographie, Insuffisance cardiaque, Bloc de branche gauche, Bloc déguisé, Bloc de branche droit.

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INTRODUCTION

Masquerading bundle branch block (M BBB) is a rare and unique finding on a 12-lead electrocardiogram, consisting of the pattern of right bundle branch block (RBBB) in the precordial leads and left bundle branch block (LBBB) in the limb leads [1]. It indicates advanced conduction system degeneration usually associated with severe underlying heart disease. We report the case of a patient with ischemic heart disease and MBBB on electrocardiogram (ECG).

CASE REPORT

A 73-year-old patient presented with progressive shortness of breath. He had hypertension. On examination, the patient was alert, blood pressure was 134/85 mmHg, pulse was 70 beats per minute, oxygen saturation was 96% while he was breathing ambient air. The 12-lead ECG (Fig.1) showed a sinus rhythm and a rate of 65 beats per minute with left axis deviation (-54°), prolonged PR interval (PR interval =240ms), and right bundle branch block. The diagnosis of RBBB in precordial leads was based on the following criteria:

(1) duration of QRS (=160 ms) \geq 120 ms; (2) R wave peak time in lead VI $>$ 50 ms; (3) secondary ST-T segment changes with negative T wave in leads VI –V3; (4) and the presence of a slurred S wave in lead V6. There was a small diminutive R in inferior leads. Interestingly, absent S waves in leads I and aVL and absent septal Q waves in lead I, V5 and V6 resembled a left bundle branch block pattern. All these features were thought to be consistent with masquerading bundle branch block.

An echocardiogram revealed an enlarged left ventricle with severe left ventricular systolic dysfunction with an ejection fraction of 30%, dilated left atrium, grade 3 diastolic dysfunction, and moderate mitral and tricuspid regurgitation. Coronary angiography showed severe stenosis of the left anterior descending artery (LAD) II-III and chronic total occlusion of the right coronary artery.

He had a percutaneous coronary intervention on the LAD with two drug-eluting stents.

He was discharged home in a stable condition on heart failure and ischemic medication. The patient is still on follow-up and close monitoring.

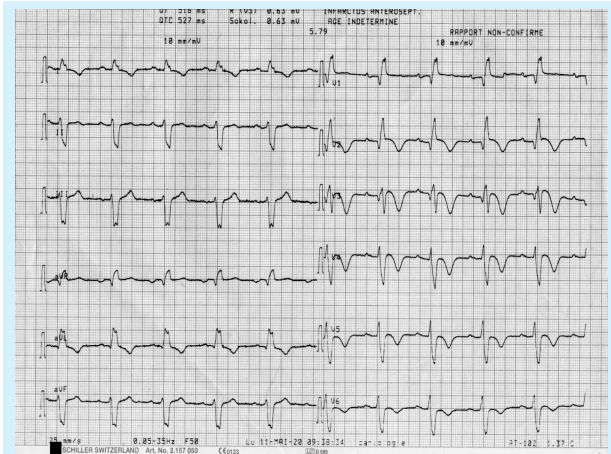


Figure 1 : The 12 leads ECG.

DISCUSSION

“Masquerading bundle branch block” term was first used by Richman and Wolff in 1954.[2] There are two described types [3]: the standard type and the precordial type. The standard type shows a RBBB pattern in precordial leads from V1 to V6 and LBBB pattern in frontal leads, while in the precordial type the left precordial leads from V4 to V6 resemble LBBB pattern and RBBB in right precordial leads from V1–V3. Our patient’s ECG pattern was characteristic of the standard type of MBBB. [3]

The standard type pattern is secondary 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 the presence of a very high degree of the left anterior fascicular block (LAFB), concomitant left ventricular hypertrophy (LVH), or concomitant left anterior parietal block. [3,4]. Grant in 1956 [5] defined “left anterior parietal block” as a marked left

axis deviation greater than -30° attributable to diffuse fibrosis involving the anterior-superior division of the left bundle branch. Elizariet al.[4] explained that MBBB is simply a variety of RBBB and LAFB. In most cases of typical RBBB with LAFB, the limb leads show a QRS axis between -80° and -120° . However, when the axis remains at approximately -60° because of predominant left ventricular forces, the ECG becomes atypical. Under these circumstances, RBBB with LAFB is accompanied by a very small or absent S wave in lead I in such a way that the conduction disturbance simulates an LBBB pattern in this lead. Usually, this is the result of an advanced LAFB, severe left ventricular hypertrophy, and/or focal block in the anterolateral wall of the left ventricle due to myocardial infarction or fibrosis. This ECG pattern is associated with various heart diseases [1,6], such as coronary heart disease, ventricular hypertrophy, aortic valve disease, Chaga's myocarditis, and idiopathic degeneration of the conduction system. MBBB is also associated with severe left ventricular dysfunction [7]. Our patient had systemic hypertension and coronary artery disease with left ventricular dysfunction. A fact worth emphasizing is the poor prognosis of these patients with MBBB. They are at increased risk of complete atrioventricular (AV) block [4, 8] and may need permanent pacemaker insertion [3, 8]. From a Brazilian registry, MBBB was associated with an estimated 4-year mortality and pacemaker insertion ratio of 41.4% and 38.9%, respectively [9]. Our patient already had a first-degree AV block. He requires close monitoring in case he develops a complete AV block requiring pacemaker insertion.

CONCLUSION

MBBB indicates a poor prognosis because of underlying diffuse and severe conduction system disease. All patients with this ECG pattern should be followed-up closely, even if they are asymptomatic.

Acknowledgements:

None

Financial Support:

This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

The Authors declares that there is no conflict of interest.

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