

Right Bundle Branch Block as a Form of Presentation of Acute Myocardial Infarction

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Abstract:

Ischemic heart disease is the leading cause of death worldwide, its frequency has increased in recent years. Right bundle branch block occurs in the general population and may be an incidental finding on the electrocardiogram or a manifestation of heart or lung disease with or without associated symptoms. A case of a 57-year-old man with a health history that begins with epigastric pain and an Electrocardiogram with right bundle branch block is presented. He is diagnosed with acute myocardial infarction and is treated urgently. Within two hours of the start of the event, the patient dies. Right bundle branch block can be the debut of an acute myocardial infarction while it casts a shadow over its prognosis.

Keywords: Acute myocardial infarction, Right bundle branch block, electrocardiogram.

Introduction:

Cardiovascular diseases cause more than 30% of deaths reported in the world.[1] It is the leading cause of death in about 33% of adults above the age of 35 years, despite a decrease in the mortality caused by myocardial infarction in the last 3 decades. About 790,000 Americans have a myocardial infarction every year. According to the American Heart Association, a heart attack can occur approximately every 42 seconds in the average American population.[2]

Ischemic heart disease is the leading cause of death worldwide, its frequency has increased in recent years, however there is a downward trend in terms of mortality, in relation to the progressive improvement of therapeutic interventions. Right bundle branch block occurs in 0.2-1.3%

of the general population and may be an incidental finding on the electrocardiogram or a manifestation of heart or lung disease with or without associated symptoms.[3]

Right bundle branch block can occur in people without evidence of heart disease. It could also appear in individuals with infarction of the anterior wall of the myocardium, indicating significant myocardial injury.[4] resulting with high mortality rate, as the blood supply of the right bundle branch is primarily from the left anterior descending artery.[2] Although the blockade distorts the QRS complex, does not significantly interfere with the electrocardiographic diagnosis of myocardial infarction.[4] It is known that the appearance of RBBB in the context of STEMI is accompanied by a worse prognosis, including higher mortality and ventricular arrhythmias.[5,6]

Presentation of the case:

A 57-year-old male patient with no medical history. Around 12 at night he began with epigastric pain radiating to the chest, which was not relieved and increased, so half an hour later he went to the emergency room. An Electrocardiogram (EKG) was performed, where right bundle branch

block, ventricular bigeminy, Q waves in V1 and V2 were observed, indicating old necrosis (Figure 1). Samples are taken for D-dimer, troponins, electrolytes, kidney and liver function. It is monitored, O₂ and Morphine 3mg IV are administered. Vital parameters BP 130/70, Hb 78xmt, RR 24Xmt, SPO₂ 97%. On physical examination, patient restless, sweaty. Bibasilar crackles.

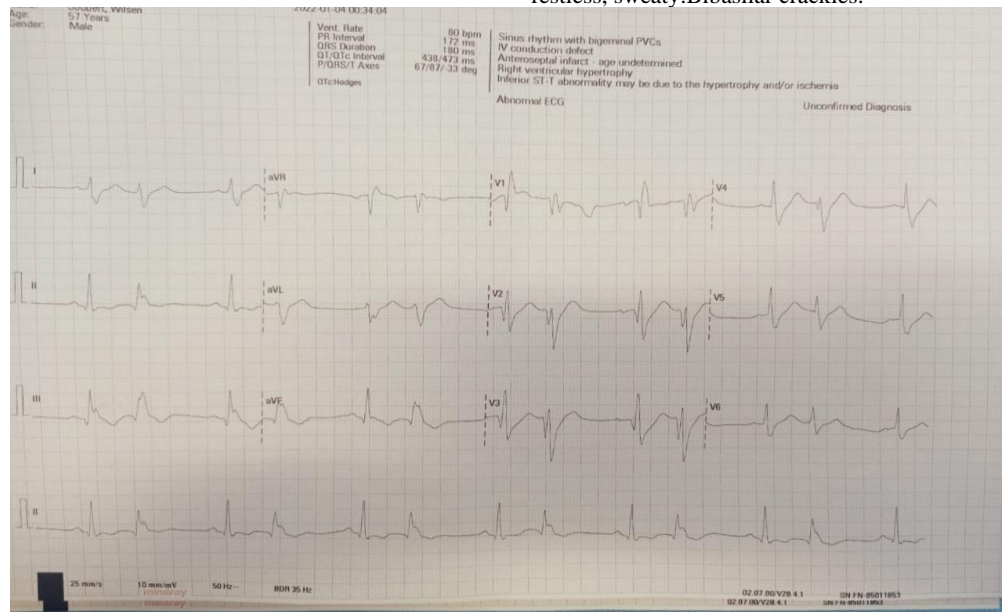


Figure 1: Fraxiheparin 0.6ml SC, Aspirin 75mg and Atenolol 50mg are administered. EKG is repeated at 10 min where right bundle branch block without other alterations (RBBB) persists. The pain is partially relieved. 5 mg of morphine and 40 mg of Furosemide are administered. After five minutes there is relief of pain, dyspnea and anxiety decrease. EKG is repeated, showing tachycardia and the same pattern of right bundle branch block (Figure 2). It was decided to enter the Intensive Care Unit (ICU). He makes cardiorespiratory arrest in Ventricular Tachycardia. He was cardioverted, endotracheal intubation was performed, then the patient had Ventricular Fibrillation, so cardiopulmonary resuscitation was performed, amiodarone and epinephrine were administered, with no improvement, and the patient died at 1:25 am.

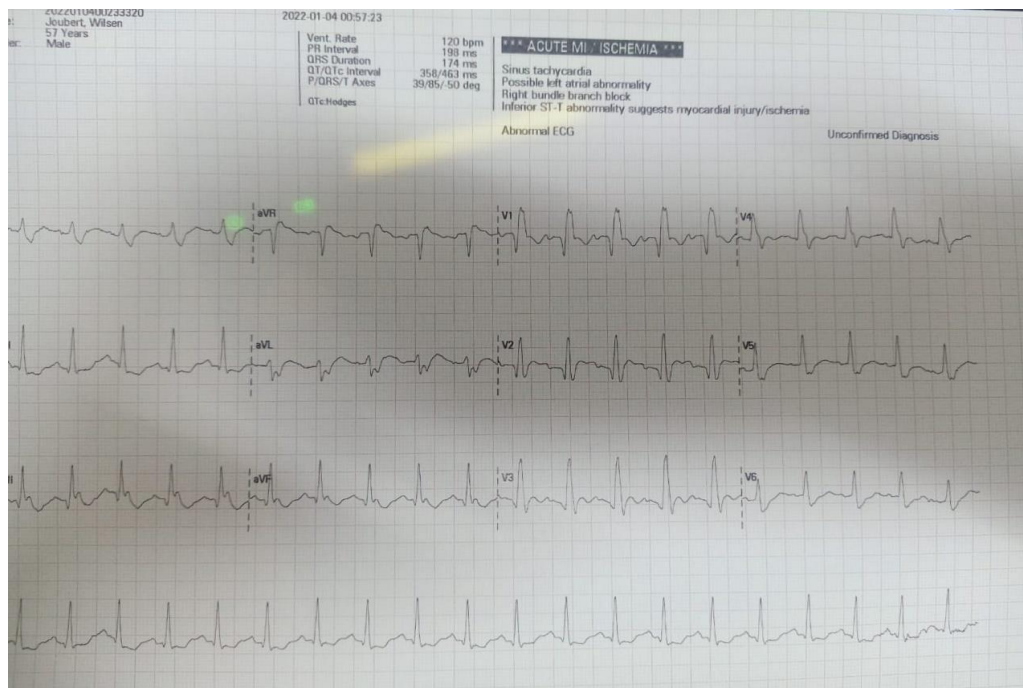


Figure 2: Complementary Exams: Cardiac enzymes (Troponins, Myoglobin, Total CK, CK-MB) in normal parameters D-dimer 80 (normal up to 200) Glycemia 110mg/dL

Pathological anatomy: (Figure 3, Figure 4, Figure 5, Figure 6)



Figure 3: *Pulmonary edema with cardiomegaly*

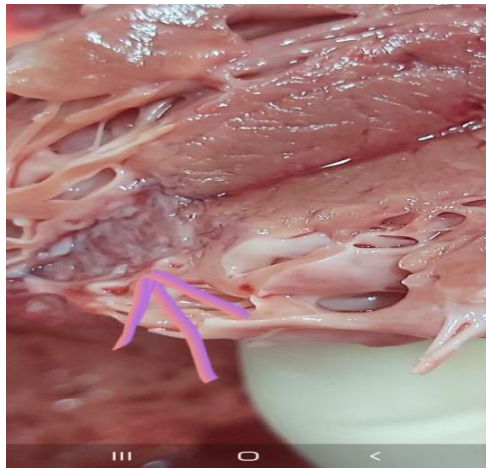


Figure 4: *Old septal infarction*

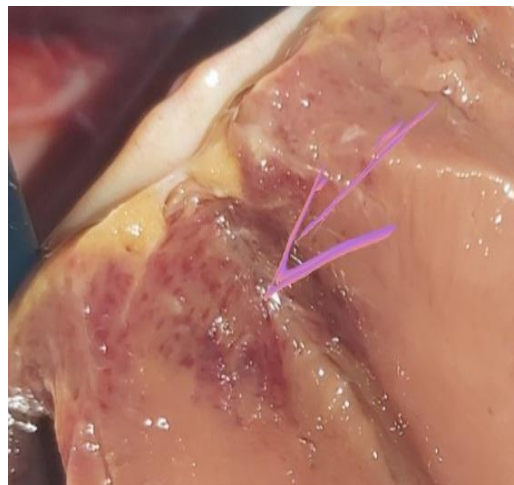


Figure 5: *Recent septal infarction close to old septal infarction*

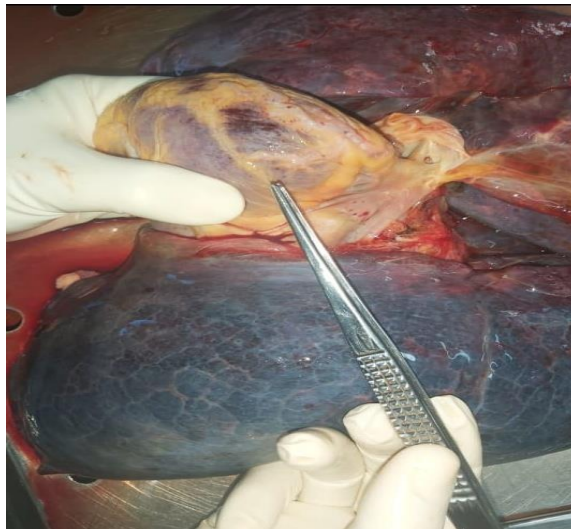


Figure 6: Hemorrhagic zone of the pericardium in the area of reinfarction

Discussion:

Currently, new-onset His bundle branch block is considered an electrocardiographic diagnostic criterion for AMI and is also considered to have a poor prognosis.[7] In the case studied, the patient debuted with RBBB accompanied by symptoms suggestive of IMA. In addition, he presented a Q wave in V1-V2 suggestive of old AMI, in this case the prognosis is even darker. RBBB can mask subtle ST elevations in anterior leads,[3] which is consistent with the present case.

Another diagnostic criterion for AMI is cardiac biomarkers, which begin to rise 1.5 hours after the start of the infarction, and the first to rise is myoglobin.[1,7] In the case studied, cardiac enzymes were within normal ranges. The patient died less than an hour and a half after symptoms began, so they had not yet risen.

RBBB is related to an increase in all-cause mortality in patients with acute myocardial infarction,[3] the HERO-2 study did show that the presence of RBBB in infarcted patients increases 30-day mortality by 3 to 4 times, when compared with AMI in the anterior face without presenting any type of abnormal conduction.[3,7] There are studies that show that patients with RBBB have an increased risk of sudden death.[3] In the case studied, the patient presented cardiorespiratory arrest in ventricular tachycardia which led to his death within two hours of the onset of symptoms.

Conclusions:

The RBBB can be the debut of an IMA in addition to being a sign of poor prognosis, which increases with a history of old IMA. Interesting previous silent IMA, now doing IMA debuting with RBBB

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