

A diagnostic pitfall: angina pectoris and intermittent left bundle branch block in a 68-year-old woman with pulmonary embolism – one year follow-up. A case report

Pułapka diagnostyczna – dławica piersiowa i intermitujący blok lewej odnogi pęczka Hisa u 68-letniej kobiety z zatorowością płucną
Opis przypadku z obserwacją po roku

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Abstract

In the present communication, a case of a 68 year-old woman consulted at a cardiology service due to angina pectoris is reported. The electrocardiogram (ECG) showed intermittent left bundle branch block. Transthoracic echocardiography revealed signs of pulmonary embolism. The diagnosis was confirmed by computed tomography angiography. The presented case highlights the role of echocardiography in the differential diagnosis of anginal pain and shows that making a correct diagnosis based on ECG may sometimes be challenging.

Key words: angina pectoris, intermittent left bundle branch block, pulmonary embolism

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Introduction

Pulmonary embolism (PE) does not have any specific clinical presentation and thus may initially remain unrecognized [1–3]. Chest pain is a common symptom of PE. It is usually caused by pleural irritation due to peripheral embolism leading to lung infarction [4]. In centrally located PE, chest pain may have typical anginal characteristics, reflecting right ventricular ischaemia, which requires differentiation from an acute coronary syndrome [5]. Chest pain associated with intermittent left bundle branch block (LBBB) suggests ischaemia involving the cardiac conduction system, which also suggests coronary ischaemia. The clinical significance of intermittent LBBB, both exercise-induced or

occurring spontaneously, has not been clearly established. This type of block has been noted both in patients with structural heart disease and in those without structural heart disease [6, 7]. Due to the fact that development of left bundle branch block during an exercise test strongly suggests coronary artery disease, such patients are often referred for coronary angiography.

In the present article, a case is presented of a female patient who was admitted due to Canadian Cardiovascular Society (CCS) class III angina, had intermittent left bundle branch block during an exercise test and was referred for coronary angiography. Based on echocardiography performed two days after the discharge, pulmonary embolism was suspected and then confirmed by pulmonary computed

tomography angiography. This allowed institution of appropriate treatment with resolution of symptoms. At one year after the acute event, the patient does not report angina and exercise tolerance is good. Following withdrawal of propafenone, no intraventricular conduction disturbances are seen on the electrocardiogram (ECG).

Case report

A 68 year-old patient, non-smoker, treated for several years for hypertension, coronary artery disease, and paroxysmal atrial fibrillation, presented for the first time to a cardiac outpatient service due to CCS class III angina occurring for several days. Her medications were bisoprolol 5 mg omne in die (OD), ramipril 5 mg OD, simvastatin 20 mg OD, acetylsalicylic acid 75 mg OD, and propafenone 150 mg bis in die (BID). Two days earlier, the patient was discharged from an internal medicine unit, where she had been admitted to due to the above symptoms. The discharge summary indicated that the patient had normal blood pressure on

admission, resting ECG was normal, and laboratory tests were unremarkable (haemoglobin 13.2 g/dL, platelet count 179,000/mm³, white blood count (WBC) 6,400/mm³, creatinine 1.0 mg/dL, potassium 4.3 mEq/L, total cholesterol 150 mg/dL, glucose 100 mg/dL, alanine aminotransferase (AlAT) 13 U/l, thyroid-stimulating hormone (TSH) 1.47 μ IU/mL, creatine kinase myocardial bound (CK-MB) 17.6 U/L, troponin T 9.1 and 8 pg/mL). D-dimer level was not measured. Chest X-ray was normal. An exercise test was performed, terminated at 3 minutes due to angina and development of an intermittent left bundle branch block on the ECG. Echocardiography was not performed during the hospital stay. The patient was referred for coronary angiography. While waiting for a scheduled coronary angiography, she presented to the outpatient cardiology service due to recurrent angina at low levels of exercise. The physical examination was unremarkable. Resting ECG was performed twice and initially showed normal sinus rhythm at 90 bpm and LBBB (Figure 1A). In the second ECG tracing, bundle branch block is initially absent, then incomplete left bundle

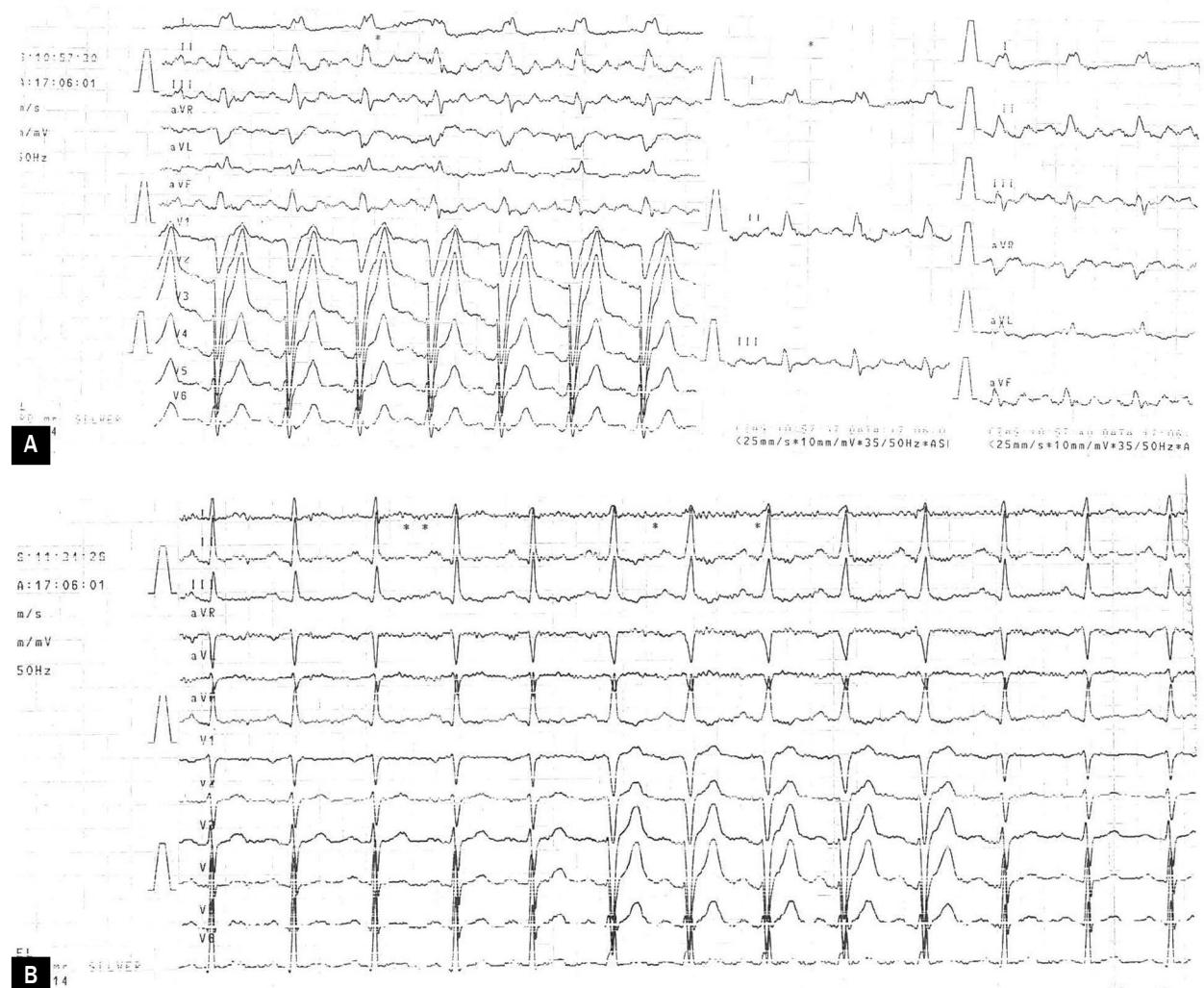


Figure 1. Electrocardiogram during the initial visit: **A.** Normal sinus rhythm at 90 bpm, left bundle branch block (LBBB); **B.** Normal sinus rhythm at 90 bpm, intermittent incomplete LBBB

branch block can be seen which subsequently resolves (Figure 1B). Echocardiography showed normal left heart chamber dimensions, modest enlargement of the right atrium and the right ventricle, normal left ventricular ejection fraction (about 65%), intermittent paradoxical movement of the interventricular septum, fused E and A waves of the mitral inflow, shortened pulmonary ejection acceleration time (AcT) (82 ms), moderate tricuspid regurgitation, and increased right ventricular systolic pressure (42.6 mm Hg plus central venous pressure), suggesting a moderate likelihood of pulmonary hypertension (Figure 2). Despite a misleading ECG pattern, a suspicion of pulmonary embolism

was made and the patient was referred to a hospital. Currently, the patient presented again for a follow-up visit one year later. The discharge summary from the second hospitalization indicates that on the day the patient was referred to a hospital, D-dimer level was measured (18,000 pg/mL) and pulmonary computed tomography angiography (angio-CT) was performed, showing pulmonary emboli in the pulmonary arteries, distal to the main pulmonary artery bifurcation. Low-risk PE was diagnosed and treatment with rivaroxaban was instituted, initially at 15 mg BID for 3 weeks, followed by 20 mg OD. Continuation of propafenone treatment for prevention of atrial fibrillation was also recommended. During follow-up visit at one year, the patient does not report angina, her exercise tolerance is good, and she does not recall any recent discernible arrhythmia episode. ECG shows sinus rhythm at 65 bpm and left bundle branch block (Figure 3). Echocardiography showed cardiac chambers of normal size, normal systolic function of the left and right ventricle, normal right ventricular systolic pressure (28 mm Hg), and normal pulmonary ejection AcT (122 ms). A suspicion of intraventricular conduction disturbances related to propafenone use was made. Due to sporadic occurrence of arrhythmia, the drug was withdrawn, while bisoprolol 5 mg OD was continued. Following discontinuation of propafenone, follow-up ECG was recorded twice. Both the initial ECG recorded at the primary care 2 weeks after propafenone was stopped and another ECG recorded at the cardiology service one month after drug discontinuation showed no LBBB (Figure 4). The patient did not feel any arrhythmia since discontinuation of propafenone.

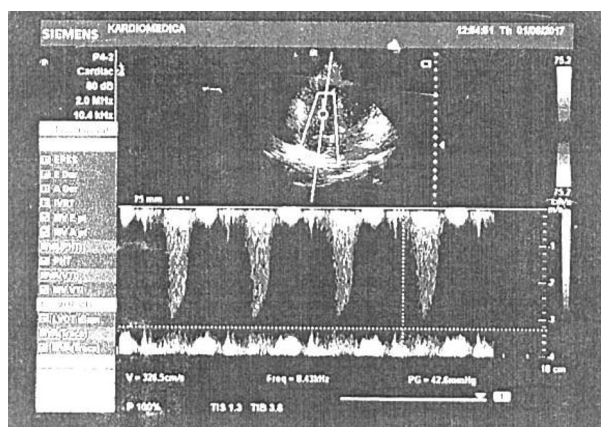


Figure 2. Continuous wave Doppler. Tricuspid regurgitation. Right ventricular systolic pressure estimated at 42.6 mm Hg based on the velocity of the tricuspid regurgitant jet (plus central venous pressure to give estimated pulmonary artery systolic pressure)

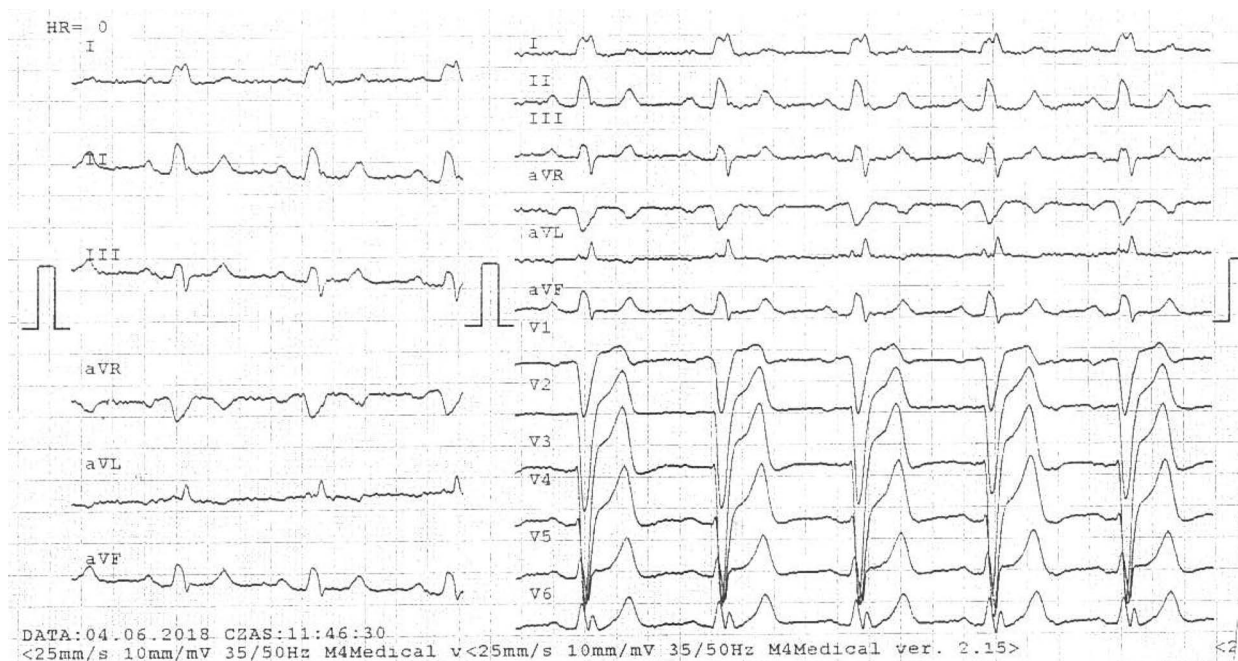


Figure 3. Electrocardiogram during the second visit – persisting left bundle branch block

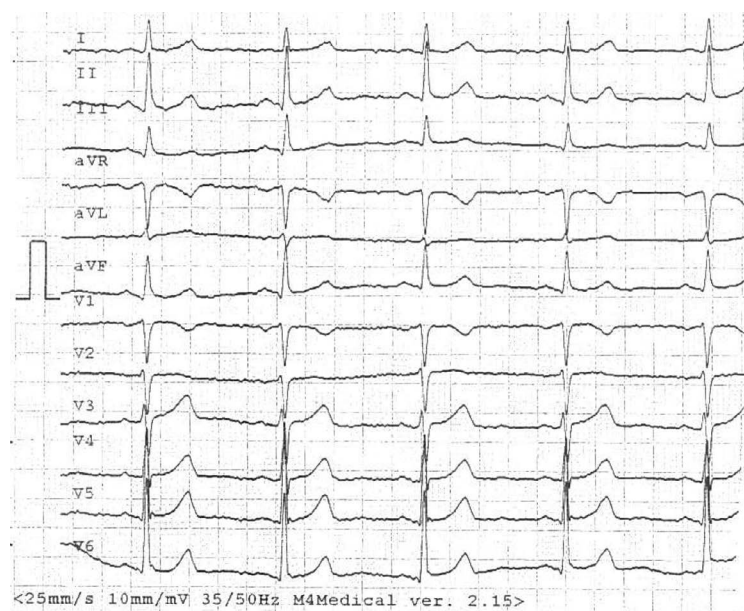


Figure 4. Electrocardiogram during the third visit, one month after discontinuation of propafenone. No intraventricular conduction disturbances

Discussion

The diagnosis of PE is challenging for a physician. Both the clinical presentation and the ECG pattern may help in making the correct diagnosis but may also be misleading. Typical angina is rare in pulmonary embolism and pleuritic chest pain is a much more common finding, and thus history in this case was suggestive of coronary artery disease. Regarding the ECG pattern, findings reported in pulmonary embolism may indicate right ventricular overload, including negative T waves in V1 through V4, QR in V1, S1Q3T3 configuration, and incomplete or complete right bundle branch block. These changes were reported in more severe cases, while sinus tachycardia maybe the only ECG abnormality in milder cases [8]. No literature reports of pulmonary embolism accompanied by left bundle branch block were identified. It seems that the most likely cause of intraventricular conduction disturbances seen in the reported patient was the use of propafenone. This hypothesis is supported by ECG recorded twice after drug discontinuation and showing no intraventricular conduction disturbances. In the reported case, echocardiography was the key to the diagnosis. The echocardiographic pattern was suggestive of but not diagnostic for PE. The diagnosis was confirmed by angio-CT. Of note,

the patient had a history of paroxysmal atrial fibrillation, and accidental findings of pulmonary artery thrombi by multidetector computed tomography were reported in such patients [9, 10]. It is not known whether in this particular case, it was of importance that the patient did not receive anticoagulation before the diagnosis of pulmonary embolism, although such treatment was indicated with the CHA₂DS₂-VASc score of 3. Currently, the patient has dual indications for long-term anticoagulation, including both a history of atrial fibrillation with a high risk of thromboembolic complication [a class I indication by the European Society of Cardiology (ESC) guidelines] and unprovoked pulmonary embolism with a low bleeding risk (a class IIa indication by the ESC guidelines).

Summary and conclusions

The presented case suggests that the diagnostic workup of angina should always include echocardiography which may be the key to the diagnosis, while the ECG pattern may be a diagnostic pitfall.

Conflict of interests

The author declares no conflicts of interests.

Streszczenie

W pracy zaprezentowano przypadek pacjentki w wieku 68 lat, która była konsultowana w poradni kardiologicznej z powodu dolegliwości dławicowych w III klasie według Canadian Cardiovascular Society. W badaniu elektrokardiograficznym (EKG) obserwowano intermitujący blok lewej odnogi pęczka Hisa. W badaniu echokardiograficznym uwidoczono cechy sugerujące zatorowość płucną. Rozpoznanie potwierdzono w angiografii tomografii komputerowej. Przypadek ilustruje, jak duże znaczenie ma badanie echokardiograficzne w diagnostyce różnicowej dolegliwości dławicowych oraz wskazuje, że zapis EKG może niekiedy utrudnić postawienie właściwej diagnozy.

Słowa kluczowe: dławica piersiowa, intermitujący blok lewej odnogi pęczka Hisa, zatorowość płucna

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