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58-year-old woman with acute chest pain

Kobieta w wieku 58 lat z bólem w klatce piersiowej

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Abstract

We present the case of a 58-year-old woman with suspected myocardial infarction. Coronarography did not reveal changes in coronary arteries. Laboratory tests revealed increases in troponin and inflammation parameters, and therefore MRI was performed. This showed subendocardial ischaemic necrosis with organ viability preservation in the heart muscle. As a result, myocardial infarction with non obstructive coronary arteries (MINOCA) was diagnosed.

Key words: myocardial infarction, electrocardiogram, coronarography, MRI

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Case report

A 58-year-old woman, not previously having been treated due to chronic diseases, was admitted to the Department of Interventional Cardiology and Cardiac Arrhythmias. The patient was suffering from crushing and burning chest pain in the region of the heart. This had persisted since the previous day and was accompanied by a feeling of general weakness, sweating and nausea. On admission, the pulse rate was regular (80 bpm), blood pressure was 130/80 mm Hg, body mass index (BMI) was 37 kg/m^2 and no other abnormality was revealed during the physical examination. ECG found sinus rhythm, pathological Q in leads III, aVF, ST segment depression by 0.5 mm in leads II, III, aVF, positive-negative T-wave in lead II and negative T-wave in leads III, aVF (Figure 1). Laboratory tests revealed elevated levels of troponin (693 ng/L), CK-MB mass (89.3 ng/mL) and LDL-cholesterol (141 mg/dL). On the basis of this clinical picture, a decision of coronarography was taken, but there were no changes in the coronary arteries. Echocardiographic findings included hypokinesis of the inferior wall, the infero-lateral wall and the basal segment of the intraventricular septum with ejection fraction of 48%. Further hospitalisation revealed increases in troponin (1,258 ng/L) and inflammation parameters (WBC 11.39 × 10^3/μL, CRP 8.2 mg/L), and therefore MRI was performed. This showed subendocardial ischaemic necrosis in basal and medial segments of the inferior and infero-lateral walls with organ viability preservation, and ejection fraction of 56% with regional contractility disorder (Figure 2). As a result, myocardial infarction with non obstructive coronary arteries (MINOCA) was diagnosed, and the following medicines prescribed: acetylsalicylic acid 75 mg/day, clopidogrel 75 mg/day, atorvastatin 40 mg/day, bisoprolol 5 mg/day and perindopril 5 mg/day.

Discussion

This is a case of myocardial infarction with non obstructive coronary arteries (MINOCA). Most frequently the aetiology of myocardial infarction is connected with fragments of thrombi which are carried by bloodstream blocking vessels. There have been cases of myocardial infarction occurring in unobstructed coronary arteries. There are many mechanisms of MINOCA pathogenesis: coronary artery spasm, non obstructive coronary atherosclerosis with positive remodelling, Takotsubo syndrome, coronary microvascular spasm, myocarditis mimicking

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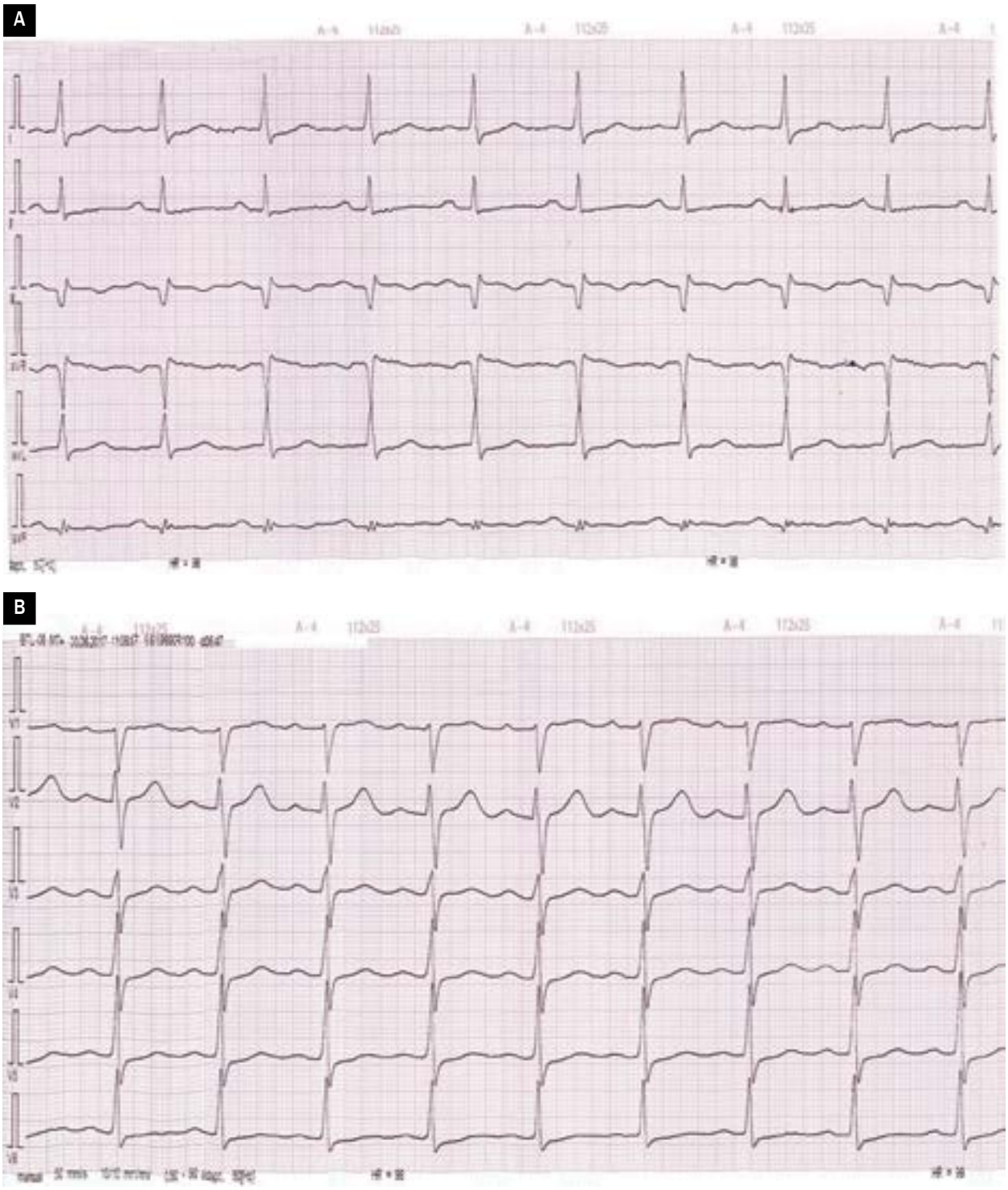

Figures 1A, B. ECG — sinus rhythm, pathological Q in leads III, aVF, ST segment depression by 0.5 mm in leads II, III, aVF, positive-negative T-wave in lead II, and negative T-wave in leads III, aV

myocardial infarction or coronary embolism. According to the literature, the incidence of MINOCA varies between 5% and 25%, and is encountered more frequently in women than in men. In the presented case, the most probable cause of MINOCA is non obstructive coronary atherosclerosis with positive remodelling. Atherosclerotic

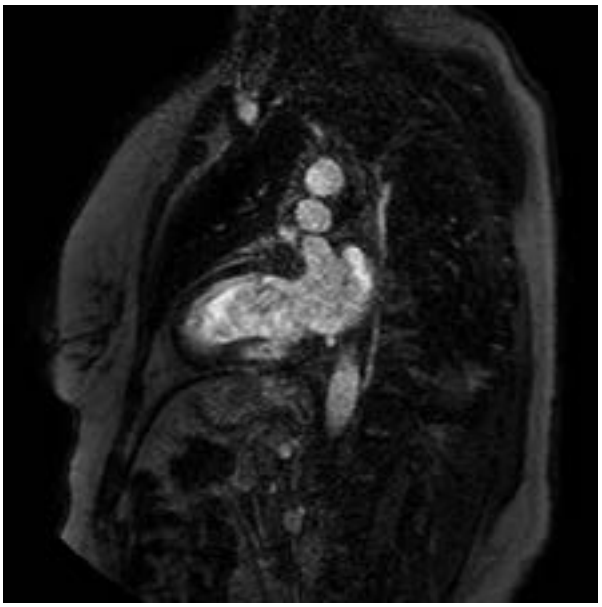

Figure 2. MRI — visible subendocardial ischaemic necrosis in basal and medial segments of inferior and infero-lateral walls

plaques with large lipid pool and thin fibrous cap which are present in coronary arteries can be damaged easily. The emerging thrombus closes the lumen of the vessel but spontaneous fibrinolysis dissolves it. Thanks to that, no changes in arteries are visible during coronarography. Therefore, dual antiplatelet treatment is recommended for 12 months alongside statins which stabilise atherosclerotic plaque. The presented mechanism is more common in women with cardiovascular risk factors (in the presented case: age > 55 years, BMI > 25 kg/m^2, LDL > 70 mg/dL). Finally, due to coronarography restrictions, MRI had to be applied in this case. Such a method of imaging should be considered in patients who complain of stenocardial pain who have a significant increase of troponin or elevated levels of inflammation parameters, unobstructed coronary arteries, and cardiovascular risk factors.

Conflict of interest(s)

The authors declare no conflict of interest.

Streszczenie

Przedstawiono opis przypadku 58-letniej pacjentki z podejrzeniem zawału serca. Weryfikacja koronarograficzna nie potwierdziła zmian w naczyniach wieńcowych. Ze względu na wzrost parametrów stanu zapalnego i markerów martwicy mięśnia sercowego w badaniach laboratoryjnych wykonano badanie rezonansu magnetycznego serca, na którym uwidoczniono podwsierdziowe ogniska martwicy z zachowaniem żywotności w mięśniu sercowym, co pozwoliło rozpoznać zawał serca bez zmian w naczyniach wieńcowych (MINOCA).

Słowa kluczowe: zawał serca, elektrokardiogram, koronarografia, MRI mięśnia sercowego

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