

# Triple-trouble cardiomyopathy: myocardial infarction, diastolic heart failure, and conduction defects due to amyloidosis associated with multiple myeloma

Niezwykła kardiomiopatia: zawał serca, rozkurczowa niewydolność i zaburzenia przewodzenia u pacjenta z amyloidozą i szpiczakiem mnogim

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We believe this is the first reported case of the co-existence of primary amyloidosis in the course of multiple myeloma presenting with cardiac involvement with such a great number of complications observed in one patient. This 57 year-old male, previously not treated, and exhibiting no other risk factors for coronary artery disease (CAD), was admitted to our Department on an emergency basis due to exacerbation of dyspnoea on exertion and pain sensations in the chest of 3 months' duration. Electrocardiographic (ECG) examination performed on admission showed traits of myocardial ischaemia (slight progression of R wave, deep and negative T waves recorded in chest leads) as well as low voltage of QRS complexes in limb leads (Fig. 1). Laboratory tests showed elevated troponin values (TNI 0.108 [n: 0.04] ng/mL) which indicated the performance of emergency coronarography. The examination performed revealed a 60–70% stenosis in the proximal segment of the anterior descending branch (Fig. 2). Echocardiographic examination showed good global systolic function of the left ventricle (EF 50%) with granular sparkling of the muscle and without segmental contractility disturbances. Moreover, severe thickening of both ventricular walls (IVSd of 18 mm, RV of 9 mm) and heart valve cusps as well as moderate mitral insufficiency, restrictive mitral inflow (E/A > 2), clear diastolic dysfunction of the left ventricle (E/E' = 30) and the presence of fluid in the pericardial sac were also observed (Fig. 3). The patient underwent dobutamine stress-echo to assess the significance of the stenosis observed in the left anterior descending artery. The patient was subsequently qualified for conservative treatment of his CAD. During hospitalisation, the patient suffered from symptomatic atrioventricular conduction defects in the form of II degree block (and required implantation of a dual-chamber pacemaker) and significant exacerbation of heart failure (NT-proBNP of 11928.0 [n: < 125.0] pg/mL, dyspnoea at rest: NYHA IV, hydrothorax, ascites and oedemas of lower extremities) which required pleural puncture. Laboratory tests showed normal results of complete blood count and general urinalysis as well as hypoalbuminaemia, elevated levels of transaminases, uric acid, lactic dehydrogenase and alkaline phosphatase. In order to search for other causes underlying the disease, the patient was subject to computed tomography of the chest which revealed hypodense soft-tissue masses causing destruction of the ribs (Fig. 4). For that reason, determinations of serum and urine free light chains were carried out, which turned out to be positive (KAPPA of 889.00 [n: 8.3–27.0] mg/L). Moreover, a myelogram was also performed and the obtained image of the bone marrow suggested the presence of multiple myeloma (plasmocytes constituted 70–100%), whereas the histopathological examination of the biopstate taken from the vicinity of the rectum stained with Congo red revealed amyloidosis. The presented heart image with non-significant myocardial infiltration observed in the ECG examination, in combination with the low voltage of QRS complexes, is a characteristic feature of infiltrative cardiomyopathies, which together with the image of bone marrow and histopathological biopstate taken from the mucous membrane allowed the authors to make the suggested diagnosis. The patient was finally qualified for chemotherapy at the Haematology Clinic.

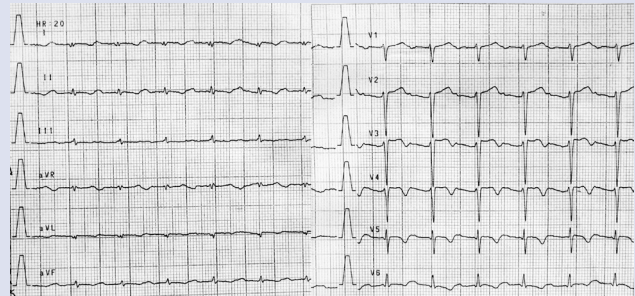


Figure 1. ECG

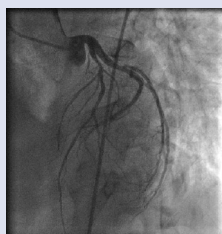


Figure 2. Coronary angiography



Figure 3. ECHO LAX



Figure 4. Chest computed tomography

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**Conflict of interest:** none declared