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STUDIUM PRZYPADKU / *CLINICAL VIGNETTE*

Low symptomatic malignant cardiac arrhythmia in a patient with lamin-related congenital muscular dystrophy

Skąpoobjawowa złośliwa arytmia u chorej z wrodzoną dystrofią mięśniową związaną z laminopatią

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We present a 24-year-old female patient with congenital muscular dystrophy (CMD), manifested by general hypotonia, multi-joint contractures, atrophy and weakness of skeletal muscles in upper and lower extremities, axial weakness with head dropping in early childhood, then progressive spine rigidity with scoliosis and hyperlordosis developed in the second decade of life. She was ambulant until the age of 23. Muscle biopsy showed dystrophic features with necrotic fibres and fibrosis, consistent with primary muscle defect. Nuclear abnormalities in electron microscopy were consistent with envelopathies. Molecular testing revealed a heterozygous mutation in the *LMNA* gene, c.745C>T, p.Arg249Trp, which has been previously described in other patients with lamin-related CMD (L-CMD). The diagnosis of laminopathy prompted a wide cardiological evaluation. Clinically the patient reported periodical tachycardia and one episode of syncope following physical effort at the age of 22; however, no cardiological diagnostics were initiated at that time. On 24-h electrocardiography monitoring atrial fibrillation (min. 50 bpm and max. 100 bpm), > 300 ectopic beats/day, 5 sequence of non-sustained ventricular tachycardia (Fig. 1), 18 ventricular pairs, and 2 pauses > 2.5 s (max. 2650 ms) (Fig. 2) were registered. Echocardiography was as follows: left ventricle: 42/26.5 mm, right ventricle: 18 mm, aorta: 22 mm, left atrium: 25 mm, intraventricular septum: 9.5 mm, and left ventricular ejection fraction (LVEF): 37%. The patient was qualified to implantation of cardioverter-defibrillator in the primary prevention of sudden cardiac death. Laminopathies belong to the group of rare inherited human diseases. They are associated with structural/functional defects of the genes that encode the nuclear envelope proteins, e.g. lamins. Mutations in the *LMNA* gene, encoding lamin A/C, cause a number of diseases with a wide range of clinical courses whose common feature is that tissues of mesenchymal origin are affected. There are four phenotypic subgroups of laminopathies, which are associated with lamin A/C pathology: muscular, peripheral neurogenic, lipodystrophies, and premature ageing syndromes. Laminopathies affecting skeletal muscles include congenital muscular dystrophy, Emery-Dreifuss muscular dystrophy, and limb-girdle muscular dystrophy type 1B. All those phenotypes are associated with life-treating cardiological presentation, including heart block, ventricular arrhythmia, progressive heart failure, and sudden cardiac death. The latter is a cause of death in nearly 25% of patients with *LMNA* mutation and could be the first manifestation of cardiac disease. The European Cohort Study from 2012 identified independent risk factors of malignant ventricular arrhythmias (MVA) in a large cohort of *LMNA* mutation carriers: non-sustained ventricular tachycardia, LVEF < 45% at the first examination, male sex and non-missense mutations (ins-del or splicing) — the two of them are sufficient; therefore, the patient presented here is at risk of MVA. Heart involvement is rarely observed in the first decade of life of patients with L-CMD; however, in laminopathies affecting skeletal muscles it usually arises in the second/third decade of life and is often low-symptomatic, so strict cardiological monitoring is required. Unexpectedly, the patient presented here did not have overt respiratory insufficiency — a common complication in the course of L-CMD, which may develop below the age of 10 years.

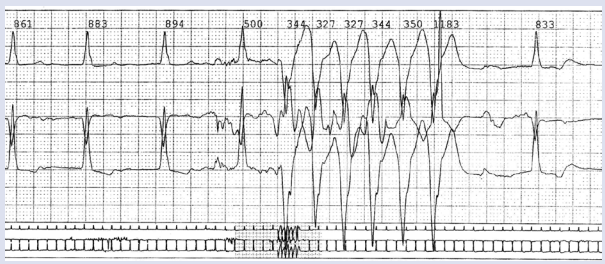

Figure 1. Two-channel 24-h electrocardiogram monitoring: non-sustained ventricular tachycardia

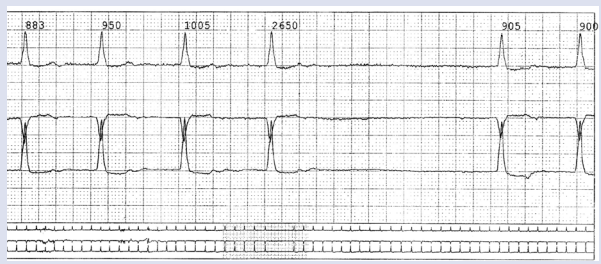

Figure 2. Two-channel 24-h electrocardiogram monitoring: atrial fibrillation, pause 2650 ms

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Conflict of interest: *none declared*