LMNA cardiomyopathy detected in Japanese arrhythmogenic right ventricular cardiomyopathy cohort.


Abstract

BACKGROUND: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is an inherited cardiac disease. While desmosomal gene mutations are considered major causes of ARVC, LMNA mutations have been reported to be possible causes of ARVC. In this study, we performed extensive genetic screening for LMNA mutations in our Japanese ARVC cohort to assess the prevalence and characteristics of LMNA mutation-positive ARVC cases.

METHODS: Our study cohort consisted of 57 ARVC probands. Genetic analyses were performed by using direct sequencing and targeted sequencing of LMNA and four desmosomal genes. We compared clinical features of probands with desmosomal gene mutations to those of probands with LMNA mutations.

RESULTS: Among 57 clinically diagnosed ARVC probands, we identified desmosomal gene mutations in 26 probands (45.6%) and two LMNA mutations in two probands. The first LMNA mutation p.M1K was detected in a 62-year-old male proband, while the second mutation p.W514X was found in a 70-year-old male proband. Compared to the 26 probands with desmosomal gene mutations, in the two probands with LMNA mutations, the mean age at diagnosis was significantly higher, and their heart rate at the diagnosis was significantly slower. While both probands with LMNA mutations underwent pacemaker implantation, only one proband with desmosomal mutations received this treatment (2/2 vs. 1/26).

CONCLUSION: Genetic screening for LMNA gene is important for ARVC patients, particularly in patients with bradycardia.

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KEYWORDS: Arrhythmogenic right ventricular cardiomyopathy; Desmosome; LMNA; PKP2; Pacemaker therapy

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