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The first prospective study of non-compaction cardiomyopathy patients with preserved ejection fraction using cardiac magnetic resonance feature tracking

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Feature tracking (FT) is a new cardiac magnetic resonance (CMR) technique for strain measurement to reveal changes e.g. in noncompaction cardiomyopathy (NCMP) patients with good ejection fraction (EF).

Our aim was to describe, first in the literature, the functional and CMR-FT strain values of NCMP patients with good EF and to compare them with their previous scans taken 4 years ago.

At the Heart and Vascular Center of Semmelweis University 6743 CMR examinations were done between 2009-2015 and 232 NCMP patients were diagnosed. We followed up 27 patients, who had a previous examination at least 4 years ago, had no co-morbidities and whose EF were above 50% (mean age: 37±14.4 years, 18 males, mean follow up: 5.7±1.5 years). Their parameters were compared to a matched control (C) group.

The Medis Suite software was used for analysis, the MedCalc software for statistics, (p<0.05).

We compared the patient’s previous (PREV) and recent (REC) functional parameters but did not find significant changes. Comparing the global longitudinal and global circumferential strains (GLS, GCS) and rotation (R) no difference was found between the PREV and the REC values. The GCS showed significant difference between NCMP and C groups (-30.2±5.0 vs -35.9±4.5; p<0.0001). We compared the segmental longitudinal and circumferential strain values of PREV vs. REC groups and NCMP vs C groups and found significant differences just in a few segments. The left ventricular (LV) apical part’s mean longitudinal strain value showed significant decrease on the REC scans compared to the PREV (PREV vs REC: -24.4±7.7 vs -20.6±5.1%; p<0.05) and a non-significant decrease compared to the C (C vs REC: -22.8±7.5 vs -20.6±5.1%; p= n.s.).

The ratio of the average longitudinal strain value of the apical and basal part of the left ventricle was significantly smaller in the REC group compared to the PREV but did not differ from the C subjects ( PREV vs. REC: 1.5±0.8 vs 1.0±0.3; C vs REC: 1.5±0.3 vs 1.2±0.5; p<0.05)

We did not find worsening in the functional parameters of NCMP patients with good EF by the end of the follow up period. However, subclinical changes can be detected in the affected apical part of LV when using FT suggesting the need for follow up.