Myocardial T1 mapping and extracellular volume quantification in patients with left ventricular non-compaction cardiomyopathy

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Résumé en anglais	Aims: From pathophysiological mechanisms to risk stratification and management, much debate and discussion persist regarding left ventricular non-compaction cardiomyopathy (LVNC). This study aimed to characterize myocardial T1 mapping and extracellular volume (ECV) fraction by cardiovascular magnetic resonance (CMR), and investigate how these biomarkers relate to left ventricular ejection fraction (LVEF) and ventricular arrhythmias (VA) in LVNC. Methods and results: Patients with LVNC (n = 36) and healthy controls (n = 18) were enrolled to perform a CMR with T1 mapping. ECV was quantified in LV segments without late gadolinium enhancement (LGE) areas to investigate diffuse myocardial fibrosis. Patients with LVNC had slightly higher native T1 (1024 ± 43 ms vs. 995 ± 22 ms, P = 0.01) and substantially expanded ECV (28.0 ± 4.5% vs. 23.5 ± 2.2%, P < 0.001) compared to controls. The ECV was independently associated with LVEF (β = -1.3, P = 0.001). Among patients without LGE, VAs were associated with higher ECV (27.7% with VA vs. 25.8% without VA, P = 0.002). Conclusion: In LVNC, tissue characterization by T1 mapping suggests an extracellular expansion by diffuse fibrosis in myocardium without LGE, which was associated with myocardial dysfunction and VA, but not with the amount of non-compacted myocardium.

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