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**Septal Late Gadolinium Enhancement and Arrhythmic Risk in Genetic and Acquired Non-Ischaemic Cardiomyopathies.**

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**Abstract**

**BACKGROUND:** In many genetic and acquired non-ischaemic cardiomyopathies (NICM) there have been frequent reports of involvement of the interventricular septum (IVS) by late gadolinium enhancement (LGE) at cardiac magnetic resonance (CMR). However, no studies have investigated the relationship between septal LGE and arrhythmias in different NICM subtypes.

**METHODS:** This study enrolled 103 patients with septal LGE at baseline CMR and different NICM: hypertrophic (n=29) or lamin A/C gene (LMNA)-associated (n=23) cardiomyopathy, and acute (n=30) or previous (n=21) myocarditis. During follow-up, the occurrences of malignant ventricular arrhythmias (MVA) and major bradyarrhythmias (BA) were evaluated.

**RESULTS:** At 4.9±0.7 years of FU, the occurrence of MVA and major BA in genetic vs acquired NICM were 10 of 52 vs 12 of 51, and 10 of 52 vs 4 of 51, respectively (both p=n.s.). However, MVA occurred more frequently in LMNA-NICM (eight of 23 vs two of 29 hypertrophic, p=0.015) and in previous myocarditis (nine of 21 vs three of 30 acute, p=0.016), while major BAs were particularly common in LMNA-NICM patients only (nine of 23 vs one of 29 hypertrophic, p=0.003). Different patterns of septal LGE were consistently retrospectively identified at baseline CMR: junctional and limited to the base in 79.3% of uneventful hypertrophic NICM; extended and focally transmural in LMNA-NICM with follow-up arrhythmias (both p<0.05); transitory in patients with acute myocarditis, who, differently from the post-myocarditis ones, showed follow-up arrhythmias only in the presence of unmodified LGE at FU CMR (five of 13, p=0.009).

**CONCLUSION:** Septal LGE was significantly associated with MVA at the 5-year follow-up in LMNA-NICM or previous myocarditis, and with major BA in LMNA-NICM only. These differences correlated
with heterogeneous patterns of IVS LGE in different NICM.

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**KEYWORDS:** Bradyarrhythmias; Cardiac magnetic resonance; Cardiomyopathy; Late gadolinium enhancement; Myocarditis; Ventricular arrhythmias

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