Journal of Cardiovascular Magnetic Resonance

ORAL PRESENTATION

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Prevalence and prognosis of non-ischemic patterns of late gadolinium enhancement in older adults by cardiovascular MR in the ICELAND-MI study

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From 19th Annual SCMR Scientific Sessions
Los Angeles, CA, USA. 27-30 January 2016

Background

Late gadolinium enhancement (LGE) can detect and discriminate myocardial scar/fibrosis of ischemic and non-ischemic etiologies. Our objective was to determine the prevalence and prognosis for ischemic and non-ischemic patterns of LGE in a community-based sample of older adults.

Methods

ICELAND-MI is a nested cohort of the Age, Gene/Environment Susceptibility-Reykjavik Study of community-dwelling older adults that intentionally over-sampled diabetic subjects. After excluding subjects with pre-existing heart failure, the cohort size was 900. CMR was used to detect myocardial infarction (MI), major patterns of non-ischemic patterns of LGE as defined by Vöhringer (Herz 2007;32:129-37), and minor patterns of non-ischemic LGE including LGE near the aortic root, mitral annulus, or right ventricular insertion points. The composite end-point was adjudicated hospitalization for heart failure and death.

Results

The median age was 76 (IQR 72-81), 48% were male, and 35% had diabetes. The prevalence of MI, major non-ischemic patterns of LGE, and minor non-ischemic patterns of LGE were 23.4%(N = 211), 6.0%(N = 54), and 26.4%(N = 238) respectively. Major non-ischemic

LGE demonstrated the highest risk (HR 3.5, p < 0.0001, Figure 1), MI had similar risk (HR 2.5, p < 0.0001), and minor non-ischemic LGE had lower but significantly higher risk (HR1.5, p = 0.03) compared to those without LGE. Controlling for age, gender, LVEF, diabetes, and hypertension, major non-ischemic LGE remained strongly predictive of the composite endpoint (HR 2.3, p = 0.001) while minor non-ischemic patterns of LGE were of borderline significance (p = 0.07).

Conclusions

Subjects with major non-ischemic LGE patterns are at increased risk of developing heart failure and death.

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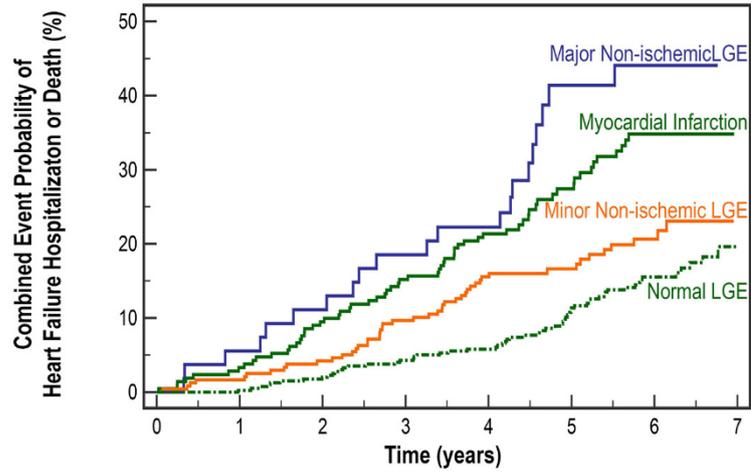
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Figure 1 Kaplan-Meier Event Rates for Subjects with Major Non-ischemic LGE, MI, Minor Non-ischemic LGE versus Normal LGE.