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Left ventricular mass by cardiac magnetic resonance imaging and adverse cardiovascular outcomes in patients treated with anthracycline-based chemotherapy

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Summary

LV mass by CMR is a powerful predictor of adverse cardiovascular outcomes in patients treated with anthracyclines.

Background

Late gadolinium enhancement (LGE) is a predictor of adverse outcomes in patients. However, limited data exist on the role of LGE, the characteristic CMR findings, and the prognostic variables in patients who develop a cardiomyopathy after treatment with anthracyclines.

Methods

LGE-CMR imaging was performed in patients with stage B and C heart failure after anthracycline-based chemotherapy. We assessed the association between CMR, EKG, echocardiographic, serum, and clinical variables with adverse outcomes (cardiovascular death and admission for heart failure).

Results

We performed a clinically-indicated CMR study on 50 patients (52% male, mean age of 49 ± 16 years, anthracycline dose of 286 ± 89 mg/m2, and ejection fraction of 38 ± 9%) with AC-mediated cardiomyopathy. Patients presented a median of 45 months after chemotherapy and were followed for a median period of 28 months. LGE was an uncommon finding (3 patients, 6%). There was a strong inverse association between anthracycline dose and indexed left ventricular mass by CMR ($r = -.75$, $p < 0.001$, Figure 1). In univariate analysis, indexed LV-mass by CMR demonstrated the strongest unadjusted association with adverse events (hazard ratio: 0.75, chi-squared 26.2, $p < 0.001$). In a multivariable model, indexed LV-mass demonstrated the strongest association with the primary outcome (Figure 2).

Conclusions

Residual LV-mass measured by CMR is a powerful predictor of subsequent adverse cardiovascular events in patients with anthracycline-induced cardiotoxicity.

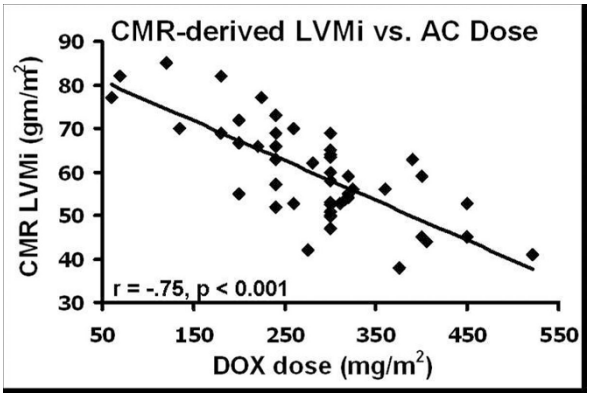

Figure 1

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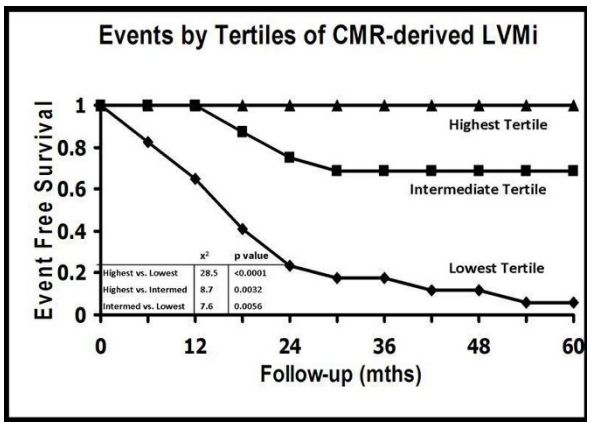

Figure 2

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