Meta-analysis for cardiovascular risk stratification based on noninvasive left anterior descending velocity reserve

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Introduction: Left anterior descending velocity reserve (LADVR) by transthoracic echocardiography (TTE) has been proposed for cardiovascular risk stratification in observational prospective studies. Aim of the current study was to interrogate the prognostic consistency and coherence of the existing LADVR data by the means of meta-analysis of relevant studies.

Methods: A systematic research through electronic databases was performed for prospective studies with patients with known or suspected coronary artery disease (CAD) who had LADVR data.

The exposure was abnormal values of LADVR as defined in each study and the outcome was the occurrence of cardiovascular event or death (CE-D). Statistical index considered were the risk ratio (RR) for CE-D of patients with abnormal vs. normal LADVR, as obtained from Cox proportional hazard models.

A meta-analysis of these studies using random-effects model was performed to evaluate the pooled prognostic value of abnormal LADVR.

Results: Fifteen studies with 13050 patients (59.7% male; mean age 64.2 years; mean follow-up 25.1 months) were included in this meta-analysis. Every study used adjustments for every established risk factor for CE-D (age, hypertension, diabetes, dyslipidemia, smoking habits, wall motion abnormalities during stress echo). The abnormal value of LADVR was associated with an increased risk of CE-D (RR=3.33, 95% CI: 2.54–4.37, p-value <0.001). Moderate heterogeneity was observed between studies (Q=35.83, p-value=0.001, I2=60.9%) which was further investigated with sensitivity analysis, subgroup analysis and meta-regression.

Conclusions: Meta-analytic data for the cardiovascular risk stratification based on dichotomous LADVR data provide robust evidence for efficient prognostic yield.

The current results support the broader clinical application of the LADVR.
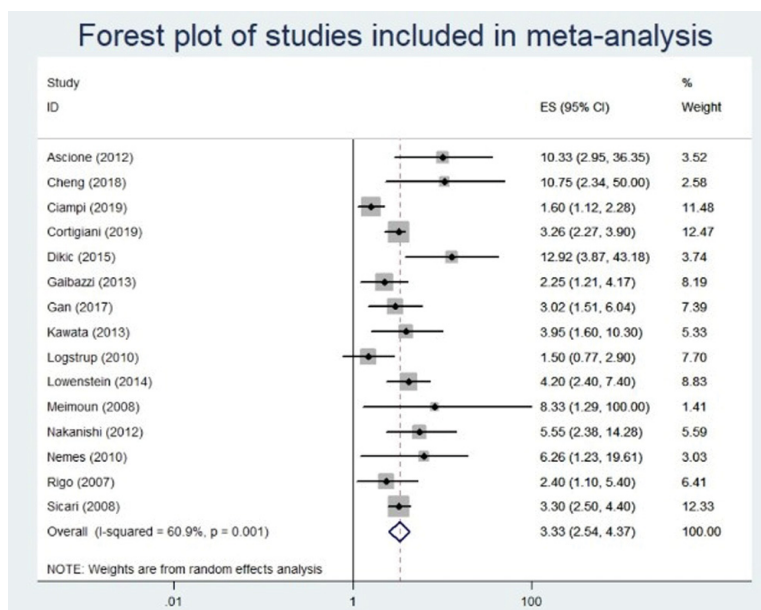
LADVR meta-analysis forestplot