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Outcome prediction with regional wall motion abnormalities during stress echocardiography

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Background: Over the last 3 decades, we observed a progressive decline in the prognostic value of a negative stress echo (SE) test based on regional wall motion abnormalities (RWMA), likely reflecting both an increase in risk in patients (older and more often diabetics) as well as a potential decrease in test performance due to concomitant anti-ischemic therapy.

Aim: To assess the value of SE in predicting outcome in contemporary populations

Methods: From September 2016 to December 2018, we enrolled 1848 patients (age 63 ± 11 years; 1121 males, 60%) with known or suspected coronary artery disease and/or heart failure evaluated with SE (exercise in 543, dipyridamole in 1184, adenosine in 10, dobutamine in 43) in 9 quality-controlled centers of 6 countries. Wall motion score index (WMSI) was evaluated at rest and peak stress (17-segment model, from 1 = normal-hyperkinetic to 4 = dyskinetic).All patients were followed-up for a median of 16 months.

Results WMSI was 1.09 ± 0.23 at rest and increased during stress (1.17 ± 0.32, p<.001). At individual patient analysis, inducible ischemia with RWMA was present in 352 pts (18.8%). At follow-up, there were 218 events: 22 deaths, 22 non-fatal myocardial infarctions, 62 hospital admissions for acute heart failures, and 112 late (>3 months from SE) myocardial revascularizations. Multivariable analysis identified stress-induced RWMA (Hazard Ratio 2.754, 95% Confidence Intervals: 2.053-3.963, p<.0.001) as an independent predictor of events. Kaplan-Meier curves showed progressively worsening event-free survival for 1247 pts with normal (WMSI = 1.0), 298 pts with mildly (1.05-1.39), 250 pts with moderately (1.4-1.99) or 73 pts with severely (>2.0) abnormal peak WMSI: see figure. In patients with negative SE, event-rate was 1.4% per year considering hard events (death and myocardial infarction) and 0.8 % per year considering only death.

Conclusion RWMA show risk stratification capability in contemporary patients referred to SE testing. The higher the peak WMSI, and the worse the prognosis. Nevertheless, the positivity rate is low (< 20%) and patients with normal baseline and stress function still have a significant event rate. A more comprehensive risk assessment with other parameters is warranted

Abstract P1791 Figure. Survival curves and peak WMSI