Non Invasive Imaging (Echocardiography, Nuclear, PET, MR and CT)

EXERCISE TEST PREDICTS BOTH CARDIOVASCULAR AND NON-CARDIOVASCULAR MORTALITY IN PATIENTS WITHOUT CARDIOVASCULAR DISEASE

Poster Contributions
Poster Hall, Hall C
Sunday, March 19, 2017, 9:45 a.m.-10:30 a.m.

Session Title: Non Invasive Imaging: Role of Exercise Testing
Abstract Category: 31. Non Invasive Imaging: Sports and Exercise
Presentation Number: 1289-204

Authors: Nora Sydo, Tibor Sydó, Bela Merkely, Shausha Farooq, Nasir Hussain, Karina Gonzalez Carta, Francisco Lopez-Jimenez, Adelaide Arruda-Olson, Thomas Allison, Mayo Clinic, Rochester, MN, USA, Heart and Vascular Center, Semmelweis University, Budapest, Hungary

Background: Exercise test variables have been shown to predict total mortality in several cardiovascular (CV) diseases. Is this because cardiovascular mortality constitutes many of the deaths in the published studies, or may these prognostic factors also predict non-CV mortality? Our aim was to compare the effect of an abnormal heart rate (HR) recovery and a 10% higher functional aerobic capacity (FAC) on CV versus non-CV mortality in a large primary prevention cohort.

Methods: Mayo Clinic stress test database was reviewed from 1994-2010. We included non-imaging, symptom-limited tests on Bruce protocol. Non-Minnesota residence, baseline CV disease, and age < 30 or ≥ 80 were exclusion criteria. Comorbidities included obesity, hypertension, diabetes, and use of a HR-lowering drug from medical records, and current smoking by self-report. Mortality was determined from Mayo Clinic records and Minnesota Death Index which included causes of death. A death was considered CV if any CV disease was listed among the first 4 causes of death. Cox regression was used to determine long-term total, CV, and non-CV death risk according to an abnormal HR recovery < 13 bpm in the first minute of active recovery and a 10% higher FAC). All analyses were adjusted for age, sex, and comorbidities.

Results: We identified 19551 patients (51±10 years, 34.5% female). Comorbidity rates included diabetes (5.5%), hypertension (21.9%), current smoking (11.2%), obesity (3.6%), and use of HR-lowering drugs (11.6%). Over a mean follow-up of 12±5 years, 1272 patients died with 405 CV and 867 non-CV deaths. After adjustment, an abnormal HR recovery was a significant risk factor for total mortality (hazard ratio = 1.50 with 95% CL [1.33 - 1.70], $p < .0001$), CV mortality (1.82 [1.46 - 2.26], $p < .0001$), and non-CV mortality (1.37 [1.18 - 1.59], $p < .0001$). In contrast, a 10% higher FAC was protective against total mortality (0.88 [0.86 - 0.91], $p < .0001$), CV mortality (0.84 [0.80 - 0.88], $p < .0001$), and non-CV mortality (0.91 [0.88 - 0.94], $p < .0001$).

Conclusions: FAC and HR recovery not only predict total and CV mortality, but also non-CV mortality, thus broadening the prognostic significance of an impaired response to exercise.