Abstract: P3821

Resting heart rate in late adolescence and long term risk of cardiomyopathy - A nationwide study of one million Swedish men

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Risk Factors and Prevention – Epidemiology

Citation:

Background/Introduction

Elevated resting heart rate (RHR) is a known risk factor for HF. Whether elevated RHR is also associated with cardiomyopathy (CM), a common cause of heart failure in the young, is unknown.

Purpose

To investigate the association of resting heart rate (RHR) measured in late adolescence with long term risk of various subtypes of CM with special attention to cardiorespiratory fitness (CRF), an important predictor of RHR and myocardial dysfunction.

Methods

We followed a cohort of Swedish men enrolled for conscription in 1968-2005 (n= 1,008,485; mean age=18.3 years) until December 2014. Outcomes of CM were collected from the national inpatient- (IPR), outpatient- (OPR) and cause of death registries and were divided into categories: 1) dilated, 2) hypertrophic, 3) alcohol/drug-induced, and 4) other. Cox proportional hazard models were used to analyze the longitudinal association between RHR and outcomes while adjusting for potential confounders, including body mass index (BMI), arterial blood pressure and cardiorespiratory fitness (CRF). CRF was measured by maximum capacity ergometer testing as part of the enlistment protocol.

Results

During a mean follow up of 34 years, there were 3500 cases of a first hospitalization for CM (mean age at diagnosis, 50.1 years). Comparing the highest with the lowest quintile of the RHR distribution, we found a positive association between RHR and dilated CM (hazard ratio (HR)=1.58 [confidence interval(CI)=1.37-1.82]) after adjustment for BMI, age at conscription, conscription year, test center, and baseline comorbidities (diabetes, hypertension, congenital heart disease). There no significant association with alcohol/drug-induced (HR=1.32 [CI=0.94-1.85]) or other categories of CM.

Conclusion

Adolescent RHR is associated with future risk CM, independently of blood pressure, BMI and CRF. The association was driven by dilated CM. These findings are suggestive of a causal pathway between elevated heart rate and adverse cardiac remodeling that warrants further investigation.
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