

Frequency and Predictors of Premature Ventricular Contraction

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Purpose

Premature ventricular contractions (PVCs) are associated with a higher rate of all-cause mortality and cardiovascular complications in individuals with and without structural heart disease. However, little is known about frequency and predictors of PVCs in the general population.

Methods

We assembled a population-based sample of individuals aged 25-41 years without prevalent cardiovascular disease. 24-hour electrocardiography (ECG) was obtained with a validated device. Rigorous quality control was performed on all ECG studies by a trained physician, in order to adjust PVCs and to remove artefacts. We used multivariable negative binomial regression models with PVC count as the dependent variable to assess the relationship of PVC frequency with a large number of baseline characteristics, lifestyle factors and laboratory parameters.

Results

Of the 2170 participants recruited for this study, 2060 participants (median age 37 years, 47% men, median BMI 24.1kg/m²) qualified for this analysis. During 24 hours of ECG recording, 69% of participants had at least 1 PVC. The distribution of PVCs is displayed in **Figure 1**. Median number and 95th percentile of PVCs detected in 24h-ECG was 2, and 193, respectively. In multivariable models, we found 18 significant predictors for PVC frequency, as displayed in **Figure 2**.

Number of PVCs	0 n=648	1-2 n=593	3-8 n=408	>8 n=411	p-Value
Age (years)	35.7 (30.8; 39.8)	36.6 (30.4; 40.2)	37.0 (31.5; 40.3)	38.0 (32.3; 40.7)	<0.001
Male sex (%)	300 (46.3)	304 (51.3)	182 (44.6)	173 (42.1)	0.03
BMI (kg/m ²)	24.8 (±3.7)	24.6 (±3.8)	24.2 (±3.8)	24.5 (±3.8)	0.17
Current smoking (%)	152 (23.5)	133 (22.4)	80 (19.6)	84 (20.4)	0.43

Table 1 Baseline characteristics

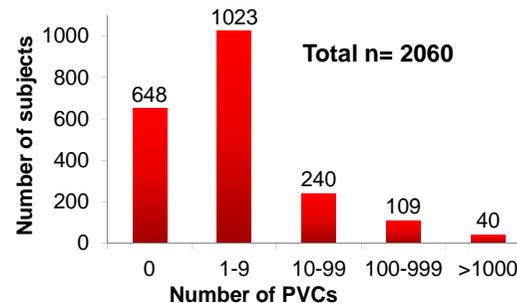


Figure 1 Distribution of PVCs

Conclusion

In this unique cohort of well-characterized young and healthy adults the frequency of PVCs seems to be determined by several covariates related to cardiovascular risk factors, myocardial structure and function and extra-cardiac organ function. Left ventricular remodeling and oxidative stress are common links of many of these predictors and therefore possibly play an important role in early pathogenesis.

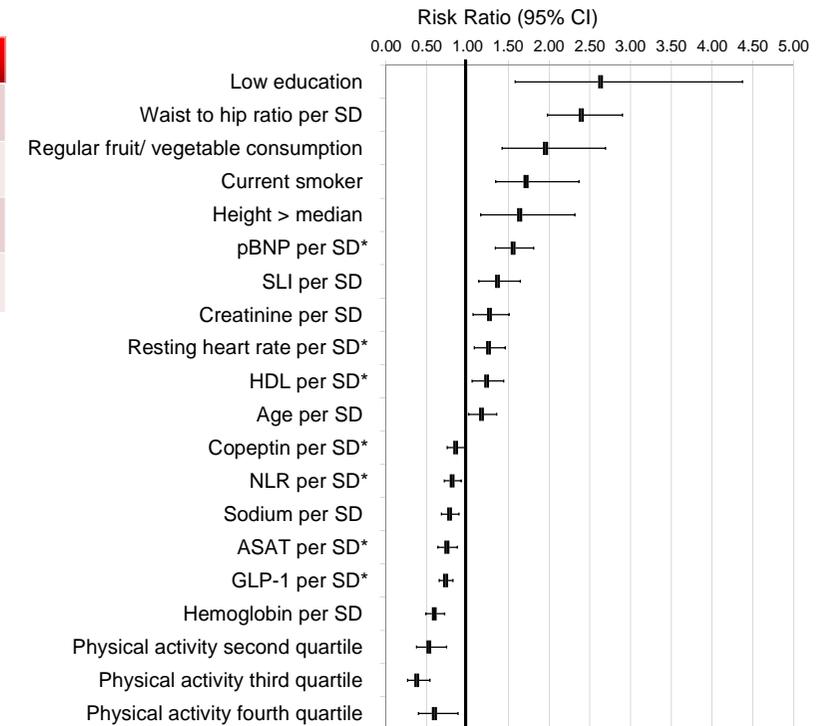


Figure 2 Independent Predictors of PVC frequency

Results of the stepwise backward selection in a multivariable negative binomial regression model. Risk ratios and corresponding 95% confidence interval are displayed. The model was additionally adjusted for sex.

*= Variable log-transformed;

SD= standard deviation;

Regular fruit/vegetable consumption= fruit and vegetable consumption ≥5 servings per day; **pBNP**= pro brain natriuretic peptide; **SLI**= Sokolow-Lyon index; **NLR**= neutrophil to lymphocyte ratio, **ASAT**= aspartate aminotransferase; **GLP-1**= glucagone like peptide-1; **95% CI**= 95% confidence interval.