Force-interval relationship predicts mortality in survivors of myocardial infarction with atrial fibrillation.

RR interval variations lead to beat-to-beat blood pressure differences through the myocardial force-interval relationship (FIR). In sinus rhythm, an altered FIR leads to post-extrasystolic potentiation (PESP) of systolic blood pressure, which has been shown to predict adverse outcome in survivors of acute myocardial infarction (MI). The purpose of this study was (1) to develop a parameter to assess the FIR in patients with atrial fibrillation (AF) and (2) to investigate its association with mortality in MI survivors suffering from AF. Thirty-two patients with acute MI and AF underwent 30-min recordings of ECG and continuous blood pressure. Episodes of a short RR interval (140%, RRi+1) were identified. The systolic pressures of the pulse waves following RRi and RRi+1 were labeled Pi and Pi+1. PESPAfib was calculated as (Pi+1-Pi)/(RRi+1-RRi). During 5 years of follow-up, 13 patients died. When PESPAfib was dichotomized at the median, mortality rates were 63% and 19% in patients with high and low PESPAfib. Hazard ratio for mortality was 4.88 for patients with high PESPAfib (1.33–17.84, p=0.004). The association of PESPAfib and mortality was independent from LVEF, age, diabetes mellitus or mean heart rate. PESPAfib, a measure for the FIR...
in patients with AF, can be derived from simultaneous ECG and blood pressure recordings. The results of this pilot study indicate that PESPAfib may be useful to predict adverse outcome in survivors of myocardial infarction suffering from AF.