

Plasma aldosterone concentration and long term fatal coronary events

Background: High circulating aldosterone levels have been associated with increased cardiovascular mortality in various groups of patients at cardiovascular (CV) risk. However, data on the relationship of aldosterone with atherosclerotic coronary artery disease (CAD) are sparse. We therefore aimed to elucidate the relationship between plasma aldosterone concentration (PAC) and long term fatal coronary events in patients referred to coronary angiography (CA).

Methods: Patients were derived from a prospective cohort study of patients referred to CA. Indications for CA were based on clinical routine. We investigated the association of PAC and fatal coronary events (sudden death, fatal myocardial infarction, death during CA and other fatal coronary events). Cox proportional hazard analysis adjusted for established CV risk factors was performed. Binary logistic regression was used to evaluate the association between PAC with the presence of obstructive CAD (defined as stenosis >50% in at least one segment).

Results: A total of 3316 Patients referred to CA were enrolled in the study. Mean PAC was 79.0 (IQR=48.0–124.0) pg/mL with a median age of 63.5(IQR=56.3–70.6) years (30.1% women). At baseline 19.0% had one-, 19.1% two- and 30.3% had three-vessel CAD. After a median follow-up of 9.9 (IQR 8.5–10.7) years, a total of 348 (11.0%) patients died due to fatal coronary events. Multivariate Cox proportional hazard analysis revealed an increased risk for coronary mortality per increment log-aldosterone (HR=1.53; 95%CI 1.08-2.16; P=0.017). Stratification according to the median (293.0ng/ml) of NT-proBNP and angiotensin II (20.0ng/L) levels revealed a significant association with CVD mortality only in patients with high NT-proBNP levels (HR=1.8; 95%CI 1.17-2.76; P=.004) and high angiotensin II (HR=1.64; 95%CI 1.01-2.67; P=.046), respectively.

No significant association between log-aldosterone and presence of obstructive AS-CAD at baseline was observed (OR=1.15; 95%CI 0.83-1.60; P=0.387). In subgroup analysis patients with a history of VT/VF had significantly higher aldosterone levels (median=75.0, [IQR=46.0-120.0]ng/L vs. 86.0 [IQR=55.0-151.75]ng/L; P=0.045).

Conclusion: In an analysis of a prospective cohort study we found a significant association between aldosterone and long term fatal coronary events. Baseline AS-CAD was not associated with plasma aldosterone levels, supporting the hypotheses that other aldosterone related mechanisms of action, e.g. plaque stability or arrhythmic susceptibility, might contribute to higher CVD mortality risk.