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Copeptin and coronary artery calcium score in elderly adults without a cardiovascular history. A report from the ICELAND MI cohort

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Background: Copeptin, a marker for vasopressin, is related to advanced cardiovascular disease such as myocardial infarction.

Purpose: The aim of the present investigation was to assess whether copeptin is associated with the different atherosclerotic plaque stages expressed by coronary artery calcium scores (CAC score).

Methods: Copeptin and CAC score were studied in 677 participants in the ICELANDIC MI cohort without a history of a myocardial infarction at baseline. The Agatston method was used to measure coronary artery calcification visualized by means of computed tomographic scans. The CAC score was categorized into four classes: 0, 1–99, 100–399, and ≥400. Correlations between the CAC score and copeptin were assessed using Spearman's Rank Correlation while the predictive value of copeptin and CAC score were evaluated with Cox proportional Hazard regression analysis (unadjusted and adjusted for age groups, serum creatinine, gender, hypertension and type 2 diabetes mellitus). The primary outcome was cardiovascular events (CVE) while total mortality served as secondary outcome.

Results: The median copeptin level was 6.4 pmol/L and the median CAC score 227.0 (IQR: 48.3–692.4) for the total cohort. The highest copeptin level was seen in people with a CAC score ≥400. Copeptin predicted total mortality in the unadjusted analysis and the CAC score predicted both outcomes. Only the CAC score that predicted outcome following adjustments (CVE: HR 1.35, 95% CI 1.23–1.48; $p < 0.001$; and total mortality: HR 1.29, 95% CI 1.16–1.43; $p < 0.001$). The cardiovascular prognosis was similar in those with CAC score less than 400 and above 400 regardless of the copeptin level (Figure).

Conclusion: In this cohort of elderly individuals without a previous MI a high CAC score was as a significant predictor of future cardiovascular events. People with high a CAC score had elevated copeptin levels but copeptin did not serve as a prognostic indicator. This suggests that copeptin elevation in people with CAD is an expression for the general state of disease rather than an indicator of a pathophysiological role of vasopressin in this context.
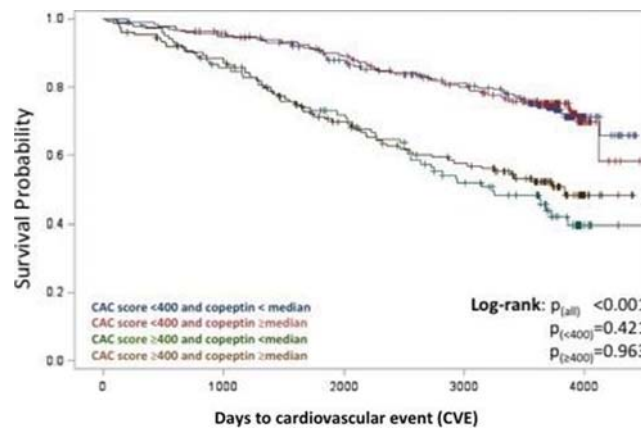

Figure 1