A study of Fernandez et al., aimed to investigate the temporal relationship between changes in copeptin concentrations and episodes of Delayed ischemic neurological deficit (DIND) and hyponatremia.

Copeptin concentrations in cerebrospinal fluid were quantified using enzyme-linked immunosorbent assay in 19 patients: 10 patients with DIND, 6 patients without DIND (no-DIND), and 3 controls.

Copeptin concentrations were higher in DIND and no-DIND patients than in controls. In hyponatremic DIND patients, copeptin concentrations were higher compared with hyponatremic no-DIND patients. DIND was associated with a combination of decreasing sodium levels and increasing copeptin concentrations.

Increased AVP may be the unifying factor explaining the co-occurrence of hyponatremia and DIND. Future studies are indicated to investigate this relationship and the therapeutic utility of AVP antagonists in the clinical setting [1)].

Several studies investigated the prognostic role of copeptin in stroke. The aim of this study is to assess copeptin levels in serum, and investigate their associations with risk of recurrent stroke in a 1-year follow-up study in patients with ischemic stroke. In this post hoc analysis, serum levels of copeptin and NIH stroke scale (NIHSS) were measured at the time of admission in a cohort of 316 patients with ischemic stroke. The end point was stroke recurrence after 1-year follow-up. We used logistic regression model to assess the relationship between copeptin levels and risk recurrent stroke. Logistic regression analysis considering traditional risk factors showed a relationship between serum copeptin levels and moderate-to-high clinical severity when serum copeptin was used as a continuous variable (OR, 1.05; 95% CI, 1.03-1.09). In the follow-up, 54 patients (17.1%) had a stroke recurrence. The stroke recurrence events distribution across the copeptin quartiles ranged between 5.1% (first quartile) to 23.1% (fourth quartile). In multivariate models comparing the third (OR = 2.78; 95% CI 1.85-3.53) and fourth quartiles (OR = 4.00; 95% CI 2.86-6.50) against the first quartile of the copeptin, levels of copeptin were associated with stroke recurrence events. A higher serum copeptin level is a predictor of both severity at admission and stroke recurrence at 1-year in stroke patients [2)].

In a prospective, multicenter observational study of 4,215 patients with AIS, copeptin and NT-proBNP levels were measured with a standardized method when patients were admitted to hospital. The primary endpoint was all-cause mortality or cardiovascular disease (CVD) mortality within 1 year.

RESULTS: During a follow-up period, 906 patients (20.1%, 95% confidence interval [CI] 18.9-21.2) died, including 589 cases of CVD mortality (13.1%, 95% CI 12.1-14.0). With the use of a multivariate analysis, both markers were found to have prognostic value in the same model (CVD mortality: odds ratio [OR] for fourth quartile of copeptin and NT-proBNP 1.68 and 2.58, 95% CI 1.22-2.49 and 1.76-4.05, respectively; all-cause mortality: OR for fourth quartile of copeptin and NT-proBNP 1.48 and 2.47, 95% CI 1.22-2.03 and 1.68-3.95, respectively). In a receiver operating characteristics analysis of CVD mortality, the area under the curve varied from 0.80 to 0.83 (95% CI 0.79-0.87) when the index of NT-proBNP was added and increased to 0.86 (95% CI 0.83-0.90) when both markers were added.

CONCLUSIONS: Copeptin and NT-proBNP may be useful independent prognostic markers of all-cause or CVD mortality in Chinese patients with AIS [3)].

From July 2014 to June 2015, all T2DM patients with first-ever AIS were included. Plasma levels of copeptin were tested at admission. The prognostic value of copeptin to predict the functional outcome and mortality 3months after stroke was compared with the National Institutes of Health Stroke Scale score and with other known outcome predictors.

RESULTS: We recorded 247 stroke patients with T2DM. The copeptin levels were obtained in those patients with a median value of 14.3pmol/L (IQR, 9.5-17.1pmol/L). At 3-month follow-up, a favorable functional outcome was found in 86 patients (34.8%). Plasma copeptin levels in patients with an unfavorable outcome were significantly greater than those in patients with a favorable outcome (16.2 [IQR, 12.2-20.3] vs. 12.4 [IQR, 8.6-15.2] pmol/L; Z=5.399; P<0.0001). In univariate logistic regression analysis, with an unadjusted OR of 1.123 (95% CI, 1.072-1.177, P<0.001), copeptin had a strong association with unfavorable functional outcome. In multivariate analyses, a copeptin level in the highest inter-quartile (>17.1pmol/L) was associated with a higher risk of unfavorable functional outcome (OR=4.62; 95% CI=2.63-9.21; P<0.001). After adjusting for other outcome predictors, a copeptin level in the highest inter-quartile (>17.1pmol/L) was associated with a higher risk of mortality (OR=5.12; 95% CI=2.20-11.38; P<0.001).

CONCLUSION: Our study suggested that copeptin levels may reliably predict short-term stroke prognosis at its onset in Chinese patients with T2DM and stroke [4].

The aim of a study was to quantitatively assess the prognostic significance of plasma copeptin level on functional outcome and mortality in patients with acute stroke using a meta-analysis of the available evidence. Thirteen relevant studies from 2,746 patients were finally included in our study. An elevated plasma copeptin level was associated with an increased risk of unfavorable outcome and mortality after stroke (OR 1.77; 95% CI, 1.44-2.19 and OR 3.90; 95% CI 3.07-4.95, respectively). The result of the pooled measure on standardized mean difference (SMD) was that plasma copeptin levels were found to be significantly higher in patients who died compared to survivors (SMD 1.70; 95% CI, 1.36-2.03). A stratified analysis by study region showed significant differences in SMD of copeptin, and the heterogeneity among studies was significantly decreased. However, the positive association of copeptin with poor prognosis after stroke was consistent in each stratified analysis. The present meta-analysis suggests that early measurement of plasma copeptin could provide better prognostic information about functional outcome and mortality in patients with acute stroke [5].

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