



## Editorial

## Copeptin: A reliable diagnostic and prognostic biomarker or just the stress hormone?

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Copeptin is an arginine-vasopressin (AVP) glycopeptide composed of 39 amino acids, and it is derived from the C-terminal part of pre-pro-AVP (AVP precursor). The AVP precursor molecule is converted into equimolar amounts of AVP, neurophysiolin II, and copeptin. Copeptin is the biochemical mirror to the AVP. As being synthesized from the same ancestor, its level is objectively correlated with AVP release [1]. Measurement of AVP concentration is complicated due to the instability of this peptide and usual platelets bounding. Copeptin remains stable in the plasma for several days at room temperature. Its testability is effective, and results may be available within an hour [2]. Previous studies have shown a clear diagnostic predictive value of copeptin in multiple clinical conditions especially diabetic heart diseases [3,4].

Severe acute respiratory syndrome (SARS) has had a major impact on health systems worldwide with a considerable mortality rate of ventilated patients specially in COVID-19 pandemic. Several physiopathology studies highlighted the correlation between objective risk stratification and the success of the treatment plan [5]. Severe COVID-19 cases were associated with remarkable increase in serum copeptin level when compared to mild to moderate cases. Admission copeptin levels in COVID-19 patients were almost 4-fold higher in non survivors cases. Among all biochemical and inflammatory markers, copeptin showed the best prognostic value for COVID-19 severity with sensitivity and specificity of more than 90% [6]. Copeptin may be a useful neuroendocrine biomarker of COVID-19 severity for better triage and effective management plan. Moreover, it was determined that serum copeptin level was higher in COVID-19 pneumonia patients compared to community-acquired pneumonia (CAP) patients. Copeptin distinguished COVID-19 pneumonia with a reasonable level of sensitivity and specificity [7].

Inflammation, pain, lung injury, plasma osmolarity changes and psychological stress associated with COVID-19 are behind the activation of the stress-adapting endocrine axis. Endocrine stress conditioning is mediated by several hormones, including AVP and cortisol. Pandemic physical and psychological impacts on healthcare providers were considerable and contributed to systems overflow and failure in several critical scenarios [8]. Baseline copeptin concentration is significantly higher and more variable than Cortisol serum level in ICU staffs. These findings suggested that copeptin might be a potential biomarker for physiological strain of health practitioners working under pressure [9].

The need for quick accurate diagnosis and reliable prognostic assessment and treatment decisions has led to the investigations of copeptin in various diseases. Copeptin was found as predictive of adverse outcomes in a wide range of critical clinical situations. However, the lack of independency should be considered as it is the stress and stressful scenarios biomarker hormone.

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