

Prognostic Significance of Hemoconcentration in Acute Heart Failure: A Systematic Review and Meta-Analysis

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Aims:

Hemoconcentration, defined as an increase in the concentration of blood components such as hemoglobin, hematocrit, albumin, or total protein has been proposed as a biomarker for effective decongestion in acute heart failure patients (AHF). The purpose of our review was to investigate the influence of hemoconcentration on mortality and rehospitalization in AHF patients who were treated with diuretics.

Methods:

We systematically searched PubMed, Scopus, Web of Science, and EBSCO for studies investigating hemoconcentration in patients with acute heart failure treated with diuretics. No language or time restrictions were applied. The risk of bias assessment was performed by two reviewers independently using the Newcastle Ottawa Scale. Relevant data were extracted by two independent reviewers and analyzed by Revman software using a random-effect model. Sensitivity analysis was performed to ensure the robustness of the results.

Results:

A total of eight studies and 6,781 patients were included in the final analysis. hemoconcentration was associated with a significant reduction in mortality (HR: 0.65; 95% CI: 0.56-0.74; I^2 : 16%) based on unadjusted hazard ratios.

This association remained significant when adjusted hazard ratios were utilized (HR: 0.67; 95% CI 0.57-0.79; I^2 : 38%). Furthermore, subgroup analysis demonstrated that this association was consistent for both short-term and long-term mortality. However, the relationship between hemoconcentration and rehospitalization was found to be insignificant. (RR:0.93; 95% CI: 0.76-1.15; I^2 : 28%). The sensitivity analysis revealed that no single study had a significant impact on the overall estimate of hemoconcentration on mortality or rehospitalization.

Conclusion:

Hemoconcentration is a good prognostic factor for both short-term and long-term mortality, and should be utilized to optimize diuretic therapy in AHF patients. However current evidence is insufficient to draw conclusions about its impact on rate of rehospitalization.