Therapeutic Effect of Granulocyte Colony-Stimulating Factor Therapy In Acute-On-Chronic Liver Failure: A Meta-Analysis of Randomized Controlled Trials

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Background

- Acute-on-chronic liver failure (ACLF) is a condition characterized by acute decompensation of chronic liver disease, accompanied by the failure of one or more extra-hepatic organs and high short-term mortality.
- Currently, liver transplantation is the only definitive treatment for ACLF but it is not available to all patients due to limited donors, expensive procedure and high risk of adverse effects. Granulocyte stimulating factor (G-CSF) could be considered as an alternative treatment.
- However, its therapeutic effectiveness is still debatable, so we aimed to conduct a meta-analysis to evaluate the clinical efficacy of G-CSF In patients with ACLF.

Methods

- MEDLINE and SCOPUS were queried from inception till June 2022 for randomized controlled trials (RCTs), without any restriction.
- RCTs evaluating effects of G-CSF on survival rates and occurrence of infection in patients with ACLF were incorporated.
- The results were reported using a random-effects meta-analysis and the Mantel-Haenszel risk ratio (RR).The Subgroup analysis was done to investigate the influence of study-level factors such as study setting, population and etiology on the outcomes of interest.

Figure1: Survival rates in patients with alcoholic hepatitis and viral hepatitis

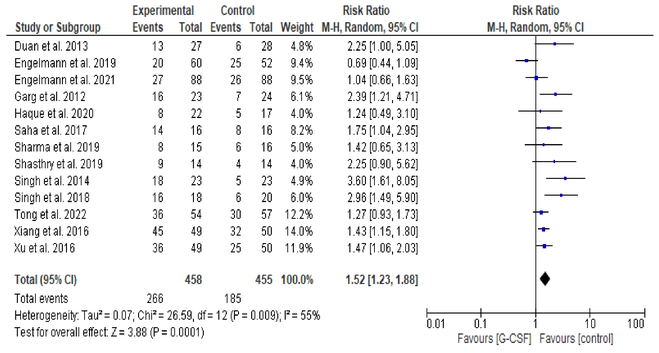


Figure 2: Survival rates in patients with viral hepatitis

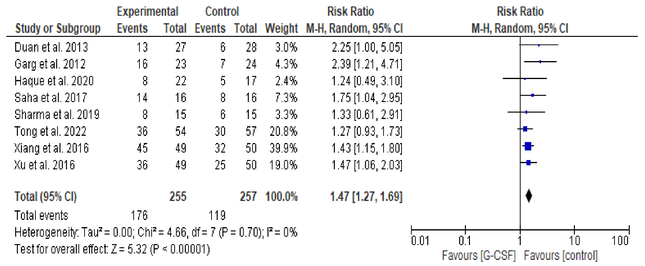
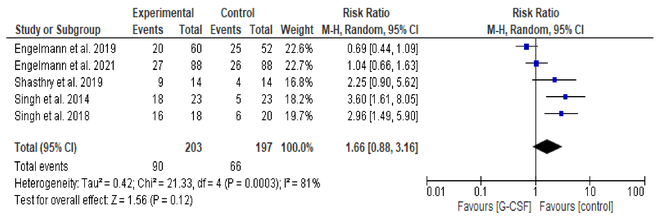


Figure 3: Survival rates in patients with alcoholic hepatitis



Results

- Thirteen studies (n = 13) were included in our meta-analysis. The total number of participants in our study was 913, and the median study duration was 3 months.
- Our pooled analysis demonstrates that G-CSF therapy significantly improved survival rates (RR 1.52; 95% CI 1.23 to 1.88; p = 0.0001; **Figure 1**) in patients with ACLD. In our subgroup analysis,
- G-CSF was not found to be associated with an improved survival rate in patients with alcoholic hepatitis (RR 1.47; 95% CI 1.27 to 1.69; p <0.00001, **Figure 2**).Similar results for patients with alcoholic hepatitis were not statistically significant (RR 1.66; 95% CI 0.88 to 3.16; p< 0.12; **Figure 3**).

CONCLUSIONS

- Our findings indicate that G-CSF therapy is not beneficial in improving survival rates and does reducing the risk of infection in patients with ACLF.