

Category : **Sepsis management**

A67 - Metaanalysis of extracorporeal cytokine removal therapies in COVID-19

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Introduction:

COVID-19 showed dysregulated host immune response and severe inflammation and endothelial injury. Extracorporeal blood purification techniques (CytoSorb) are adjunctive therapies to mitigate hyperinflammation. Clinical data supporting efficacy are sparse and inconsistent. This meta-analysis sought to evaluate outcomes in controlled and single-arm studies of extracorporeal cytokine removal use in critically ill COVID-19 patients.

Methods:

We performed a comprehensive systematic literature search (PubMed, Cytosorbents database) to identify trials reporting mortality in critically ill COVID-19 treated with CytoSorb. We stratified into controlled (comparator arm) and single-arm trials (CT, ST). The longest reported mortality endpoint was analyzed, if it assessed mortality during COVID-19-related critical illness. When mortality timing was not stated, endpoint classification referenced to the primary data source. Pooled OR for mortality were calculated for CT and were estimated for ST using random-effects models to account for between-study heterogeneity.

Results:

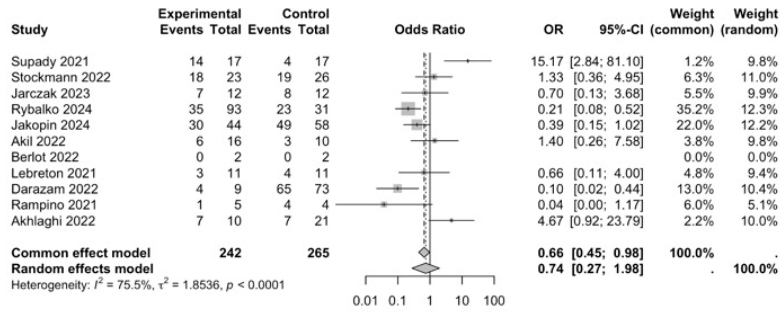
We included 11 CT (3 randomized, 1 prospective, 7 retrospective; n=507, Figure 1A). Pooled OR favored CytoSorb (OR 0.74; 95% CI: 0.27–1.98) with a large CI not reaching statistical significance. In 16 ST (n=368, Figure 1B) the random effects pooled mortality rate was 38% (95% CI: 0.29 – 0.47). This is lower than comparable reported mortality rates: ECMO 42–53%; CRRT without ECMO 44–53%. Previously reported concerns regarding potential harm by CytoSorb were not substantiated in this more comprehensive synthesis

Conclusion:

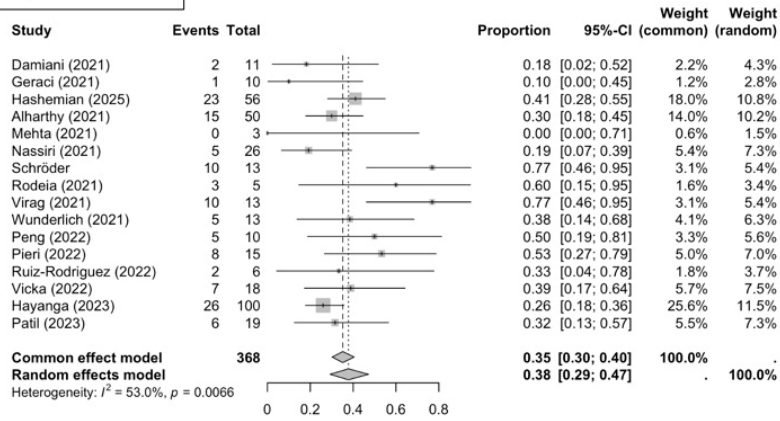
CytoSorb was associated with trends to lower mortality compared to benchmark outcomes. No signals of harm were detected. There was a high degree of heterogeneity (significant heterogeneity test and high I^2). Use of ECMO and CRRT varied greatly between studies. The results justify continued differentiated evaluation of CytoSorb in severe hyperinflammatory conditions, both within and beyond the context of COVID-19.

Image :

A) Controlled Trials



B) Single Arm Trials



Analysis of A) Controlled and B) Single Arm Trials