

Relative Adrenal Insufficiency in Cirrhosis: A Systematic Review and Meta-analysis

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Background

- Relative adrenal insufficiency (RAI) is associated with increased mortality in critically ill patients.
- It can be seen in patients of liver cirrhosis, especially in those with decompensated disease, which has been described as “hepato-adrenal syndrome”.
- We conducted this systematic review and meta-analysis to assess true incidence of RAI in non-critically ill decompensated cirrhosis patients and its effects on outcomes.

Methods

- We conducted a comprehensive search of Ovid Cochrane, Ovid Embase, Ovid Medline, Scopus, and Web of Science (inception to July 2021) to identify studies reporting on use of relative adrenal insufficiency in decompensated cirrhosis.
- RAI was diagnosed as increase in serum total cortisol <9 mcg/dl after standard dose-synacthen stimulation test.
- Studies were excluded if the patients were in shock, on vasopressors, in ICU or needing mechanical ventilatory support.
- The primary outcome was incidence of RAI; secondary outcomes were risk ratio of ICU admission, in-hospital mortality and mortality on follow up.

Table 1: Effects of relative adrenal insufficiency on outcomes in non-critically ill decompensated cirrhosis

Outcomes	Number of studies	Risk ratio	I ²	p-value
Ascites	6	1.04 (0.90 - 1.19)	0%	0.59
Hepato-renal syndrome	3	1.31 (0.45 - 3.84)	38.52%	0.62
ICU admission	3	1.79 (0.90 - 3.53)	0%	0.09
In-hospital mortality	5	1.63 (0.94 - 2.83)	0%	0.08

Key Message:

Despite high incidence, relative adrenal insufficiency did not impact ICU admissions or mortality in decompensated cirrhosis patients

Results

- Out of 249 studies, 8 were included in final analysis based on inclusion criteria.
- 710 patients, with 502 males (70.7%), mean age 56.53 ± 3.81 years.
- Pooled incidence of RAI in decompensated cirrhosis was 38% (8 studies; 29.5 - 47.6, I²= 82.19%).
- Patients with RAI had higher MELD score with mean difference 0.383 (8 studies; 0.124 - 0.642, I² = 58.5), lower mean arterial pressure -0.182 (5 studies; -0.368 - 0.004, I² = 9.09), serum albumin -0.460 (7 studies; -0.702 - -0.271, I² = 38.53) and sodium -0.254 (6 studies; -0.509 - 0, I² = 48.2).
- Effects of RAI on outcomes is shown in Table 1.

Conclusions

- Our meta-analysis reveals 38% incidence of relative adrenal insufficiency in non-critically decompensated cirrhosis patients.**
- Despite, high incidence, RAI did not impact outcomes in terms of ascites, hepato-renal syndrome, ICU admissions, and mortality. This meta-analysis highlights no effects of RAI on real-world outcomes in non-critically ill decompensated cirrhosis patients.

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