Effect of Continuous Positive Airway Pressure on Liver Enzymes in Obstructive Sleep Apnea: A Meta-Analysis of Randomized Controlled Trials

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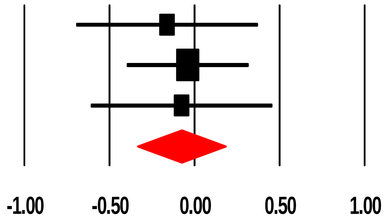
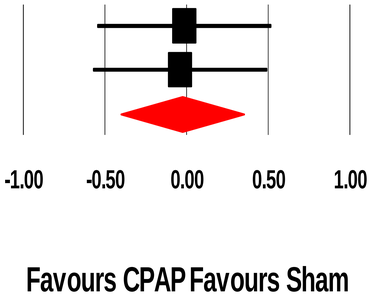
(A)

Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Kohler, 2009	-0.16	0.27	0.07	-0.70	0.37	-0.59	0.55
Ng, 2021	-0.04	0.18	0.03	-0.40	0.32	-0.22	0.83
Sivam, 2012	-0.08	0.27	0.07	-0.61	0.46	-0.28	0.78
	-0.08	0.13	0.02	-0.34	0.18	-0.58	0.56



(B)

Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Kohler, 2009	-0.01	0.27	0.07	-0.55	0.52	-0.05	0.96
Sivam, 2012	-0.04	0.27	0.07	-0.57	0.49	-0.15	0.88
	-0.03	0.19	0.04	-0.40	0.35	-0.14	0.89



Introduction

- It is known that obstructive sleep apnea (OSA) is associated with nonalcoholic fatty liver disease (NAFLD).
- However, the impact of OSA treatment using continuous positive airway pressure (CPAP) on liver enzymes remains unclear.
- Therefore, we conducted this meta-analysis to evaluate the effect of CPAP therapy on liver enzymes in patients with OSA.

Methods

- We performed a comprehensive literature search using PubMed, Embase, and Web of Science databases through May 15, 2022, for all randomized controlled trials (RCTs) that assess the impact of CPAP therapy on liver enzymes in patients with OSA.
- The primary outcome of our study was the reduction of serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) pre- and post-CPAP treatment.
- The random-effects model was used to calculate the standardized mean difference (SMD) with the corresponding 95% confidence intervals (CI) of our desired outcome.
- A P-value <0.05 was considered statistically significant.
- Heterogeneity was assessed using the Higgins I2 index (I2 values >50% implied the presence of significant heterogeneity).

Results

- A total of three RCTs were included. There were 186 patients with OSA who received therapeutic CPAP therapy and 185 who received subtherapeutic CPAP therapy.
- The mean age was 50 years.
- The follow-up period ranged from 1 month to 6 months.
- There was no significant difference in the reduction of ALT (SMD -0.08; 95% CI -0.34, 0.18; P = 0.56, I2 = 0%, Figure 1A) or AST (SMD -0.03; 95% CI -0.40, 0.35; P = 0.89, I2 = 0%, Figure 1B) levels between the two groups.

Conclusions

- Our meta-analysis demonstrated that CPAP did not improve the liver enzymes in patients with OSA.
- Our study is hampered by the limited number of studies and small sample size.
- Further large-scale RCTs with long-term follow-up are necessary to validate our findings.