E-Poster

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Reassessing Hyperbaric Oxygen Therapy Efficacy in Carbon Monoxide Intoxication: A Retrospective Cohort Analysis of Delayed Neurological Sequelae Outcomes

Topic: Complications/Sequelae (ie Spasticity, Immobilization and Frailty)

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BACKGROUND

Carbon monoxide (CO) intoxication is associated with delayed neurological sequelae (DNS) that can significantly impact patient outcomes. Hyperbaric oxygen therapy (HBOT) is frequently recommended for CO poisoning to prevent DNS; however, evidence supporting its efficacy remains controversial. This study aimed to evaluate the association between HBOT administration and DNS development in CO-poisoned patients using real-world data.

METHODS

We conducted a retrospective cohort study using the TriNetX database. CO-poisoned patients who received HBOT were compared with those patients who did not. After propensity score matching (1:1), the two cohorts were analyzed. The primary outcome was set as the development of DNS, and secondary outcomes as all-cause mortality and the composite of DNS and all-cause mortality, within a three-month follow-up period. Kaplan-Meier survival analysis with Cox proportional hazard model was conducted for outcome measurements.

RESULTS

Initially, 590 CO-poisoned patients who received HBOT were compared with 21,238 who did not. After matching, 590 pairs of patients were analyzed. Baseline characteristics including age, sex, and ethnic were well-balanced (SMD < 0.1) between the two groups. For primary outcome, the HBOT group exhibited significantly higher risk of developing DNS (HR=4.258, 95% CI: 1.724-10.517; p=0.0006), with 22/590 (3.7%) patients in the HBOT group versus < 11/590 (1.9%) in the non-HBOT group experiencing DNS. For the composite outcome of DNS and all-cause death, the HBOT group similarly exhibited higher risk (HR=2.407, 95% CI: 1.386-4.180; p=0.0013). All-cause mortality alone showed no significant difference between the two cohorts (HR=1.290, 95% CI: 0.637-2.612; p=0.4782).

CONCLUSION

Contrary to previous studies, our study found higher DNS rates in CO-poisoned patients receiving HBOT versus non-HBOT care. These findings may be due to potential bias in HBOT allocation. Further larger prospective studies are warranted to assess HBOT efficacy for CO poisoning.

Statement of Disclosures

None

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