ICU
MANAGEMENT & PRACTICE

Chronic high alcohol consumption increases ARDS risk

A new systematic review and meta-analysis shows that chronic high alcohol consumption significantly increases the risk of acute respiratory distress syndrome (ARDS). This finding suggests that patients admitted to hospital should be screened for chronic alcohol use, according to researchers at the University of Nottingham's UK Centre for Tobacco and Alcohol Studies.

Evangelia Simou, MSc, and co-authors say this is the first meta-analysis of observational studies of the association between alcohol consumption and the risk of ARDS among adults. "We found evidence of a 1.89-fold increase in the odds of ARDS in persons with high alcohol consumption, which in subgroup analyses appeared to be attributable to the effect of exposure defined as alcohol abuse and also in those with sepsis or septic shock as the predisposing condition for ARDS," the authors write.

ARDS is responsible for 10.4 percent of all ICU admissions, and approximately 23 percent of patients with ARDS need mechanical ventilation. ARDS is associated with high morbidity and mortality. Risk factors for the development of ARDS include increased age and clinical factors such as sepsis, pneumonia, aspiration, trauma, pancreatitis, and smoke or toxic gas inhalation. Alcohol abuse has also been reported to increase the risk of ARDS, perhaps because acute alcohol intoxication increases the risk of aspiration and pulmonary infection.

To date, however, there remains limited and inconsistent evidence on the relation between alcohol consumption and the risk of ARDS. To synthesise this mixed evidence to estimate an overall magnitude of risk, and to explore whether this varies by predisposing condition for ARDS, Simou and colleagues performed this systematic review and meta-analysis evaluating the association between alcohol consumption and the risk of ARDS in adults. Medline, EMBASE and Web of Science were searched to identify observational studies evaluating the association between prior alcohol intake and the occurrence of ARDS among adults, published between 1985 and 2015 and with no language restriction. Demographic baseline data were extracted independently by two reviewers and random-effects meta-analyses were used to estimate pooled effect sizes with 95% confidence intervals.

All studies that had assessed alcohol consumption, either by self-report or a proxy such as clinical records – defined either as drinking level (low, moderate, heavy, alcohol abuse, alcoholism) or as frequency (grams per day) – were included. The quality of the studies was assessed by the Newcastle-Ottawa Scale. High quality was defined as a grade of ≥ 6.

In all, 17 observational studies (177,674 people) were included in the analysis. Meta-analysis of 13 studies showed that any measure of high relative to low alcohol consumption was associated with a significantly increased risk of ARDS (OR, 1.89; 95% CI, 1.45-2.48; I2 = 48%; 13 studies); no evidence of publication bias was seen (P = .150). Sensitivity analyses indicated that this association was attributable primarily to an effect of a history of alcohol abuse (OR, 1.90; 95% CI, 1.40-2.60; 10 studies). Also, subgroup analyses identified that heterogeneity was explained by predisposing condition (trauma, sepsis/septic shock, pneumonia; P = .003).

"Being based largely on observational studies raises the possibility of bias, which may be introduced in our analysis. However, misclassification bias due to the inclusion of former/lower drinkers in the reference group is likely, if anything, to have reduced the magnitudes of estimated effects," the authors explain. "However, the subgroup analyses were conducted in an attempt to explore reasons for heterogeneity, and we found that there were no significant differences according to study quality, study design, effect estimate, continent, or year of publication."

This systematic review therefore provides comprehensive evidence that high alcohol consumption increases the risk of ARDS, the authors conclude. Their findings are published in the journal CHEST.

Source: CHEST
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