ICU
MANAGEMENT & PRACTICE

Corticosteroid use associated with ICU-acquired weakness

There is a significant association between corticosteroid use and intensive care unit-acquired weakness, according to results of a systematic review and meta-analysis. Thus, exposure to corticosteroids should be limited, or the administration time should be shortened in clinical practice to reduce the risk of ICU-acquired weakness in adult patients, researchers say.

With its strong anti-inflammatory and anti-fibrotic effects, corticosteroid therapy is still the key treatment and recommendation for specific critically ill patients. However, the role of corticosteroid therapy in intensive care unit-acquired weakness (ICUAW) remains controversial. Some clinical studies have indicated that corticosteroids may contribute to developing ICUAW, yet others have demonstrated decreasing odds of developing ICUAW. Meanwhile, other studies could not identify the effect of corticosteroids on ICUAW.

For this review, an online search of all of the pertinent English language studies was undertaken in the following databases from inception through 10 October 2017: PubMed, Embase, Cochrane Central Register of Controlled Trials, Web of Science, and Cumulative Index of Nursing and Allied Health Literature. Randomised controlled trials and prospective cohort studies evaluating the association between corticosteroids and ICU-acquired weakness in adult ICU patients were selected. Data extraction from the included studies was accomplished by two independent reviewers. Meta-analysis was performed using Stata version 12.0. The results were analysed using odds ratios (ORs) and 95% confidence intervals (CIs). Data were pooled using a random effects model, and heterogeneity was evaluated using the $\chi 2$ and I2 statistics.

One RCT and 17 prospective cohort studies (2,387 patients) were included in this review. After a meta-analysis, the effect sizes of the included studies indicated a statistically significant association between corticosteroid use and ICUAW (OR 1.84; 95% CI 1.26–2.67; I2 = 67.2%). Subgroup analyses suggested a significant association between corticosteroid use and studies limited to patients with clinical weakness (OR 2.06; 95% CI 1.27–3.33; I2 = 60.6%), patients with mechanical ventilation (OR 2.00; 95% CI 1.23–3.27; I2 = 66.0%), and a large sample size (OR 1.61; 95% CI 1.02–2.53; I2 = 74.9%), and not studies limited to patients with abnormal electrophysiology (OR 1.65; 95% CI 0.92–2.95; I2 = 70.6%) or patients with sepsis (OR 1.96; 95% CI 0.61–6.30; I2 = 80.8%); however, statistical heterogeneity was obvious.

No significant publication biases were found in the review, and the overall quality of the evidence was high for the RCT and very low for the included prospective cohort studies, according to the researchers.

"This review synthesised data on the relationship between corticosteroids and ICUAW," the authors write. "In addition, the effect of corticosteroid therapy on ICUAW is complex and may also depend on the duration and cumulative dosage of the corticosteroids. Of the included studies, duration of the corticosteroids was not found to be an independent risk factor for ICUAW, but the cumulative doses of corticosteroids were significantly higher in patients with ICUAW than in those without ICUAW in two studies based on univariate analysis. Thus, exposure to corticosteroids should be limited or the dose lowered in clinical practice to reduce the risk of ICUAW."

Future research should focus on RCTs or prospective cohort studies by performing multivariable adjustment for confounders to identify the associations between the use, duration, and total doses of corticosteroids and ICUAW, the authors say.

Source: Critical Care
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