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Antioxidant, Anti-inflammatory Therapy in Sepsis

Sepsis is associated with long-term cognitive impairment and poor psychological and functional outcomes. Potential mechanisms for this include intracerebral oxidative stress and inflammation. However, there is limited knowledge about the effects of early antioxidant and anti-inflammatory therapy on cognitive, psychological, and functional outcomes in sepsis survivors.

The Vitamin C, Thiamine, and Steroids in Sepsis (VICTAS) randomised clinical trial describes the differences in long-term cognitive, psychological, and functional outcomes between the intervention and control groups. The study aimed to understand the effects of vitamin C, thiamine, and hydrocortisone on sepsis survivors.

The study included 213 adult patients with sepsis-induced respiratory and/or cardiovascular dysfunction who survived to discharge or day 30. Study participants were recruited from 43 intensive care units in the U.S. and were randomised to either the intervention or control group.

The intervention group received intravenous vitamin C (1.5 g), thiamine hydrochloride (100 mg), and hydrocortisone sodium succinate (50 mg) every six hours for 96 hours or until death or ICU discharge. The control group received a matching placebo.

Cognitive performance, risk of post-traumatic stress disorder and depression, and functional status were assessed using standardised instruments administered during a 1-hour telephone call six months after randomisation.

As per the findings, the intervention group showed lower immediate memory scores, higher odds of post-traumatic stress disorder, and lower odds of receiving mental health care than the control group. However, no other significant differences were found in the cognitive, psychological, and functional outcomes between the two groups.

Overall, these findings show that treatment with vitamin C, thiamine, and hydrocortisone did not improve or had worse cognitive, psychological, and functional outcomes after six months in survivors of sepsis compared to those who received a placebo. These results challenge the idea that antioxidant and anti-inflammatory therapy during critical illness can prevent long-term cognitive, psychological, and functional impairment in sepsis survivors.

Source: JAMA

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