

Hydrocortisone therapy for trauma patients associated with reduced hospital-acquired pneumonia risk

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Patients admitted to a hospital with major trauma and treated with the steroid hydrocortisone were less likely to be diagnosed with hospital-acquired pneumonia than patients who received placebo, according to a study in the March 23/30 issue of *JAMA*.

Severe trauma is one of the leading causes of death and illness in the world. "The overall rate of posttraumatic [pneumonia](#) reaches an incidence of 40 percent to 60 percent, mainly in patients with [traumatic brain injury](#) (TBI). Early posttraumatic pneumonia increases the duration of [mechanical ventilation](#), hospitalization, and risk of death. Thus, prevention of posttrauma pneumonia is a major clinical and economical issue," according to background information in the article. "Both experimental and clinical data suggest that corticosteroid use may decrease the occurrence and severity of nosocomial [hospital-acquired] pneumonia in patients treated in intensive care units (ICUs)."

Antoine Roquilly, M.D., of the University of Nantes, France, and colleagues conducted the HYPOLYTE (Hydrocortisone Polytraumatise) study to examine whether treatment with stress-dose levels of hydrocortisone would reduce the prevalence of hospital-acquired pneumonia. The [randomized trial](#), conducted from November 2006 to August 2009, included 150 patients with severe trauma from 7 ICUs in France. Patients were randomly assigned to a continuous intravenous infusion of either hydrocortisone (200 mg/d for 5 days, followed by 100

mg on day 6 and 50 mg on day 7) or [placebo](#). The treatment was stopped if patients had an appropriate adrenal response.

Twenty-six of 73 patients (35.6 percent) treated with hydrocortisone and 39 of 76 patients (51.3 percent) treated with placebo developed hospital-acquired pneumonia at day 28 of hospitalization. Twenty of 56 patients with corticosteroid insufficiency (35.7 percent) who were treated with hydrocortisone and 31 of 57 patients (54.4 percent) receiving placebo developed hospital-acquired pneumonia at day 28.

The average duration of mechanical ventilation-free days was 16 days in the hydrocortisone group and 12 days in the placebo group. Three of 73 patients (4.1 percent) in the hydrocortisone group and 11 of 76 patients (14.5 percent) in the placebo group developed acute lung injury or acute respiratory distress syndrome (ARDS). The average length of ICU stay was 18 days in the hydrocortisone group and 24 days in the placebo group.

Seven of 76 patients (9.2 percent) in the placebo group and none of the 73 in the hydrocortisone group developed hyponatremia (low concentration of sodium in the blood). For the entire study population, 6 of 73 patients (8.2 percent) died in the hydrocortisone group and 4 of 76 (5.3 percent) died in the placebo group.

"In conclusion, a stress dose of hydrocortisone for 7 days is associated with a reduction in the rate of hospital-acquired pneumonia at day 28 together with a decreased requirement for mechanical ventilation and length of ICU stay in trauma patients. The effects and safety of corticosteroid therapy with stress-dose levels of hydrocortisone should be confirmed in trauma patients and investigated in other ICU populations, particularly in TBI patients," the authors write.

More information: *JAMA*. 2011;305[12]1201-1209.

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