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# High-Dose Intravenous Methylprednisolone for Hantavirus Cardiopulmonary Syndrome in Chile: A Double-Blind, Randomized Controlled Clinical Trial.

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**Abstract**

**BACKGROUND:** Andes virus (ANDV)-related hantavirus cardiopulmonary syndrome (HCPS) has a 35% case fatality rate in Chile and no specific treatment. In an immunomodulatory approach, we evaluated the efficacy of intravenous methylprednisolone for HCPS treatment, through a parallel-group, placebo-controlled clinical trial.

**METHODS:** Patients aged >2 years, with confirmed or suspected HCPS in cardiopulmonary stage, admitted to any of 13 study sites in Chile, were randomized by study center in blocks of 4 with a 1:1 allocation and assigned through sequentially numbered envelopes to receive placebo or methylprednisolone 16 mg/kg/day (≤1000 mg) for 3 days. All personnel remained blinded except the local pharmacist. Infection was confirmed by immunoglobulin M antibodies or ANDV RNA in blood. The composite primary endpoint was death, partial pressure of arterial oxygen/fraction of inspired oxygen ratio ≤55, cardiac index ≤2.2, or ventricular tachycardia or fibrillation within 28 days. Safety endpoints included the number of serious adverse events (SAEs) and quantification of viral RNA in blood. Analysis was by intention to treat.

**RESULTS:** Infection was confirmed in 60 of 66 (91%) enrollees. Fifteen of 30 placebo-treated patients and 11 of 30 methylprednisolone-treated patients progressed to the primary endpoint (P = .43). We observed no significant difference in mortality between treatment groups (P = .41). There was a trend toward more severe disease in placebo recipients at entry. More subjects in the placebo group experienced SAEs (P = .02). There were no SAEs clearly related to methylprednisolone administration, and methylprednisolone did not increase viral load.

**CONCLUSIONS:** Although methylprednisolone appears to be safe, it did not provide significant clinical benefit to patients. Our results do not support the use of methylprednisolone for HCPS.

**CLINICAL TRIALS REGISTRATION:** NCT00128180.