A non-randomized multicentre trial of human immune plasma for treatment of hantavirus cardiopulmonary syndrome caused by Andes virus.


Abstract

BACKGROUND: In Chile, Andes virus (ANDV) is the sole aetiologic agent of hantavirus cardiopulmonary syndrome (HCPS) with mean annual incidence of 55 cases, 32% case fatality rate (CFR) and no specific treatment. Neutralizing antibody (NAb) titres at hospital admission correlate inversely with HCPS severity. We designed an open trial to explore safety and efficacy and evaluate pharmacokinetics of immune plasma as a treatment strategy for this disease.

METHODS: We performed plasmapheresis on donors at least 6 months after HCPS and measured NAb titres through a focus-reduction neutralization test. Subjects admitted to 10 study sites with suspected/confirmed HCPS were eligible for treatment with immune plasma by intravenous infusion at an ANDV NAb dose of 5,000 U/kg. HCPS was confirmed through immunoglobulin M serology or reverse transcriptase-PCR. The main outcome was mortality within 30 days.

RESULTS: From 2008-2012, we enrolled and treated 32 cases and confirmed HCPS in 29. CFR of hantavirus plasma-treated cases was 4/29 (14%); CFR of non-treated cases in the same period in Chile was 63/199 (32%; P=0.049, OR=0.35, CI=0.12, 0.99); CFR of non-treated cases at the same study sites between 2005-2012 was 18/66 (27%; P=0.15, OR=0.43, CI=0.14, 1.34) and CFR in a previous methylprednisolone treatment study was 20/60 (33%; P=0.052, OR=0.32, CI=0.10, 1.00). We detected no serious adverse events associated to plasma infusion. Plasma NAb titres reached in recipients were variable and viral load remained stable.

CONCLUSIONS: Human ANDV immune plasma infusion appears safe for HCPS. We observed a decrease in CFR in treated cases with borderline significance that will require further studies for confirmation.