Clinical and immunomodulating effects of ketamine in horses with experimental endotoxemia.

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Abstract

BACKGROUND:

Ketamine has immunomodulating effects both in vitro and in vivo during experimental endotoxemia in humans, rodents, and dogs.

HYPOTHESIS:

Subanesthetic doses of ketamine will attenuate the clinical and immunologic responses to experimental endotoxemia in horses.

ANIMALS:

Nineteen healthy mares of various breeds.

METHODS:

Experimental study. Horses were randomized into 2 groups: ketamine-treated horses (KET; n = 9) and saline-treated horses (SAL; n = 10). Both groups received 30 ng/kg of lipopolysaccharide (LPS, Escherichia coli, O55:B5) 1 hour after the start of a continuous rate infusion (CRI) of racemic ketamine (KET) or physiologic saline (SAL). Clinical and hematological responses were documented and plasma concentrations of tumor necrosis factor-α (TNF-α) and thromboxane B(2) (TXB(2)) were quantified.

RESULTS:

All horses safely completed the study. The KET group exhibited transient excitation during the ketamine loading infusion ($P < .05$) and 1 hour after discontinuation of administration ($P < .05$). Neutrophilic leukocytosis was greater in the KET group 8 and 24 hours after administration of LPS ($P < .05$). Minor perturbations of plasma biochemistry results were considered clinically insignificant. Plasma TNF-α and TXB(2) production peaked 1.5 and 1 hours, respectively, after administration of LPS in both groups, but a significant difference between treatment groups was not demonstrated.

CONCLUSIONS AND CLINICAL IMPORTANCE:

A subanesthetic ketamine CRI is well tolerated by horses. A significant effect on the clinical or immunologic response to LPS administration, as assessed by clinical observation, hematological parameters, and TNF-α and TXB(2) production, was not identified in healthy horses with the subanesthetic dose of racemic ketamine utilized in this study.

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