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Effects of Electroacupuncture on Minimum Alveolar Concentration of Isoflurane in Anesthetized Horses During MRI Examination

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Electroacupuncture significantly reduces the isoflurane requirement in horses under general anesthesia for MRI examination. Authors' addresses: Via Lago Gerundo 24, Maleo (LO), Italy (Romanò); Scienze Cliniche Veterinarie, Sezione di Clinica Chirurgica, Facoltà di Medicina Veterinaria, Università degli studi di Milano, Milano, Italy (Ravasio); Castenedolo (BS), Italy (Elli); Forlì, Italy (Longo); Radiologia Veterinaria Clinica e Sperimentale, Reparto di Radiologia, Az. Polo Veterinario di Lodi, Facoltà di Medicina Veterinaria, Università degli studi di Milano, Milano, Italy, Lodi, Italy (Zani); e-mail: laura.rom@hotmail.it. *Corresponding author. © 2011 AAEP.

1. Introduction

Isoflurane causes dose-dependent cardiovascular adverse effects. Because of the high anesthetic mortality in horses and the risk of onset of post-anesthetic myopathy, the reduction of isoflurane requirements appears to be indispensable in minimizing its dose-dependent side effects. Since it was found that the minimum alveolar concentration (MAC) of isoflurane was reduced by electroacupuncture (EA) in dogs, in this study the effects of electroacupuncture on MAC in horses under isoflurane general anesthesia were evaluated. Other descriptive-subjective parameters such as quality of recovery, depth, and stability of anesthetic plane were evaluated.

2. Materials and Methods

Fifteen lame adult horses underwent general anesthesia for MRI examination and were randomly assigned into 2 groups. In the first group, 10 horses

were treated with EA at acupoints GV1, Bai Hui, GV6, GV8, GV11, GV12, ST36, LI4, and PC6 for 30 minutes at 20 Hz. In the second group, 5 horses were used as control group, without EA.

3. Results

EA lowered the MAC of isoflurane by 31.3%: the mean \pm SD isoflurane MAC for the EA group was $0.9\% \pm 0.2\%$, versus $1.3\% \pm 0.1\%$ for the control group. There was no significant difference regarding rectal temperature, heart rate, systolic and diastolic arterial pressures, and quality of recovery. Depth and stability of anesthetic plane were significantly shallower in the control group ($p < 0.002$).

4. Discussion

EA decreases the isoflurane requirement in horses undergoing general anesthesia. In conclusion, EA could be considered a valid tool as part of a multimodal anesthetic approach.

Research Abstract

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