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# Comparison of the effect of intraosseous and intravenous administration of midazolam-ketamine on clinical, cardiopulmonary and hematological parameters in dogs

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## Abstract

The aim of this study was to compare the quality of anesthesia, duration of anesthesia, quality of recovery, pain assessment, vital signs and some hematological and biochemical factors following IO injection of midazolam and ketamine compared to IV injection. Six mixed-breed adult female dogs with mean weight of 21.76 ± 1.49 kg were selected. Thirty minutes after intramuscular injection with acepromazine (0.05 mg/kg) and morphine (0.5 mg/kg) for sedation, the quality of sedation was scored and the right cephalic vein for fluid therapy and in the IV group, cephalic vein of the forelimb was catheterized to inject the drug. In the IO group, the left tibia was prepared for injection and after perforation of the bone, anesthetics {midazolam (0.375 mg/kg) and ketamine (10 mg/kg) were injected into the bone marrow. According to the performed studies, the anesthesia times in the two methods of IO and IV injection were not significantly different. In both methods, induction, maintenance of anesthesia and recovery were performed smoothly without any stress. By examining the results of the parameters measured in this study such as heart rate, respiration rate, body temperature, saturation of hemoglobin with oxygen, exhaled carbon dioxide, and recovery time, different stages of anesthesia and sedation quality, induction of anesthesia and recovery, significant differences were not found between the two groups. In the study of blood platelets, only a significant difference was observed in the total number of red blood cells and white blood cells in the blood sample after recovery between the IV group and to the IO group. There was no statistically significant difference in blood glucose and cortisol levels between the two groups in blood biochemical studies. Therefore, according to the results of this study, it can be concluded that IO injection of midazolam-ketamine in terms of lack of access to vein is a rapid and effective method of induction of general anesthesia in dogs.

**Key words**: Anesthesia, Intraosseous, Dog, Ketamine, Midazolam

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