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Evaluation of the effects of Lidocaine and bupivacaine ophthalmic drops on intraocular pressure and duration of corneal anesthesia in dogs

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Abstract

The main cause of glaucoma is an increase in intraocular pressure (IOP). In order to measure the intraocular pressure in animals, it is necessary to use topical anesthetics. These drugs may lead to changes in intraocular pressure and, as a result, interfere with the diagnosis of increased IOP. Thus the objective of this study was to production and use topical anesthetic drugs that have minimal effect on intraocular pressure. **I**n this study, the ophthalmic drop forms of lidocaine 1% and bupivacaine 0.4% were formulated and their effects on IOP and duration of corneal anesthesia investigated in 20 mixed breed adult dogs. Two drops of lidocaine were instilled in the right eye of the half of the dogs and the left eye of the other half of the dogs. In the fellow eyes normal saline were instilled as controls. Intraocular pressure was taken before and at the minutes 0, 5, 10, 15, 20, 25, 30, 35, 40 after instilling the drug with two iCare and Tono-Pen Vet tonometers. With one week interval, the effects of bupivacaine drops were investigated in a similar manner. Lidocaine drops showed no change in intraocular pressure with both devices. Bupivacaine drops caused a temporary increase in IOP immediately after instillation, which was significant with iCare (P=0.014), then returned to normal values thereafter; However, the results obtained with the Tono-Pen Vet did not show a significant change. The duration of corneal anesthesia was found to be 14.7 minutes for lidocaine and 17.5 minutes for bupivacaine. It is concluded that because lidocaine and bupivacaine eye drops have not significantly changed the IOP, they can easily be used to measure the intraocular pressure and since the duration of corneal anesthesia is relatively short, it is necessary to measure intraocular pressure as soon as possible.

Keywords: Intraocular pressure, Local anesthesia, Lidocaine, Bupivacaine, Dog

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Refrences