Influence of topical anesthesia on tonometric values of intraocular pressure.

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The air pulse noncontact tonometer provides a safe and reliable method for measuring intraocular pressure (IOP), and makes it possible to avoid topical anesthesia. Based on previous reports that suggested possible anesthetic-induced IOP variations, this study was undertaken to investigate with this procedure the influence of local anesthetics on IOP and of some topically used drugs that could modify IOP values. In 212 normal or glaucomatous patients who underwent IOP measurement with a noncontact tonometer, IOP was determined before and in the first minutes following instillation of one of four tested drugs, oxybuprocaine and betoxycaine, two topical anesthetics currently used in applanation tonometry, and indomethacin suspension and metipranolol as controls. No significant effect was observed when comparing IOP values successively measured with the air pulse tonometer or 1 min after instillation of indomethacin suspension and metipranolol. In contrast a significant decrease in IOP was observed 1 and 5 min after instillation of one drop of the local anesthetics oxybuprocaine (mean IOP: 15.53 mm Hg before, 14.77 mm Hg at the 1st minute; p < 0.001) and betoxycaine (16.06 mm Hg before, 15.70 mm Hg at the 1st minute; p = 0.023). This effect was observed at least to the 15th minute, and in some patients, the decrease in IOP reached 8 mm Hg. Metipranolol only decreased IOP significantly at the 15th minute as compared to initial values, which differed from IOP variations following topical anesthesia. This phenomenon could not be related to mechanical effects of repetitive IOP measurements or massage by eyelids secondary to corneal irritation by anesthetic eye drops.

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