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Dexmedetomidine sedation during cataract surgery under regional anaesthesia

Editor—Regional anaesthesia for ophthalmic surgical procedures provides an immobile and clear operative field, low-normal intraocular pressure, cardiovascular stability, and good cooperation between the patient and the surgical team.[1] Although akinesia and analgesia can be achieved with a regional block, appropriate sedation may lower the intraocular pressure and pain on injection, prevent the hypertensive response to anxiety and local anaesthetic injection, and provide patient comfort. Dexmedetomidine is a selective and specific α2-adrenoceptor agonist, which has beneficial sedative effects for premedication and intensive care sedation procedures and also beneficial effects on intraocular pressure during eye surgery.[2] We have investigated the efficacy of dexmedetomidine during cataract surgery under regional anaesthesia.

After ethics committee approval, 40 patients (ASA I–II, 50–75 yr) were randomized to receive either dexmedetomidine sedation (Group D) or no intraoperative sedation (Group C) during cataract surgery performed under peribulbar–retrobulbar block. Group D received a loading dose of 1 μg kg^{-1} dexmedetomidine for 10 min. When additional sedation was needed, dexmedetomidine 2 μg ml^{-1} for patient-controlled sedation (PCS) was prepared. The PCS settings were a dose of 5 μg and a lockout interval of 10 min. Additional doses were recorded. The study groups were compared with respect to intraocular pressure, haemodynamic variables, perception of pain during local anaesthetic injection by using Numeric rating scale (NRS), intraoperative Ramsay Sedation Score (RSS), Aldrete Scores in postoperative first 30 min, incidence of intraoperative complications, patient and surgeon satisfaction by using NRS. The mean dexmedetomidine dose of the Group D was [66.4 (3.7)] μg. In Group D, intraoperative mean heart rate was found to be lower up to 50 min ($P<0.05$) and arterial pressure lower up to 30th min ($P<0.05$). One dose of atropine was needed in five patients in Group D, but the administration of the study drug was not stopped after the atropine treatment. However, there was no need to administer ephedrine. NRS values during retrobulbar block were lower in Group D [1.9 (0.5)], compared with Group C [3.9 (0.6)] ($P=0.016$). After the dexmedetomidine loading dose, intraocular pressure (IOP) was significantly decreased [12.3 (1.0) mm Hg] compared with preoperative value [16.1 (0.8) mm Hg] ($P<0.05$). Intraoperative RSS were higher in Group D after the loading dose of dexmedetomidine ($P<0.05$). Incidences of mouth dryness were higher in the Group D after surgery ($P<0.05$), but patient satisfaction was also higher ($P=0.001$). There were no differences in Aldrete Scores or surgeon satisfaction scores between the groups. Two patients in Group D needed additional doses after the loading dose, one requiring two doses. Peripheral oxygen saturation values of the patients were more than 98% and ventilatory frequency never lower than 10 min. The RSS in three patients reached to 4 during dexmedetomidine infusion, so their loading doses were ended at total doses of 57.4, 47, and 50 μg.

This study demonstrates that sedation with dexmedetomidine decreases intraocular pressure, pain on injection and provides sedation effectively without causing respiratory depression. A single dose of dexmedetomidine appears to be enough. Dexmedetomidine sedation enables full cooperation and potentially better operating conditions without significant respiratory depression.[3] The lower NRS values of the study patients during local anaesthetic injection may be related to the anaesthetic and analgesic sparing effect of dexmedetomidine.[4] Alhashemi[5] compared dexmedetomidine with midazolam in cataract surgery by both infusion and bolus doses, but dexmedetomidine was found to affect Aldrete scores significantly and the recovery periods were longer than those of the midazolam group. As most patients in our study did not require additional doses of dexmedetomidine, we propose that in short operations repeated doses can be avoided.

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