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Letter to Editor

Ophthalmology Section

Dexmedetomidine Associated with Intraoperative Floppy Iris Syndrome in Ophthalmic Surgery

INCI DERSU

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Dear Editor,

Through this letter, we intend to report Intraoperative Floppy Iris Syndrome (IFIS) findings related to Dexmedetomidine, which is an alpha-2 adrenergic anaesthetic agent. It is an FDA approved sedative agent in the same class with Clonidine, but has 8 times more alpha-2 receptor affinity than Clonidine [1,2]. It is a relatively new drug for ophthalmic surgery sedation. Originally, it was approved for sedation and used in the Intensive Care Unit settings. Owing to less inhibitory effects on the respiratory system, there is considerable interest regarding its use in short operative procedures as well. A loading infusion of 0.5 mcg/kg over 10 minutes is recommended for ophthalmic surgery [1,2].

Five cataract patients (age range: 55-75; females: n=3; males: n=2), without current or remote history of Tamsulosin (with the exception of one patient) or Clonidine use, are described herein. In all cases, the pupils were found well dilated with mydriatics (phenylephrine: 2.5%, cyclopentolate: 1%, tropicamide: 1%) in the preoperative holding area. The procedures were performed under topical anaesthesia and intravenous sedation with dexmedetomidine. Within 5-10 minutes, the became constricted and quite suddenly, the iris became floppy. Despite the administration of intracameral epinephrine, the pupils remained only 3-4 mm dilated. This created challenge during the next 15-20 minutes to complete the cases. They all required suturing of the main corneal temporal incision to prevent iris prolapsing. Postoperative day 1, pupils were regular size in 2 patients and dilated in 3 patients. There was various amount of iris atrophy due to surgical trauma. Although vision recovered to 20/25 with higher dose of topical steroids in all cases, surgical pupil was observed in 3 patients.

Alpha-2 agonists agents inhibit sympathetic system centrally causing bradycardia and hypotension while causing miosis by decreasing the sympathetic activity on iris dilator muscles. Brimonidine and clonidine, both alpha-2 agonist, has been associated with miosis, and topical brimonidine is utilised for this propriety following refractive surgery related glare [3].

The IFIS has been described first with alpha-1 adrenergic antagonists by Chang DF and Campbell JR [4,5]. In addition to tamsulosin, other alpha-adrenergic antagonist, antipsychotic agents have been associated with this syndrome [6]. The known effect of medications on pupil size would help surgeons to predict and optimise pupil size intraoperatively. However, acute onset of miosis as observed in this report with intravenous agent infusion may cause potential problems for the surgeon. We believe that dexmedetomidine may have played role in abrupt constriction of the preoperatively well dilated pupils.

According to our knowledge, there are no previous publications regarding pupil complications during cataract surgery related to dexmedetomidine administration for anaesthesia. However, only one report indicated that pupil size remained unchanged with the administration of this agent. In this report, subjects were under opium supplemented general anaesthesia and pupil size remained stable at 2 mm after addition of the dexmedetomidine [7].

Further investigation of this agent and its effect on the pupil size is recommended. Meanwhile, communication with anaesthesiologist before intravenous introduction of agent may be crucial in the event this anaesthetic medication gains more widespread use for ophthalmic cases.

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