

PAEDIATRIC OPHTHAMOLOGY AND STRABISMUS

Ketamine Anaesthesia to the Rescue in Paediatric Ophthalmic Procedures

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Background: Paediatric ophthalmic procedures including surgery and examinations often require some sedation/anaesthesia which may not be accessible or available for various reasons.¹ Ketamine has been found to be safe in paediatric age group.^{2,5} The use of ketamine, was a paradigm shift which became vital as a result of COVID-19 pandemic which reduced the availability of anaesthetists, in addition to other logistic challenges at a large tertiary hospital.

The administration of ketamine for sedation/anaesthesia enabled us to deliver otherwise unavailable essential paediatric ophthalmic services⁶ during COVID-19 pandemic like the experience reported from elsewhere.⁷ The aim of this report is to describe the method and outcome of Ketamine anaesthesia as used for paediatric intraocular and extraocular procedures.

Methods: Between May 2020 and August 2021, ketamine was used initially in oral and subsequently as intravenous (IV) formulations for paediatric ophthalmic procedures. An oral dose of ketamine at 4mg/Kg in Vitamin C syrup was administered. This did not produce adequate sedation /anaesthesia after one hour of ingestion in the first six patients, hence IV ketamine was subsequently administered at 2mg/Kg, and preceded by IV Atropine 0.01mg/kg and IV diazepam 0.2mg/kg. The diazepam helps to reduce

the dose of ketamine required for sedation. The Ketamine and diazepam were double diluted with water for injection and given slowly. Intravenous antiemetic (Ondansetron 0.1mg/Kg) was introduced after some cases of vomiting were observed. In addition to ketamine, 2.5mls of sub-tenon anaesthesia with lidocaine was used for intraocular surgeries.

Oxygen was delivered via nasal prongs, the oxygen saturation (SpO₂), pulse and blood pressure were monitored with a multiparameter monitor. The anaesthesia was administered by Ophthalmology team (resident doctors/consultants) members, later, a nurse anaesthetist became available to administer the Ketamine anaesthesia for the remaining patients. Adequacy of sedation/anaesthesia was judged by successful completion of the planned procedures without anaesthetic complications. The indications and outcome were entered immediately after each procedure into a Google form, the data was downloaded into Excel sheet and analyzed.

Results: A total of 143 paediatric ophthalmic procedures were carried out using ketamine over the period. The age range of the children was 6months to 12years with a mean age of 4.68years. There were 83(58%) males and 60(42%) females. The first six children were given oral ketamine which did not produce adequate sedation after one hour at the dose administered, thereafter, intravenous ketamine was administered to them before surgery commenced. The remaining 137 children subsequently had only intravenous ketamine administered intra-operatively for adequate sedation/anaesthesia. Ninety-five (66.4%) were for Retinoblastoma Examination Under Anaesthesia (EUA) with or without Trans-pupillary diode laser thermotherapy (8), there were three cases of enucleation for Retinoblastoma, 24 cases were for bilateral cataract and trabeculotomy & trabeculectomy / cycloablation, and 20 others were for fundus imaging, strabismus surgery, Probing and syringing for congenital nasolacrimal duct obstruction (CNLDO), excisional biopsy and trauma(3). The planned procedures were successfully completed without anaesthetic complications in all cases. The recovery from ketamine anaesthesia was quick,

and this shortened the time in-between cases. There were 8(5.6%) cases of vomiting within 4 hours after the procedure. Raised intraocular pressure caused iris prolapse during surgery for a case of penetrating ocular injury.

Conclusion: Ketamine is cheap, readily available and requires minimum number of anaesthetic equipment. Back pressure from raised IOP was not a major challenge during intraocular procedures. Ketamine when given intravenously proved to be safe, well tolerated and effective in producing desired sedation/anaesthesia for Paediatric ophthalmic procedures; oral Ketamine was not similarly effective. Post-operative vomiting was the most common side effect and should be anticipated and prevented.

Keywords: Paediatric, Ophthalmic, EUA, Ketamine Anaesthesia,

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