ABSTRACT

Objective: The present study was conducted to evaluate the effect of these drugs on the blood pressure (BP) and pulse rate during induction of anesthesia in children undergoing full mouth rehabilitation.

Methods: Data were collected from the records maintained for the children <6 years who underwent full mouth rehabilitation under general anesthesia (GA). The drugs used for induction, the changes seen in the BP, pulse rate were recorded. Statistical analysis was done using Mann–Whitney test with p<0.05, significant.

Results: Of 64 children treated under GA, 31 children were induced with propofol and by sevoflurane in the remaining 33 children. The induction time with 2 mg/kg dosage of propofol was approximately 12 seconds while it was variable with 8% sevoflurane. The mean systolic and diastolic BP and pulse rate were found to be within the normal levels under both the drugs.

Conclusion: In children, sevoflurane and propofol can be safely used for inducing anaesthesia.

Keywords: Blood pressure, Children, Induction, Propofol, Pulse rate, Sevoflurane.
pressure was 28.87 mm Hg. The pulse rate in patient’s induced using propofol was found to be 30.68. The mean systolic and diastolic pressures were found to be 34.08 mm Hg and 35.91 mm Hg, respectively, when anesthesia was induced using sevoflurane. The relationship of the drugs used and their effects on the physiological parameters is tabulated in Table 3. In the present study, there is no statistically significant relationship between the drugs used and their effects on the physiological parameters - arterial pressure and pulse rate.

DISCUSSION

Despite the availability of wide range of anesthetic drugs, sevoflurane is found to be useful in inducing anesthesia in children [6]. Anesthetic doses of propofol are successfully used for induction of anesthesia in anxious children facilitating the dental treatment [7]. The question regarding which anesthetic agent - propofol or sevoflurane is safe in children is still controversial. Hence, in the present study, we extracted the records of the children treated under GA with propofol and sevoflurane induction and compared their effects on the physiological parameters such as BP and pulse rate during the anesthetic procedure. In the present study, out of 64 children treated under GA, propofol was used in 31 children and sevoflurane in 33 children. 2mg/kg body weight of propofol and 8% sevoflurane was used for induction of anesthesia in children. The induction time with propofol was approximately 12 seconds while it was variable with sevoflurane. Various studies comparing sevoflurane and propofol have been reported in adults. It has been found that the induction time was shorter with propofol compared to sevoflurane, which was in concordance to the present study and the emergence time was shorter with sevoflurane than propofol [8]. With regard to the physiological parameters, the minimum acceptable BP is 80/40 in children. In our study, the mean systolic BP was found to be within the normal levels under both the drugs. No major commendable change was noted in the pulse rate when induction was done using sevoflurane and propofol respectively. No statistically significant association was noted with the drugs used and the changes in the parameters. Post-operative nausea and vomiting were not seen in both the groups in our study. This result is similar to the results obtained in another study where the post-operative nausea, vomiting, pain, and discomfort scores were similar between both the groups [8]. The reason could be because the children are at lower risk group and also for the dental procedures to prevent drying and inflammation of the oral mucosa dexamethasone is injected which has antiemetic properties. In addition, an antiemetic drug is given as pre-medication agent. In children induced with propofol, the anesthetic drug itself has antiemetic properties. However, it has been reported that the post-operative nausea and vomiting rate with propofol induction in children ≥3 years are twice as high as adults and are rare in children <2 years of age [9]. Although sevoflurane and propofol had similar effects, propofol is still considered as the preferred anesthetic agent for induction due to its favorable induction characteristics, high patient satisfaction and less frequent incidence in post-operative nausea and vomiting [10].

CONCLUSION

Sevoflurane and propofol being inhalatory and intravenous drugs, respectively, have similar effects on the BP and pulse rate when used for inducing anesthesia. Both of these drugs can be effectively and efficiently used in children during full mouth rehabilitation under GA.

REFERENCES

1. Cote CI, Wilson S. Guidelines for monitoring and management of pediatric patients before, during and after sedation for diagnostic and therapeutic procedures: An update 2016. Pediatr 2016;138:e1-31.
2. Alwardt CM, Redford D, Larson DF. General anesthesia in cardiac surgery: A review of drugs and practices. J Extra Corp Technol 2005;37:227-35.
3. Yakubu JM, Abdullahi A, Bhagavandas M, Onifade KI. Effect of time influence on physiological parameters following ketamine and diazepam administration in cats. Int J Pharm Pharm Sci 2015;7:363-6.
4. Akioye AA, Ojiaka HN, Samuel ES. Xylazine-ketamine anaesthesia; comparative studies in male and female cane rats. Int J Pharm Pharm Sci 2017;9:52-5.
5. Tagliente TM. Pharmacoeconomics of propofol in anesthesia. Am J Health Syst Pharm 1997;54:1953-62.
6. Kim SO, Kim YJ, Hyun HK, Koo YS, Shin TJ. Deep sedation with sevoflurane inhalation via a nasal hood for brief dental procedures in pediatric patients. Pediatr Emerg Care 2013;29:926-8.
7. Hosey MT. Propofol intravenous conscious sedation for anxious children in a specialist paediatric dentistry unit. Int J Paediatric Dent 2004;14:2-8.
8. Jellish WS, Lien CA, Fontenot HJ, Hall R. The comparative effects of sevoflurane versus propofol in the induction and maintenance of anesthesia in adult patients. Anesth Analg 1996;82:479-85.
9. Lerman J. Surgical and patient factors involved in postoperative nausea and vomiting. Br J Anaesth 1992;69 7 Suppl 1:245-32.
10. Joo HS, Perks WJ. Sevoflurane versus propofol for anesthetic induction: A meta-analysis. Anesth Analg 2000;91:213-9.