Inhalation of sevoflurane in the removal of post-labioplasty and palatoplasty stitches in uncooperative children patients

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ABSTRACT

The technique of behaviour management in medical treatment, especially in dental treatment, is needed to eliminate uncooperative children behaviour. The main factor influencing children behaviour is fear of painful that usually related to dental treatment. Children patients who will have their post-labioplasty and palatoplasty stitches removed have more sensitive condition, they cry when the dentist gives treatment. Using general anesthesia is a method to manage uncooperative children behaviour. Inhalational anesthesia is often used in general anesthesia and sevoflurane is a drug of choice. Sevoflurane has low solubility in blood, pleasant odor, nonirritating airway, and has a rapid induction of and recovery from anesthesia. Some researches indicate that sevoflurane gives more calm condition and can be used as a sufficiently ideal induction and maintenance of anesthesia in children. Sevoflurane can therefore made as alternative procedure in the removal of post-labioplasty and palatoplasty stitches.

Key words: Uncooperative children, stitches removal, sevoflurane

INTRODUCTION

Negative emotion such as fear and anxiety often become one of the main problems all dentists may face in every day practice. The primary causes of the negative emotion arousal are the fear and the pain that are usually related to dental and oral treatment. Negative emotion may trigger uncooperative behavior.[1]

In dentistry, uncooperative chlidren usually show no willingness and ability to adapt and to compromise with the dentist which may lead to total rejection of the treatment.[2] There are certain types of children behavior that are related to dental and oral treatment: Frankl behavioral rating scale: extremely negative, negative, positive, extremely positive[3]; Finn: inferiority/shy, worried, scared, defensive[4]; Wright[2]: cooperative; less/uncooperative; there is an ability to become cooperative; uncontroled behavior, defensive, tense, and prolong crying.

Children behavior in treatment process is often influenced by many factors that underly the live of the children. Those factors may take the form of personal experience when receiving medical treatment, such as excitement or fear, parents attitude/behavior, such as over protection: over indulgence, over dominant, over anxiety, over authority, rejection, and identification, and family relationship, where child's negative behavior in dental treatment is resulted from family member or older relative behavior that influences the child.[4]

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Methods that may be used for dealing with uncooperative children include pharmaceutical[2,3,5-7], non-pharmaceutical, and combination of those approach. Non-pharmaceutical approach are psychological approaches, modelling, desensitization, behavior shaping, retraining, and HOME. Pharmaceutical approaches are sedation, premedication, general anesthesia. Combination of the two approaches with and without pharmaceutical product.

CASE REPORT

Patient that came to Oral and Maxillofacial Surgery Department Faculty of Dentistry, Universitas Padjadjaran/Dr. Hasan Sadikin Hospital Bandung has an indentity: name Nazilah, age 7 months, and health history was good. Before sevoflurane was administered, the patient was conditioned to avoid food and drink for more or less 3-4 hours. Patient health status was examined first, with emphasize on possible respiratory problems. The patient entered the operation theater at 09.00 o'clock and 4% sevoflurane was administered through nose mask by an anasthetic specialist. After 4 minutes, at 09.04 o'clock, the mask was removed, the patient was calm, moved a bit and started to sleep. Patient then received 3% sevoflurane through nose mask until she was calm and cooperative. At 09.08 o'clock, the suture removal was started, the patient was very calm, asleep, and unconciuos that the suture removal was performed smoothly.

The suture removal was done by an Oral Surgeon. The suture removal was finished at 09.11 o'clock with patient was still sleepy and even still asleep. After the action was finished, oxygen was distributed to the patient in order to recover and bring the patient's consciousness back. The patient left the operation theater at 09.16 o'clock. Before the patient's condition was fully recovered, the patient was instructed to avoid food and drink for at least for 1 hour.

DISCUSSION

Removal procedure of post-labioplasty and palatoplasty sutures in Oral and Maxillofacial Surgery Department, Faculty of Dentistry, Universitas Padjadjaran/Dr. Hasan Sadikin Hospital Bandung uses general anesthesia to calm the patients. From all the types of general anesthesia procedure used, inhalation anesthesia is the most frequently used method to produce general anesthesia. Inhalation anesthetics that are usually used include gases such as N_2O, and volatiles such as halotane, enflurane, isoflurane, desflurane and sevoflurane.[8,9]

With the invention of sevoflurane as volatile anesthetics has uninflammable and unexplosive natures with nice smell that is not sharp leading to its utilization as anesthesia induction. Sevoflurane has lower solubility inside the blood, fast working reaction, and does not iritate the respiratory tract, making it the suitable agent to meet the ideal inhalation anesthetic requirement in treatment procedure particularly for children.[10-14]

The withdrawal, distribution, and elimination of sevoflurane are very fast because sevoflurane itself has low solubility in blood/gas and tissue/blood.[10,14,15-17] Elimination of an anesthetic agent is influenced by its solubility in the blood, with the lower solubility produces faster elimination from body tissue. Sevoflurane biotransformation consists of organic and inorganic fluoride metabolites.[18] Degradation of sevoflurane in the liver releases inorganic fluoride ion (F^-) and organic substance with hexafluoroisopropanol (HFIP) as the main result.[12,19,20]

Effects on the central nervous system are does not increased intracranial pressure and declined cerebral perfusion pressure.[10,13,21] Effect on the cardiovascular system are does not activates the sympathetic system, bradycardia incident is not seen in neonates, babies, and children, administration to healthy people and patients with and without premedication (nonopioid), the heart frequency remains stable, declined blood pressure and peripheral vascular resistance, and gives a depression effect to cardiovascular and myocardium contraction.[13,22]

Effects on the respiratory system are depresses respiration, decreases tidal volume, does not affect respiration frequency, does not trigger cough reflex, produces bronchodilatation and alleviating colinergic effect from the contraction of the tracheal smooth muscle.[23]

Effects on neuromuscular system are

produces muscle relaxation effect for various surgery procedures, may develop potentials of a muscle relaxation medicine, may also used for tracheal intubation without having to give muscle relaxation medicine in adults or children.[17] Effects on kidney is no distinct clinical effect on kidney functions.[21,23] Effect on liver is does not have the ability to accumulate in the liver. Clinically, sevoflurane does not affect liver function and is quite effective and appropriate if it is used as anesthetic in patients with liver function disorder.[24,25]

Figure 1. Patient when entered the OT.

Figure 2. Sevoflurane inhalation procedure.

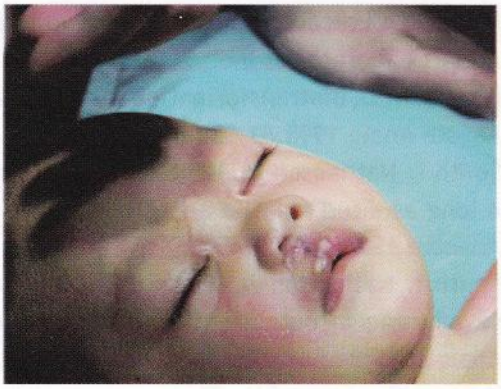

Figure 3. Patient condition after sevoflurane inhalation.

Figure 4. Suture removal procedure started.

Figure 5. Suture removal procedure.

Figure 6. Oxygenation.

Figure 7. Patient after stitches removal.

Sevoflurane administration technique

Sevoflurane is used for anasthetic induction and maintenance both in adult patients and children. The dosage is very individually determined and depends on the patient's clinical status and age. The anesthetic induction can be performed with or without premedication. During anasthetic maintenance, 0.5-3% of sevoflurane is provided with or without N_2O. For the anasthetic maintenance, sevoflurane should be given with intubation. In the removal of post-labioplasty and palatoplasty suture, it is sufficient to give sevoflurane using inhalation induction technique through nose mask without premedication.[15,17]

The use of sevoflurane in suture removal

Before the administration of sevoflurane, the patient is instructed to avoid food and drink for 3 to 4 hours. If after examination the patient is stated as in a good shape, he/she is taken to the surgery theater. Sevoflurane is administered in a semi closed method manner, with inhalation induction through nose mask starting with 4% of sevoflurane for more or less 4 minutes, and then the nose mask is removed and 3% of sevoflurane is administered for 4 minutes. After the patient is unconcious, the suture removal can be performed smoothly. After it is completed, 100% oxygen is provided for 1 to 3 minutes until the patient regains his/her consciousness.[15,17]

CONCLUSION

Sevoflurane is quite ideal to be used as an inhalation anethestic agent for uncooperative children patient in the suture removal of post-labioplasty and palatoplasty patients.

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