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ANESTHESIA AND XENON IN PEDIATRIC DENTISTRY

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Abstract: In most cases, inhalation anesthesia is used with halogen-containing drugs, in combination with local or intravenous anesthesia. The use of an inert gas, xenon, as an inhalation anesthetic in dental practice is promising. However, information on its use in children is limited.

Keywords: Xenon, anesthesia, dentistry, children, pain relief.

INTRODUCTION

According to the World Health Organization, 93% of the world's population suffers from diseases of the dental system. Dental care ranks first in terms of psychonegative perception of treatment. Most dental interventions (99%) are performed on an outpatient basis with the patient's consciousness preserved. Children are most susceptible to fear and various manifestations of negative emotions [1].

MATERIALS AND METHODS

One of the key topics in pediatric dentistry is the problem of combating pain, fear, anxiety. A visit to the dentist in most cases is associated with serious difficulties not only for the child, but also for the parents, as well as for the dentist. According to a systematic review, dental fear among children and adolescents is a common problem in Europe, Asia, Africa and North America. It was found that one in ten children has a level of dental fear and anxiety that is so severe that it does not allow dental treatment [2]. There is no data in the scientific literature on a clear distinction between the concepts of “dental fear” and “dental anxiety”, so the term “dental fear/anxiety” (DFA) is often used. It has been established that the prevalence of DFA is on average from 10 to 20%, especially at an early age [3]. DFAs are the leading cause of refusal of dental treatment.

RESULTS AND DISCUSSION

A connection has been found between a child’s fear of dental treatment and the occurrence and severity of the gag reflex, which, of course, creates great difficulties for the dentist [3]. It is extremely difficult to provide high-quality treatment to restless children, it takes a lot of time, there is dissatisfaction with the result on the part of the dentist and parents, and sometimes the appointment is simply canceled [4]. In order to create greater commitment to dental treatment, non-pharmacological and pharmacological methods have been proposed.

Non-pharmacological, distraction methods include the following means of influencing the child’s behavior: TV broadcasts, voice control, alarms, distraction, hypnosis, and others. One of the systematic reviews showed the low effectiveness of distraction techniques during

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dental treatment [4]. There is also data on the benefits of a method of combining information technology and training, which has a beneficial effect at the stage of waiting and induction of anesthesia [3]. For dental patients, both adults and children, who are to undergo anesthesia, the following are characteristic: severe (in 57%) and moderate (in 39%) degrees of psychoemotional stress according to the A. F. Bizyaev scale and an increased level of mental and somatic anxiety according to the M. Hamilton anxiety assessment scale (total score 25.5), which should be considered as a potentially dangerous condition in terms of the development of vital complications.

In 2023, a systematic review was conducted using PubMed, Cochrane, Scopus databases to evaluate the effectiveness of local anesthesia, side effects when using various local anesthetics and injection methods during dental treatment in children and adolescents aged 3 to 19 years. According to the review results, no serious side effects were identified. No evidence was found in favor of a particular injection method of anesthesia. All studied pharmacological drugs, local anesthetics were effective in preventing pain during dental treatment [3]. In groups receiving ketamine + midazolam orally and a combination of ketamine + midazolam orally with inhalation of sevoflurane (final exhaled concentration 0.3-0.4 vol.%), in dental practice in children aged 4 to 6 years, a decrease in excitability and emotional instability was noted without an increase in postoperative complications in children in the group using sevoflurane.

In anesthesiological practice in children, inhalation methods of pain relief are used in 80% of cases. This is explained by the fact that most interventions performed in childhood are short in duration and minimally invasive [2].

Sevoflurane is very popular for anesthesia in dentistry in children. This is due to good controllability of the depth of anesthesia, satisfactory tolerability, good sedative effect, and the absence of irritation of the upper respiratory tract. In pediatric dentistry, the frequency of sedation using sevoflurane and nitrous oxide varies from 80 to 92%, and taking into account the introduction of midazolam and fentanyl, it reaches 99% of successful use [4].

Good results have been demonstrated for the use of sevoflurane with dexmedetomidine. During dental treatment in children, stable hemodynamic parameters and reduced effects on respiration were achieved compared to the use of sevoflurane alone [2].

The advantages of sevoflurane in short-term procedures in pediatric dentistry are noted in its ability to provide rapid induction of anesthesia and rapid recovery [4].

Sedation by insufflation of sevoflurane for 15-45 min through nasal cannulas in children with dental trauma provided time savings, good conditions of the surgical field, and no panic in patients [3].

CONCLUSION

Methods of pharmacological and non-pharmacological correction of psychoemotional stress and pain relief in children during dental interventions have a wide variety. Inhalation anesthesia with halogenated anesthetics is most often used, including in combination with intravenous analgesics and local anesthetics. Xenon anesthesia in children in dentistry has

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not been fully studied to date. There are practically no works on this topic, although the relevance of the issue is beyond doubt. Considering such positive properties of xenon as rapid falling asleep and recovery of consciousness, no agitation upon waking up, no negative impact on the child's body and complete elimination during breathing, neuroprotective and cardioprotective effects, analgesic activity, it could be classified as the drug of choice for general anesthesia in dentistry.

REFERENCES

1. Avdeev S. V., Pak A. V., Strezh V. A. Liver blood flow during xenon anesthesia in surgical hepatology // Anesthesiology and resuscitation. – 2012. – No. 3. – P. 27–31.

2. Xenon anesthesia: Methodological recommendations. – Ministry of Health of the Russian Federation. RMAPO. – M., 2013.

3. Babikov A. S., Rabinovich S. A., Naumov S. A. et al. Xenon inhalations for pain relief in dentistry. In the collection of works of the X All-Russian scientific and practical conference "Education and practice in dentistry" on the single topic "Dentistry and socially significant diseases" February 11-13, 2013. - M.: Chelovek, 2013. - P. 26-27.

4. Bagayev V. G. Combined anesthesia with xenon in children: Abstract of the author's dissertation... Doctor of Medical Sciences: 14.01.20 / Research Institute of General Reanimatology, Russian Academy of Medical Sciences. - M., 2016. - 42 p.