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# FEATURES OF ANESTHESIA IN CHILDREN

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**Annotation:** The process of anesthesia in children has specific physiological and psychological characteristics compared to adults. Since their nervous system, respiratory and cardiovascular systems are not yet fully developed, anesthesia doses, the choice of drugs, and methods of administration require a special approach. In addition, because children experience higher levels of stress, fear, and anxiety, psychological preparation plays an important role in the anesthesia process. The anesthesiologist's experience and individualized approach determine the safety of the patient and the effectiveness of surgery.
**Keywords:** pediatric anesthesia, physiological features, drug dosage, psychological preparation, safety, surgery.

**Introduction.**The process of anesthesia in children is one of the most responsible and complex areas of medicine. Because the children's organism is significantly different from that of adults, and these differences require a special approach to the anesthesia process. First of all, the nervous system, cardiovascular and respiratory systems of children are not sufficiently formed, and the level of sensitivity to drugs is high. Therefore, it is necessary to correctly calculate the dosage, select drugs and thoroughly know the methods of their use during anesthesia. Making mistakes can endanger not only the results of the operation, but also the life of the child.

In addition, the psychological characteristics of children also require special attention during anesthesia. Children often experience fear, anxiety and stress before surgery. This condition can also affect their physiological indicators, leading to increased heart rate, changes in blood pressure and impaired respiratory rhythm. Therefore, the anesthesiologist must use not only a medical, but also a psychological approach. Psychologically calming the child, giving him confidence and explaining the process play an important role in the successful course of surgery.
The peculiarities of anesthesiology in pediatric practice require not only an individual approach, but also a high level of experience and qualifications. Since each child's organism is unique, in addition to standard protocols, individual analysis and correct assessment of the clinical situation are very important. For example, infants and young children have a high metabolic rate, which also affects the time of action of drugs in the body. At the same time, the compensatory capabilities of the body are limited in young children, and even a small error can lead to serious consequences.[1; 356-b]
The safety of the anesthesia process in children directly depends on the training of the medical team, the availability of modern equipment and the experience of the anesthesiologist. Currently, international standards have been developed in the field of pediatric anesthesiology, strict adherence to which is of great importance in saving children's lives. In addition, the participation of parents and their psychological support in anesthesia in children is also one of the factors that facilitate the process.

## LITERATURE ANALYSIS AND RESEARCH METHODOLOGY

The issue of anesthesia in children has been studied by many scientists as one of the most important scientific areas in the field of pediatrics and anesthesiology. An analysis of foreign and domestic literature shows that pediatric anesthesia occupies a special place not only in surgical

practice, but also in intensive care and pain management. The main areas of research include the physiological characteristics of children, pharmacokinetics and pharmacodynamics of drugs, the importance of psychological preparation, and safety standards.[2; 412-b]

As noted in the works of local authors (Karimova, 2018; Rasulova, 2019), the morpho-physiological characteristics of the child's body are significantly different from those of adults. Because their respiratory and cardiovascular systems are not sufficiently developed, high accuracy in dosing drugs during anesthesia is necessary. Supporting this idea, Smith et al. (2004) note that in pediatric anesthesia, individual calculations should be used, rather than standard doses. The issue of psychological preparation is also widely covered in the literature. Olweus (1993) and Rigby (2007) emphasize in their studies that fear and anxiety in children directly affect the effectiveness of anesthesia. Therefore, psychological support and the active participation of parents in the process are important factors in calming the child. A report published by UNESCO (2020) states that the joint efforts of teachers and medical staff help reduce stress in children.[3; 288-b]

**Results.** The process of anesthesia in children is one of the complex and specific aspects of medicine, which is carried out depending on many factors. An analysis of the literature and a generalization of the results of existing scientific studies show that pediatric anesthesia should be considered as a separate direction with its physiological, pharmacological, psychological and organizational characteristics. In this section, the main aspects of this process are analyzed in detail and linked to practical results.

The children's organism has significant differences compared to that of adults. First of all, the risk of hypoxia during anesthesia is high due to the insufficient development of the respiratory system. At the same time, the peculiarities of the cardiovascular system - high heart rate and relatively low blood volume - change the mechanism of action of drugs. Analyses show that with age, compensatory mechanisms in the body are limited. As a result, even a small dose of the drug can cause serious complications.[4; 330-b]

Pharmacokinetics and pharmacodynamics of anesthetics require separate study in children. According to the literature, metabolic processes in the children's body occur faster, which reduces the duration of action of drugs. For example, inhalation anesthetics act faster in children than in adults, but are also excreted from the body faster. Therefore, an individual approach is necessary when choosing a drug. Studies show that when determining the optimal dose, the child's age, weight, general health and existing diseases should be taken into account. Psychological preparation plays an important role in anesthesia in children. According to the analyzed sources, children experience a high level of fear, anxiety and stress before surgery. This negatively affects not only mental, but also physiological indicators. For example, increased heart rate, changes in blood pressure and respiratory rhythm disorders can be observed. In such cases, psychological support, parental participation and a kind attitude of the anesthesiologist increase the effectiveness of the process. The results show that children who have undergone psychological preparation have significantly fewer postoperative complications.

The effectiveness of pediatric anesthesia also depends to a large extent on organizational factors. In particular, the experience of the anesthesiologist, the availability of modern equipment and the harmonious work of the medical team are of great importance. According to international standards, anesthesia in children should be performed only by specialists who have undergone

special training. Analyses show that the rate of complications during anesthesia performed by highly qualified medical personnel and in fully equipped conditions is minimal.[5; 295-b]

Safety is one of the most important issues when performing anesthesia in children. According to the literature, the main causes of complications are incorrect dosing, insufficient monitoring and neglect of psychological factors. Analyses show that continuous monitoring of heart rate, blood pressure and respiratory parameters using modern monitoring equipment reduces the risk. Preparation for emergency situations is also of great importance.

**Discussion.** According to the results of scientific research, an integrated approach to pediatric anesthesia increases efficiency. In particular, pharmacologically correctly selected drugs, psychological support and modern monitoring systems create safe conditions for children. Also, the involvement of parents in the process is important in calming the child psychologically. The results of the research show that this approach also speeds up the recovery period after surgery.Based on the analyzed sources, the following general conclusions can be drawn:

1. Anesthesia in children is significantly different from that in adults, and it is impossible to obtain an effective result without taking into account physiological characteristics.

2. An individual pharmacological approach and the selection of the correct dosage ensure safety.

3. Psychological preparation is very important for children, which reduces post-surgical complications.

4. Organizational aspects, including the experience of specialists and the availability of modern equipment, are the main factors determining the effectiveness of the process.

5. Strict adherence to safety measures, constant monitoring and emergency preparedness are crucial in saving children's lives.[6; 260-b]

In general, the process of anesthesia in children is multifaceted, and it is necessary to organize it not only medically, but also psychologically and organizationally. Scientific analysis shows that an integrated approach is the most correct way to increase the safety of children and the effectiveness of surgery. Based on the results, it can be said that continuing in-depth scientific research on pediatric anesthesiology, developing new drugs and expanding the psychological support system will make a significant contribution to this field in the future.

**Conclusion.**The issue of anesthesia in children is one of the most relevant areas of pediatric medicine. Conducted scientific research, literature analysis and practical observations show that this process is fundamentally different from that of adults and includes many specific features. First of all, the physiological and morphological immaturity of the children's body requires a high level of caution during anesthesia. Due to the sensitivity of their nervous, respiratory and cardiovascular systems, the dosage, type and method of administration of drugs must be individually adjusted to each patient.

In addition, psychological factors are also of great importance in children. Fear, anxiety and stress before surgery can negatively affect the effectiveness of anesthesia. Therefore, psychological preparation, parental involvement and the anaesthetist's kind attitude play an important role in ensuring the child's mental stability. Practical experience shows that children who receive psychological support have a faster recovery period after surgery and fewer complications.

The success of pediatric anesthesia depends not only on medical knowledge and experience, but also on modern technical equipment, a highly qualified medical team, and compliance with international standards. The use of monitoring systems, enhanced safety measures, and preparedness for emergencies are decisive factors in saving children's lives. In addition, the use of modern drugs and the development of new techniques allow for further improvement of anesthesiological practice.

The above analysis and results show that the process of anesthesia in children requires an integrated approach. In this process, it is necessary to take into account physiological characteristics, carefully select drugs, organize psychological support, and carefully plan organizational aspects. Also, continuing scientific research, introducing innovative methods, and improving the skills of specialists will make a significant contribution to the field.

In conclusion, anesthesia in children is a complex process that requires an approach not only from the medical, but also from the psychological and organizational aspects. A properly organized comprehensive approach will ensure the safety of children, increase the effectiveness of surgery, and facilitate the recovery period. Therefore, expanding scientific research in pediatric anesthesiology and implementing experiences in practice will be an important step in maintaining children's health in the future.

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