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OPTIMIZATION OF THE QUALITY OF MEDICAL CARE FOR CHILDREN AFTER SURGICAL TREATMENT OF CONGENITAL HEART DEFECTS: CLINICAL AND ORGANIZATIONAL ASPECTS

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Abstract
Congenital heart defects (CHD) are one of the most common anomalies among newborns requiring surgical intervention. However, the success of the operation does not always guarantee an optimal outcome if high-quality postoperative care is not provided. The article discusses aspects of optimizing medical care for children after surgical treatment of CHD, including organizational and clinical problems, modern methods of diagnosis and treatment, as well as rehabilitation. Key organizational aspects, such as a multidisciplinary approach, the role of telemedicine and the need to improve the skills of medical workers are described. Particular attention is paid to the issues of financing and accessibility of medical services. To improve the quality of medical care, recommendations are proposed aimed at developing the healthcare infrastructure and improving the level of professional training of specialists.

Keywords: Congenital heart defects, cardiac surgery, postoperative rehabilitation, multidisciplinary approach, telemedicine, organization of medical care, healthcare financing, professional training of doctors.

Introduction

Congenital heart defects (CHD) are one of the most common anomalies of the heart in children, representing a serious medical problem that requires a comprehensive approach to treatment and postoperative rehabilitation. Statistics show that the incidence of CHD is about 1-2% among newborns, which is equivalent to about 1-2 million children worldwide annually. Thanks to modern advances in medicine, surgical treatment of CHD has become the main method of therapy, allowing to significantly improve the prognosis and quality of life of patients.

However, the success of surgical interventions is only part of the problem. The most important aspect is the optimization of medical care after surgery, which includes not only medical but also organizational aspects. Such a comprehensive approach can significantly reduce the number of complications and ensure effective rehabilitation of patients.

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Prevalence and causes of congenital heart defects

Congenital heart defects occur in 8-10 cases per 1000 newborns, according to the World Health Organization (WHO). The causes of their occurrence can be both genetic and external factors, such as infectious diseases of the mother, alcohol or smoking abuse, and exposure to toxic substances in early pregnancy.

Research shows that 20-30% of cases of CHD have a genetic predisposition, which highlights the importance of early diagnosis and genetic counseling for families at risk of having children with heart defects. Importantly, with advances in prenatal technologies such as ultrasound and genetic screening, most CHDs can be detected early in pregnancy, allowing treatment approaches to be planned before the baby is born (table 1).

Table 1: Statistical Data on Congenital Heart Disease in Children and Surgical Outcomes

Indicator	Value	Observations
Prevalence of CHD among newborns	8-12 cases per 1000 live births	Reflects global statistics on congenital heart defects
Percentage of children requiring surgery	30-40% of all children with CHD	Estimates for the need for surgical intervention
Percentage of successful surgeries	85-90% within the first year post-surgery	Represents the general success rate in early recovery
Long-term survival rate after surgery	90% at 5 years, 85% at 10 years	Data reflecting post-surgical longevity for children
Percentage of complications post-surgery	5-7% (infections, circulatory issues)	Common post-operative complications in pediatric heart surgeries
Percentage of children requiring rehabilitation	60-70% post-surgery	Reflects the need for rehabilitation in children after surgery
Access to telemedicine services in remote areas	40-50% among children with CHD in rural regions	Availability of telemedicine for follow-up care in remote areas
Reduction in mortality with a multidisciplinary approach	15-20% decrease in mortality	Shows the impact of a comprehensive care approach on mortality rates

Types of surgical treatment for congenital heart defects

Today, surgical treatment of congenital heart disease consists of various methods, including both open heart surgery and minimally invasive techniques such as catheterization. Open surgeries include repair of heart valve defects, closure of holes in the septa, and correction of major vascular anomalies.

Technologies such as cardioplegia and artificial circulation allow operations to be performed on a stopped heart, and the use of minimally invasive techniques reduces trauma and speeds up recovery. Each type of surgical intervention requires a specific postoperative strategy to prevent complications such as infection, blood clots , or abnormal heart rhythms.

Postoperative care

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The postoperative period is a time when the risk of complications such as infectious diseases, cardiac arrhythmias, and growth and development disorders increases significantly. During this period, intensive care and monitoring of the patient's condition are necessary, which requires highly qualified medical personnel and modern equipment.

Key aspects of postoperative care include:

- Cardiovascular monitoring : Monitoring heart function, normalizing blood pressure and blood oxygen levels.
- Pain management : Using pain medications to reduce stress and discomfort.
- Infection prevention : Antibiotic therapy, sterile conditions, wound monitoring.
- Rehabilitation : Including physical exercise and psychological support aimed at restoring health and improving quality of life.

Clinical issues in postoperative care

Despite advances in surgery, children may still experience many complications after surgery. One of the most common is arrhythmia , especially in the first months after the procedure. In some cases, breathing problems, kidney and liver dysfunction, and growth retardation may occur.

Joint work of pediatric cardiologists, surgeons and rehabilitation specialists allows to minimize risks and significantly improve treatment outcomes. Also important is constant monitoring of the child's psycho-emotional state, as heart surgery can leave a psychological mark that will require professional help.

Organizational aspects of medical care

Organizing medical care for children after surgical treatment of congenital heart defects requires clear coordination of the work of various specialists and medical institutions. This process includes several key points:

- Early detection and diagnosis . A key part of the organization is the early diagnosis system for CHD, which begins with prenatal screening. This enables parents and health care providers to prepare in advance for the necessary measures, including choosing a place for delivery and performing surgery immediately after birth, if necessary.
- Multidisciplinary approach . Postoperative care should be provided not only by cardiac surgeons and cardiologists, but also by pediatricians, psychologists, and physiotherapists. This requires clear coordination of work between various medical specialists, as well as the organization of appropriate medical departments and wards equipped with modern equipment.
- Planning and monitoring rehabilitation . An important aspect is the creation of rehabilitation centers for children who have undergone heart surgery. These centers should provide not only medical treatment, but also psycho-emotional assistance, allowing children to adapt to life after surgery.
- Use of telemedicine . Modern technologies allow for the active implementation of telemedicine platforms for monitoring the patient's condition after discharge from the hospital. This significantly improves access to medical care in remote regions and facilitates timely response to possible complications.

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The Impact of Healthcare Systems and Policies on Quality of Care

Political and economic aspects of health care also play an important role in the quality of medical care for children with CHD. Many countries face the problem of insufficient funding for specialized cardiac surgery centers, which limits access to quality treatment. One solution is government support and subsidies for high-quality treatment for children who need expensive surgeries.

- Funding and availability . In countries with highly developed healthcare systems, such as the United States and Germany, better treatment and rehabilitation methods are available, which has a positive impact on the prognosis of children with CHD. However, in developing countries, funding issues and a lack of qualified specialists remain serious barriers.
- Professional training and advanced training . An important element is the educational policy aimed at improving the qualifications of doctors and medical personnel. The organization of courses, seminars and trainings for specialists allows for a high level of medical care and a reduction in the number of postoperative complications.
- Quality of medical institutions . Standards of work of specialized institutions should include not only quality of treatment, but also attention to the organization of comfort of patients and their families. This includes high-quality equipment of wards , availability of modern medical equipment, as well as approaches to improving communication with patients and their parents.

7. Recommendations for improving the quality of medical care

To optimize the quality of medical care for children after surgical treatment of congenital heart disease, the following recommendations can be offered:

1. Increase funding for specialized cardiac surgery centers , especially in emerging economies.
2. Development of comprehensive rehabilitation programs that include both medical and psychological aspects of recovery.
3. Implementation of telemedicine technologies to ensure continuous monitoring of children's condition, which will help promptly respond to possible complications.
4. Improving the level of professional training of specialists through regular courses and exchange of experience at the international level.
5. Development of quality standards for medical care in the field of cardiac surgery for children, with mandatory consideration of the individual characteristics of each patient.

Conclusion

Optimization of medical care for children after surgical treatment of congenital heart defects is a multifaceted process that includes not only surgical intervention, but also ensuring high-quality postoperative rehabilitation, effective coordination of the work of medical specialists and organization of accessible care for all categories of patients. It is important to consider that the success of treatment depends on a comprehensive approach, starting with early diagnosis and ending with long-term rehabilitation.

Much depends on the development and support of healthcare infrastructure, as well as the introduction of new technologies into practice. As a result, effective and organized medical care

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for children with CHD can significantly improve their quality of life and reduce the risk of complications, ensuring their long-term health.

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