CHILDREN'S CHEST VARRICULAR DEFORMATION

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Funnel-shaped deformity of the chest (thoracic fossa) is a common anomaly occurring in children and characterized by a deepening of the sternum. This pathology can have a significant impact on the respiratory and cardiovascular systems, which requires attention from doctors of various specialties. This article provides a systematic review of the literature, including studies published in scientific databases such as Google Scholar and Scopus. The etiology and pathogenesis of pectus excavatum deformity, diagnostic methods, as well as conservative and surgical approaches to treatment are considered. Key risk factors affecting the development of this pathology have been identified. The findings highlight the need for early detection and a comprehensive approach to the treatment of children with pectus excavatum, which can significantly improve the quality of life of patients and prevent the development of serious complications.

Keywords. Funnel-shaped deformity, chest, children, pathology, respiratory system, cardiovascular system, etiology, pathogenesis, diagnosis, treatment, conservative methods, surgical methods, risk factors, quality of life, complications.

Introduction.

Funnel chest deformity, or pectus ekkavum, is a developmental abnormality of the chest characterized by a deepening of the sternum. This pathology can occur both in isolation and in combination with other genetic syndromes, such as Marfan syndrome or Klinefelter syndrome. Funnel-shaped deformity can manifest itself in varying degrees of severity and, depending on this, have a different effect on the functioning of the respiratory and cardiovascular systems.

In recent decades, there has been an increase in the incidence of pectus excavatum among the child population. This may be due to both improved diagnostic methods and changes in the environment and lifestyle that contribute to the occurrence of this pathology. It is important to note that pectus excavatum can lead to respiratory disorders, decreased physical activity and, in some cases, serious cardiovascular disease.

Despite the high urgency of the problem, there is still a lack of systematized data

in the medical literature on the mechanisms of development, methods of diagnosis and treatment of pectus excavatum in children. This necessitates an in-depth analysis of existing studies and clinical observations, which is the main goal of this work.

The study will review the current literature, including materials from Google Scholar and Scopus, as well as analyze the results of clinical observations and statistical data on pectus excavatum deformity in children.

Materials and methods.

To analyze pectus excavatum deformity in children, a systematic study of the existing literature covering various aspects of this pathology was carried out. The main sources of information were scientific articles, clinical studies, and reviews published in peer-reviewed journals available through databases such as Google Scholar, Scopus, and PubMed. In the course of the work, a sample of publications related to the etiology, pathogenesis, diagnosis and treatment methods of pectus excavatum deformity was carried out.

In the study of etiology and pathogenesis, attention was paid to both congenital and acquired forms of deformity. Data on possible genetic and environmental factors contributing to the development of this pathology were included. The results of clinical observations demonstrating the relationship between the severity of the deformity and the presence of concomitant diseases were also studied.

As part of the diagnostic method, modern approaches such as chest X-ray, computed tomography and magnetic resonance imaging were analyzed. These methods allow you to assess the degree of deformity and concomitant changes in the chest organs. Additional diagnostic procedures such as ultrasound and function tests to assess respiratory function were also included.

In terms of treatment methods, attention has been paid to both conservative and surgical approaches. Within the framework of conservative treatment, physiotherapeutic methods, the use of orthopedic devices and therapeutic exercises are considered. Indications for surgery and various surgical techniques, including minimally invasive and open surgery, were also analyzed. To assess the effectiveness of treatment methods, data on the results of clinical observations and statistics from various medical institutions were used.

Thus, the work was focused on the systematization of the available data on pectus excavatum deformity in children, which made it possible to develop reasonable recommendations for the diagnosis and treatment of this pathology. The approaches used in this study are aimed at improving the quality of medical care for children suffering from pectus excavatum strain and raising awareness of the medical community about this problem.

Results.

The study analyzed more than 100 scientific publications relating to pectus

excavatum deformity in children. The generalized data made it possible to identify several key aspects related to the etiology, pathogenesis, diagnosis and treatment of this pathology.

The etiology of pectus excavatum deformity turned out to be multifaceted. In most cases, congenital factors, including genetic predispositions, have been noted, which may be associated with abnormalities in the formation of the chest in the early stages of embryonic development. In particular, in children suffering from funnel excavatum deformity, mutations were observed in genes responsible for the formation of connective tissues, which confirms the influence of hereditary factors. In addition, some environmental factors have been identified that can contribute to the development of this pathology, including exposure to adverse environmental and lifestyle conditions.

In terms of pathogenesis, the results showed that the funnel-shaped deformity can have a significant impact on respiratory function. In children with severe deformity, there is a decrease in lung capacity and a decrease in respiratory function, which can lead to the development of respiratory diseases and a deterioration in general physical activity. In addition, data on the presence of cardiovascular disorders associated with compression of the heart and blood vessels have been revealed, which also confirms the need for early diagnosis and treatment.

The diagnostic methods used in the study showed high efficiency. Chest X-rays revealed the degree of deformity and associated changes, while computed tomography and magnetic resonance imaging provided more detailed information about the condition of the chest organs. These diagnostic methods became the basis for further treatment approaches.

In terms of treatment methods, the analysis showed that conservative methods, including physiotherapy and the use of orthopedic devices, can only be effective in the initial stages of the deformity. In the case of a pronounced funnel-shaped deformity, most children were subject to surgical treatment. A review of the literature has shown that deformity correction surgeries, such as the Nuss method and open interventions, demonstrate high efficiency and minimal complications. After surgery, there was a significant improvement in both the functional indicators of breathing and the quality of life of patients.

Overall, the results of the study highlight the need for a comprehensive approach to the diagnosis and treatment of pectus excavatum in children. Systematization of data on pathology and methods of its correction will improve the quality of medical care and improve treatment outcomes.

Conclusions.

Funnel chest deformity is a significant medical problem that requires a careful approach to diagnosis and treatment, especially in pediatric practice. The results of the

study confirm that this pathology can have serious consequences for the health of children, including respiratory dysfunction and cardiovascular diseases. Etiological factors related to both hereditary and environmental conditions highlight the importance of early detection and diagnosis, which can significantly affect the prognosis and quality of life of patients.

An analysis of the existing literature has shown that modern diagnostic methods, including radiography, computed tomography and magnetic resonance imaging, provide an accurate determination of the degree of deformity and concomitant changes in the chest organs. This, in turn, allows for adequate treatment planning. Conservative methods such as physiotherapy and the use of orthopedic devices can be effective in the early stages, but in cases of severe deformity, surgery remains the main method of correction. Operations, both minimally invasive and open, have shown high efficiency and minimal complications, which confirms their expediency.

These studies also point to the need for a comprehensive approach to the treatment of pectus excavatum, including multidisciplinary interaction between specialists in the field of pediatrics, orthopedics and rehabilitation. Informing parents about the possible risks and consequences, as well as the available methods of diagnosis and treatment, remains key.

Thus, the results of this study highlight the importance of raising awareness among the medical community and society about pectus excavatum in children. Systematization of data and the development of recommendations for doctors can help improve the quality of medical care, as well as improve the standard of living of children suffering from this pathology. Further research is needed to better understand the mechanisms of the development of pectus excavatum strain and optimize its treatment, which will contribute to better outcomes and quality of life for patients.

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