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### MODERN CONCEPTS OF EPIDEMIOLOGY, CLASSIFICATION AND DIAGNOSIS OF CHEST DEFORMITIES

#### Haydarova Gulirano Abdugani kizi

Assistant of the Department of Anatomy and Clinical Anatomy

#### Andijan State Medical Institute

Annotation: Chest deformities occur in 2% of people. Changes (defects) in bone and cartilage tissues reduce both the supporting function of the chest and the necessary amount of mobility. Deformities of the chest (sternum and ribs) are not only a cosmetic defect and cause not only psychological problems, but also quite often lead to impaired function of the chest organs (cardiovascular system and respiratory system). At the same time, the incidence of this pathology is rapidly increasing every year, despite the achievements of medicine. This can be facilitated by such risk factors as: urbanization of the population, physical inactivity, nutritional errors (malnutrition in childhood), chest injuries, regardless of how long ago they occurred (sometimes changes occur years after the injury, depending on the nature of the injury), spinal disorders, metabolic diseases. Thus, chest deformities are one of the most important and economically significant problems in medicine, since they require a multidisciplinary approach to diagnosis, treatment and prevention. And a clear understanding of the risk factors for chest deformities will allow researchers and practitioners to take a more meaningful approach to the treatment and prevention of this pathology.

Keywords: spine, deformation, topography, component composition.

**Abstact:** Chest deformities occur in 2% of people. Changes (defects) in bone and cartilage tissues reduce both the supporting function of the chest and the required amount of mobility. Deformities of the chest (sternum and ribs) are not only a cosmetic defect and cause not only psychological problems, but also quite often lead to dysfunction of the chest organs (cardiovascular system and respiratory system). The incidence of this pathology is rapidly increasing every year, despite the achievements of medicine. This can be facilitated by risk factors such as: urbanization of the population, physical inactivity, malnutrition (malnutrition in childhood), chest injuries, regardless of how long ago they occurred (sometimes changes occur years after the injury, depending on the nature of the injury), spinal disorders, metabolic diseases. Thus, chest deformities are one of the most important and economically significant problems in medicine, as it requires a multidisciplinary approach to diagnosis, treatment and prevention. A clear understanding of the risk factors for chest deformities will allow researchers and practitioners to take a more meaningful approach to the treatment and prevention of this pathology.

Key words: spine, deformity, topography, component composition.

Introduction. Chest deformity is a group of disorders for which a change in the shape, normal anatomy of the sternum, and upper body is typical. The disease is represented by several subspecies. The funnel-shaped chest is considered the most dangerous as one of the two most common types of pathological condition. Deforming conditions are not always accompanied by symptoms. Possible disorders of the heart, respiratory system. but often there are no manifestations at all, and the only problem is aesthetic, which does not require immediate treatment.

In clinical practice, funnel-shaped chest deformity and keeled deformity are most common. All deformities of the chest are divided into two groups: congenital and acquired. Among the

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congenital deformities of the chest, 90% are funnel-shaped and 8% keel-shaped deformities. Poland syndrome, congenital cleft of the sternum and isolated deformities of the ribs are observed in 2% of cases. Acquired deformities of the chest include all deformities of the ribs and sternum that occurred after surgical operations, injuries and inflammatory processes [4].

The purpose of the work is to summarize the available literature data on chest deformities.

Materials and methods. We conducted a literary review of scientific papers over the past 20 years using the eLibrary search engine resource for the above keywords. For this meta-analysis, we used scientific papers containing evidence-based experimental data on the most up-to-date issues related to the prevalence, classification and diagnosis of chest deformities.

The main part.

Keeled deformity of the chest (CDGC) manifests itself in a different degree and configuration of the anterior chest wall, which usually begins at the level of the III rib, but sometimes captures the handle of the sternum, occurs 5-7 times less often than funnel deformity, and 3 times more often in boys, manifesting mainly after puberty a "breakthrough" in growth [2,5,11]. Despite the fact that the keeled breast was described by Hippocrates around 400 BC, for a long time this pathology was practically not mentioned. Works of a descriptive nature have occasionally been found in literature since the end of the sixteenth century (J. Schenck, 1594), the beginning of the seventeenth century (Bauhinus, 1609) [12]. In the future, there was no special interest in the problem, since the keeled deformation in most cases led only to a cosmetic defect [14]. The next stage in the study of the problem was outlined only 200 years later. In 1860, Woillez gave a detailed description of the patient's chest deformity and its clinical manifestations [15]. Funnelshaped deformity of the chest (VDGK) is a malformation manifested by a different depth and shape of the sternum and anterior rib sections, a violation of anatomical relationships in the sternocostal complex (GRC). We find the first description of VDGK in Bauhinus in 1596 (cited by Brown L., 1939). The designation "funnel chest" was introduced by Epstein in 1882, and it became international. VDGK is the most common malformation of the anterior chest wall. Due to violations of the anatomical structure of the GCC, primarily its central component, and the progression of deformation, patients with VDGK often have pronounced violations of pulmonary cardiac function: displacement and rotation of the heart around the longitudinal axis, overload of the right departments, mitral valve prolapse, dilation of the aortic root. There was also a decrease in the vital capacity of the lungs (LVL), maximum ventilation (MVL), an increase in the minute volume of ventilation and oxygen consumption per minute. Electrocardiographic examination makes it possible to judge to a large extent the effect of funnel-shaped depression on heart function. In school-age children, it is not always possible to identify the relationship between the severity of deformation and electrocardiogram data. The older the child and the more pronounced the degree of VDGK, the more clearly these changes manifest themselves [4].

According to the currently generally accepted classification proposed by Acastello in the modification of M. Torre et al. (2012), there are 5 main variants of chest deformity:

Deformation of the cartilaginous part of the ribs (the most common variants – funnel-shaped and keeled deformities belong to this group);

Deformation of the bony part of the ribs (simple and complex bone deformities, syndromic deformities, etc.);

Deformation of the cartilaginous and bony part of the ribs (Poland syndrome);

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Deformity of the sternum body (splitting of the sternum body, Currarino-Silverman syndrome);

Deformities of the clavicle and shoulder blades (simple, syndromic and combined).

Let's look at the scientific works of some authors. As for morphofunctional studies and body component composition in chest deformities, they were studied in the works of Russian authors Islamov N.M. (2008), which studied the morphofunctional characteristics of children and adolescents in Naberezhnye Chelny in connection with ethnicity and the influence of environmental factors [3]. Vandysheva A.Yu., Maklakova O.A., Shtina I.E., Valina S.L. (2023), which studied the assessment of the state of the musculoskeletal system in children in different periods of school education [1]. Scientific works of Lebedev V.F., Stalmakhovich V.N., Strashinsky (2024), which studied the treatment of chest deformities in children on the basis of the Irkutsk Regional Children's Clinical Hospital [8]. We can also mention Kazakh scientists, Mukataeva Zh.M., Kabieva S.Zh., Dinmukhamedov A.S., Aizman R.I. (2020), who also studied the morphofunctional development of schoolchildren [10]. Based on the literature reviewed, we can note that the study was conducted regionally, in our republic, morphofunctional data and body component composition in children and adolescents have not been fully studied.

Methods of computer diagnostics for chest deformities were studied by the authors Motorenko N.V. (2024), Kornev A.N. (2004) [6,9]. They selectively studied a separate type of chest deformities, namely funnel-shaped chest deformity, computer diagnostics for other types of deformations were studied fragmentally.

Also interesting is the study by V.A. Kuzmichev, R.T. Adamyan, which studied breast enlargement in women with funnel-shaped chest deformity. The results of surgical treatment of 71 patients with funnel-shaped chest deformity who underwent minimally invasive correction (Nassa surgery) were analyzed [7]. There are insufficient data on sexual dimorphism of adolescent girls with chest deformities in the literature.

Conclusion. Currently, the complexity of timely diagnosis, the determination of anthropometric indicators for chest deformities, and the study of body composition in this pathology are still relevant issues of modern medicine. The literary excursion we conducted shows the question of studying anthropometric indicators for chest deformity in adolescent girls remains open to this day. In the conditions of the Republic of Uzbekistan, in particular the Ferghana Valley, this topic has not been fully studied.

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