

ASSESSMENT OF THE STATE OF THE FUNCTIONAL RESERVE OF THE CARDIORESPIRATORY SYSTEM IN CHILDREN WITH CORPITAL DEFORMATION OF THE CHEST

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Resume

The article examines the functional reserves of the cardiovascular and respiratory systems in children with pectus excavatum before and after surgery, as well as the authorization for patients to exercise. Despite the fact that the issue of chest deformities in pediatric thoracic surgery has been studied for a long time, disputes among specialists persist regarding the examination of these defects, the optimal timing and methods for their correction, as well as postoperative treatment and rehabilitation. The Skibinsky index significantly assists in assessing the functional reserves of the cardiorespiratory system in patients.

Keywords: chest, funnel-shaped, children, Skibinsk index.

Relevance: Chest deformities affect 1-4% of the population. Among children, primarily boys, the rate is 0.6-2.3%. It is mainly characterized by cosmetic chest defects, functional respiratory and cardiovascular system disturbances, and associated psychological distress. Consequently, chest deformities are a significant concern in the fields of children's thoracic surgery, traumatology and orthopedics, cardiology, and psychology.

Determining the indicators of functional reserves of the cardiovascular and respiratory systems in patients with chest deformities, as well as the impact of these conditions on a child's health, are considered pivotal factors in determining the indications for surgical intervention.

Study Purpose: To investigate the functional reserves of the cardiorespiratory system in children with pectus excavatum deformity before and after the operation.

Materials and Methods: To evaluate the cardiorespiratory functional reserves in children with pectus excavatum deformity before and after surgery, we utilized the clinical database of the Department of Pediatric Surgery at the Andijan State Medical Institute. A total of 84 patients, diagnosed with pectus excavatum deformity, were surgically treated in the thoracic surgery department of the Andijan Regional Children's Multidisciplinary Medical Center between 2017 and 2022. We studied the cardiorespiratory functional status before and after surgery in 54 of these patients using the Skibinsky index. The distribution of these patients by the level of the disease is presented in Table 1.

The surgical treatment of all 84 patients with pectus excavatum deformity included in the study was conducted at our clinic. Out of these, 41 (42.8%) were treated using our developed reconstructive method, 24 (28.5%) according to D. Nass, and 19 patients were treated for severe types of the syndrome using a combined approach, which involved correction in the open method and the installation of an internal fixator.

To determine the Skibinsky index in these patients, it was necessary to measure the resting heart rate (HR), the time they could hold their breath (HBT) at 2/3 of their maximum lung capacity, and their vital lung capacity (VC). The Skibinsky index was calculated using the following formula: $I = VC \text{ (ml)} \times HBT \text{ (sec)} / HR$.

Table 1



Distribution of patients according to the form and degree of the disease

Shape	2 nd degree		3 rd degree		4 th degree		Overall
	Before	After	Before	After	Before	After	
Symmetric	16	10	21	13	8	6	74 (53,6%)
Asymmetric	11	6	12	9	6	4	48 (34,8%)
Flat	4	2	3	2	3	2	16 (11,6%)
Overall	31	18	36	24	17	12	138 (65,7%)

Determination of the Skibinsky index in children with corpital deformation of the chest was mainly carried out in children older than 5 years. Due to the inability of young children to perform the prescribed tasks, it was not possible to determine the functional changes of the cardiorespiratory system in them. The evaluation of the test results is presented in Table 2.

Table 2

Skibinsky index evaluation table

Condition assessment	Index Skibinsky
Excellent! Functional reserves of respiratory and cardiovascular systems are excellent.	Above 60
Good! Functional reserves of respiratory and cardiovascular systems are normal.	30-60
Moderate! Functional failure of respiratory and cardiovascular system organs is possible.	10-30
Not good! Respiratory and circulatory organs have weak functional capacity. Reduced stability to hypoxia.	5-10
Too bad! Functional capabilities of respiratory and circulatory organs are very weak!	Below 5

Results and analyses:

The examinations necessary to determine the Skibinsky index were conducted in the functional diagnostic department of our clinic. Conclusions of the study The results of the study on the deformation levels were presented in Table 3.

Table 3.

Preoperative and postoperative results of the Skibinsky index in patients with a diagnosis of thoracic torsional deformity (Pectus excavatum)

Index parameters	2 nd degree	3 rd degree	4 th degree
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	Before	After	Before	After	Before	After
HR	94	90	98	88	106	94
HBT	35,6	41,4	31,6	38,4	19,5	38,4
VC	69,7	89,6	64,4	78,4	51,7	74,6
Index Skibinsky	26,4	41,2	20,7	34,2	9,5	30,4
Condition assesment	moderate	good	moderate	good	bad	good

When the indicators of cardiorespiratory system functional reserves of patients treated with Pectus excavatum were analyzed (Table 3), the Skibinsk index value was lower than the norm (26.4, 20.7, 9.5), especially in IV level. bad (I=9.5) condition was determined. The lower than normal assessment of the index indicators is caused by the influence of the Pectus excavatum on the excursion of the chest, and as a result of the direct effect on the size of the chest cavity, affecting the normal activity of the organs of the cardiovascular and respiratory systems, which causes a decrease in the functional reserves of the cardiorespiratory system in patients. It was found that the indicators of the cardiorespiratory system functional reserves at all three levels have increased to a normal level, and this condition has increased from an unsatisfactory condition to a good one, especially in the IV level of the Pectus excavatum. In our research, it was found that with the increase in age of the patients, the level of the disease increased correspondingly, with the increase of the level of the disease in the summaries of the functional reserves of the cardiorespiratory system, the Skibinsk index was lower than the standard indicators. diseases are prevented.

Summary:

Functional reserves in the cardiorespiratory system are improved mainly as a result of exercise. The most effective method of treatment of patients with Pectus excavatum is surgical method, as the results of the study show, regardless of the age of the patient, surgical treatment in mild stages of the disease is not only cosmetic, but also early elimination of the deficiency in the functional capabilities of the organs of the cardiovascular system, as well as putting patients on a par with their peers physically. made development possible.

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