



**INTERPRETATION OF HORMONAL AND IMMUNE STATUS IN CHILDREN WITH  
CONGENITAL HEART DEFECTS**

**Tairova Sakina Bakhodirovna,  
Daminov Sunnat Jaxongir ugli**  
Samarkand State  
Medical University

**Abstract:** Congenital heart defects (CHD) are one of the most common anomalies in children. The frequency of CHD is up to 30% of all developmental defects. According to official statistics, more than 20 thousand cases of congenital heart defects of varying degrees of complexity are registered in children in the CIS countries every year, 75% of which require surgical correction of the defect. Children with CHD are susceptible to various diseases due to their hormonal and immune imbalance. As a rule, in the postoperative period, the main task of the cardiologist and pediatrician is aimed at adapting the child's cardiovascular system. However, the hormonal and immune systems of this category of patients are not assessed dynamically. In this regard, the issue of studying the hormonal and immune systems in children with congenital heart defects at an early age remains relevant and requires scientific research in this area.

**Key words:** congenital heart defect, immune system, hormonal background, growth hormone, pathogenesis

**TUG'MA YURAK NUQSONI BO'LGAN BOLALARDA GORMONAL VA IMMUN FON  
INTERPRETATSIYASI**

**Tairova Sakina Baxodirovna  
Daminov Sunnat Jaxongir o'g'li**  
Samarqand davlat  
tibbiyot universiteti

**Annotatsiya:** Tug'ma yurak nuqsonlari (TYuN) bolalarda eng ko'p uchraydigan anomaliyalardan biridir. TYuN chastotasi barcha rivojlanish nuqsonlarining 30% gacha. Rasmiy statistik ma'lumotlarga ko'ra, har yili MDH mamlakatlarida bolalarda turli darajadagi murakkablikdagi 20 mingdan ortiq tug'ma yurak nuqsonlari qayd etiladi, ularning 75 foizi nuqsonni jarrohlik yo'li bilan tuzatishni talab qiladi. TYuN bilan og'rigan bolalar gormonal va immun muvozanati tufayli turli kasalliklarga moyil. Qoida tariqasida, operatsiyadan keyingi davrda kardiolog va pediatrning asosiy vazifasi bolaning yurak-qon tomir tizimini moslashtirishga qaratilgan. Biroq, ushbu toifadagi bemorlarning gormonal va immun tizimi dinamik ravishda baholanmaydi. Shu munosabat bilan tug'ma yurak nuqsonlari bo'lgan bolalarning gormonal va immun tizimini erta yoshda o'rganish masalasi dolzarbligicha qolmoqda va bu borada ilmiy izlanishlarni talab qiladi.

**Kalit so'zlar:** tug'ma yurak nuqsoni, immun tizim, gormonal fon, o'sish gormoni, patogenez

**ИНТЕРПРЕТАЦИЯ ГОРМОНАЛЬНОГО И ИММУННОГО ФОНА У ДЕТЕЙ С  
ВРОЖДЕННЫМ ПОРОКОМ СЕРДЦА**

Таирова Сакина Баходировна  
Даминов Суннат Жaxonгир угли



Самаркандский государственный  
медицинский университет

**Аннотация:** Врожденные пороки сердца (ВПС) являются одной из самых распространенных аномалий у детей. Частота ВПС составляет до 30% от всех пороков развития. По официальной статистике, ежегодно в странах СНГ регистрируется более 20 тыс. случаев врожденных пороков сердца различной степени сложности у детей, 75% из которых требуют хирургической коррекции порока. Дети с ВПС подвержены различным заболеваниям в связи с гормональным и иммунным дисбалансом. Как правило, в послеоперационном периоде основная задача кардиолога и педиатра направлена на адаптацию сердечно-сосудистой системы ребенка. Однако гормональная и иммунная системы у данной категории пациентов не оцениваются в динамике. В связи с этим вопрос изучения гормональной и иммунной систем у детей с врожденными пороками сердца в раннем возрасте остается актуальным и требует проведения научных исследований в этой области.

**Ключевые слова:** врожденный порок сердца, иммунная система, гормональный фон, гормон роста, патогенез

According to the findings of the study by Muhammad Sohail Arshad et al (2021) conducted among 53 children with cyanotic congenital heart disease, all of them had adverse effects on nutrition and growth. The mean weight of patients with CVD was significantly lower as compared to the controls (21.19±6.24 kg vs. 26.48±8.1 kg, p-value=0.0003). Blood glucose levels were significantly lower among cases as compared to the controls (77.58±14.58 mg/dL vs. 87.25±11.82 mg/dL, p-value=0.0004). No significant difference was found between cases and controls in terms of various hormone levels studied (p-value>0.05), except for insulin-like growth factor-1 (IGF-1) levels (p-value<0.0001). Alteration of the pituitary-adrenal axis is suspected, while the pituitary-thyroid axis appears to function normally in patients with CHD. Serum levels of IGF-1 have been shown to be significantly decreased among patients with cyanotic congenital heart disease (CCHD).

Dinleyici E.C. et al (2017) conducted a prospective randomized study in 94 patients with CHD (36 girls and 58 boys aged 1 year to 192 months, 19 cyanotic CHD and 75 non-cyanotic CHD) and 54 children (26 girls and 28 boys) without CHD. In the main group, 39.4% and 29.6% of the control group had malnutrition. The difference between cyanotic and acyanotic patients in terms of malnutrition was significant (57.9% and 34.6%, p < 0.05). Serum IGF-1 levels were lower (41.8±3.9 µg/L, 106.9±17.9 µg/L, respectively, p<0.001) and GH levels were higher (6.43±0.9 ng/mL, 3.87±0.5, respectively, p<0.05) in the CHD group than in the controls. Serum IGF-1 levels were significantly lower in cyanotic CHD patients than in acyanotic patients (17.2±3.2 µg/L, 48.7±4.6 µg/L, respectively, p<0.001). Serum IGF-1 and GH levels were similar in well-nourished CHD patients and malnourished CHD patients (p>0.05). In the general study group, the most effective factor on the IGF-1 level in the blood serum was the presence of congenital heart disease (p < 0.001), in patients with congenital heart disease, the most effective factor on the IGF-1 level in the blood serum is the presence of cyanosis and malnutrition. In groups of patients with acyanotic, cyanotic and complete congenital heart disease, no correlations were found between the IGF-1 levels. But the growth hormone level in the serum negatively correlated with the diastolic diameter of the left ventricular interseptal space, diastolic



mass of the left ventricle and end-diastolic volume of the left ventricle in patients with congenital heart disease.

In conclusion, we can say that the main changes in the hormonal status are observed in the pituitary-adrenal system, and this is reflected in growth retardation and physical development. The most important factor in the IGF-1 level in the serum is cyanosis. Decreased IGF1 levels and decreased left ventricular mass with elevated growth hormone levels are seen in patients with CHD, and these findings are seen in cases with cyanosis and malnutrition.

The course of CHD and early survival of patients with CHD are affected by the severity of concomitant congenital extracardiac pathology, which is found in 23-30% of patients with CHD; in the presence of such pathology, the mortality rate increases to 89%. Under certain unfavorable conditions of primary or secondary immunodeficiency, even very minor, hemodynamically compensated defects that do not require correction can serve as a background for the superposition of infection and the development of infective endocarditis and aggravate the course of associated rheumatological diseases. The modern concept of the formation of immunopathological conditions considers the neuroendocrine and immune systems as the basis of a single homeostatic regulation. The immune system is integrating, along with the central nervous and endocrine systems, and participates in maintaining the homeostasis of the child's body and establishing an optimal balance in its relationships with the environment. Immunological mechanisms participate in the pathogenesis of the main diseases of the perinatal period, and subsequently, determine the possibility of full rehabilitation of the sick child.

#### **REFERENCES:**

1. Таирова С. Б., Мухамадиева Л. А. РАССТРОЙСТВА ПОВЕДЕНИЯ У ДЕТЕЙ С ВРОЖДЕННЫМИ ПОРОКАМИ СЕРДЦА //Journal of cardiorespiratory research. – 2022. – Т. 3. – №. 2. – С. 19-21.
2. ТАИРОВА С. Б., МУХАМАДИЕВА Л. СЕРДЦА У ДЕТЕЙ С КОМОРБИДНОЙ ПАТОЛОГИЕЙ (литературный обзор) //ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ. – 2022. – Т. 7. – №. 2.
3. Хусинов А. А., Таирова С. Б. ФУНКЦИОНАЛЬНОЕ СОСТОЯНИЕ ГИПОТАЛАМО-ГИПОФИЗАРНОЙ НЕЙРОСЕКРЕТОРНОЙ СИСТЕМЫ В ФИЗИОЛОГИЧЕСКИХ УСЛОВИЯХ У ИНТАКТНЫХ ЖИВОТНЫХ //Материалы XXIII съезда Физиологического общества им. ИП Павлова с международным участием. – 2017. – С. 1595-1597.
4. Таирова С. Б., Мухторов А. А. У., Зиёдуллаева М. С. Нейрокогнитивные расстройства у детей с врождёнными пороками сердца (литературный обзор) //Science and Education. – 2023. – Т. 4. – №. 2. – С. 543-548.
5. Bakhodirovna T. S., Atamuradovna M. L. PATHOGENETIC ASPECTS OF ALLERGIC REACTIONS AMONG CHILDREN WITH CONGENITAL HEART DEFECTS //JOURNAL OF BIOMEDICINE AND PRACTICE. – 2023. – Т. 8. – №. 2.
6. Скворцов В. В., Гумаренко А. В., Байманкулов С. С. Врожденные пороки сердца //Медицинская сестра. – 2017. – №. 7. – С. 14-17.
7. ТАИРОВА С. Б., МУХАМАДИЕВА Л. А. ДИАГНОСТИКА ВРОЖДЕННЫХ СЕПТАЛЬНЫХ ПОРОКОВ СЕРДЦА У ДЕТЕЙ С КОМОРБИДНОЙ ПАТОЛОГИЕЙ (литературный обзор) //ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ. – 2022. – Т. 7. – №. 2.



8. Таирова С. Б., Мухамадиева Л. А. РАССТРОЙСТВА ПОВЕДЕНИЯ У ДЕТЕЙ С ВРОЖДЕННЫМИ ПОРОКАМИ СЕРДЦА //Журнал кардиореспираторных исследований. – 2022. – Т. 3. – №. 2.
9. Таирова С. Б. Хушвактова ББҚ Особенности течения коморбидной патологии с врожденными септальными пороками сердца (литературный обзор) //Science and Education. – 2023. – Т. 4. – №. 2. – С. 549-555.
10. Таирова С. Б. Allergic reactions on the background of congenital heart defects in young children //Журнал кардиореспираторных исследований. – 2023. – Т. 4. – №. 1.
11. Таирова С. Б., Бурунов М. И. У. Эпидемиология и факторы риска развития врождённых пороков сердца у детей (литературный обзор) //Science and Education. – 2023. – Т. 4. – №. 2. – С. 536-542.
12. Таирова С. Б., Мухамадиева Л. А. Диагностика врожденных септальных пороков сердца у детей с коморбидной патологией (литературный обзор) //журнал биомедицины и практики. – 2022. – Т. 7. – №. 2.
13. Таирова С. Б., Хушвактова Б. Б. Қ. Особенности течения коморбидной патологии с врожденными септальными пороками сердца (литературный обзор) //Science and Education. – 2023. – Т. 4. – №. 2. – С. 549-555.
14. Turaeva N. et al. The use of cholecalciferol in the treatment of bronchial asthma in children //E3S Web of Conferences. – EDP Sciences, 2023. – Т. 413. – С. 03032.
15. Tairova S. B., Sattarova R. T., Husanova M. B. Q. Incidence of allergic diseases in children with congenital heart defects //Science and Education. – 2023. – Т. 4. – №. 10. – С. 17-21.
16. Таирова С. Б. АЛЛЕРГИЧЕСКИЕ РЕАКЦИИ НА ФОНЕ ВРОЖДЁННЫХ ПОРОКОВ СЕРДЦА У ДЕТЕЙ РАННЕГО ВОЗРАСТА //Journal of cardiorespiratory research. – 2023. – Т. 1. – №. 1. – С. 72-75.
17. Таирова С. Б., Мухамадиева Л. А. ОЦЕНКА РОСТА И РАЗВИТИЯ У ДЕТЕЙ С ВРОЖДЕННЫМИ ПОРОКАМИ СЕРДЦА //Инновационные технологии в медицине: взгляд молодого специалиста. – 2022. – С. 37-38.
18. Epidemiology and Risk Factors for Congenital Heart Defects in Children MNS Tairova Sakina Bakhodirovna, Mukhamadiyeva Lola Atamuradovna AMERICAN Journal of Pediatric Medicine and Health Sciences 5 (2), 94-98
19. Immunological Aspects in Young Children with Congenital Heart Defects MLA Tairova Sakina Bakhodirovna1 American Journal of Medicine and Medical Sciences 14 (4), 805-807
20. Tairova S. B., Asatillayeva S. S. Q., Ismatova N. U. Q. Tug ‘ma yurak nuqsoni mavjud bo ‘lgan bolalarda epidemiologiya va xavf omillari (adabiyotlar sharhi) //Science and Education. – 2024. – Т. 5. – №. 3. – С. 98-104.
21. Tairova S. B., Ashirkulova F. T. L. Q., Ahmatova N. S. Q. Septal tug ‘ma yurak nuqsoni bo ‘lgan bolalardagi komorbid holatlar //Science and Education. – 2024. – Т. 5. – №. 3. – С. 111-117.
22. Tairova S. B., Ahmatova N. S. Q., Ashirkulova F. T. L. Q. Tug ‘ma yurak nuqsoninlari: immunologik perspektiva (adabiyotlar sharhi) //Science and Education. – 2024. – Т. 5. – №. 3. – С. 134-140.
23. Tairova S. B., Ahmatova N. S. Q., Ashirkulova F. T. L. Q. Tug ‘ma yurak nuqsoni bo ‘lgan bolalarda neyrokognitiv buzilishlar (adabiyotlar sharhi) //Science and Education. – 2024. – Т. 5. – №. 3. – С. 141-146.



24. Tairova S. B., Ismatova N. U. Q., Asatillayeva S. S. Q. Tug 'ma yurak nuqsoni bor bolalar orasida allergik kasalliklari bilan kasallanishi //Science and Education. – 2024. – T. 5. – №. 3. – С. 147-152.
25. Tairova S. B., Ashirkulova F. T. L. Q., Ahmatova N. S. Q. Komorbid patologiyalari mavjud bo 'lgan bolalarda septal tug 'ma yurak nuqsoninig kechish xususiyatlari (adabiyotlar sharhi) //Science and Education. – 2024. – T. 5. – №. 3. – С. 118-124.
26. PREVALENCE OF ALLERGIC DISEASES AMONG CHILDREN WITH CONGENITAL HEART DEFECTS TS Bakhodirovna JOURNAL OF BIOMEDICINE AND PRACTICE 8 (4)
27. ВРОЖДЕННЫЙ ПОРОК СЕРДЦА: ИММУНОЛОГИЧЕСКАЯ ПЕРСПЕКТИВА (ЛИТЕРАТУРНЫЙ ОБЗОР) TS Bahodirovna JOURNAL OF BIOMEDICINE AND PRACTICE 8 (4)
28. ИММУНОЛОГИЧЕСКИЕ АСПЕКТЫ У ДЕТЕЙ РАННЕГО ВОЗРАСТА С ВРОЖДЕННЫМИ ПОРОКАМИ СЕРДЦА TS Bahodirovna, ML Atamuradovna JOURNAL OF BIOMEDICINE AND PRACTICE 8 (4)
29. ДИАГНОСТИКА ВРОЖДЕННЫХ СЕПТАЛЬНЫХ ПОРОКОВ СЕРДЦА У ДЕТЕЙ С КОМОРБИДНОЙ ПАТОЛОГИЕЙ (литературный обзор) TS Bakhodirovna, ML Atamuradovna JOURNAL OF BIOMEDICINE AND PRACTICE 7 (2)