



IRON METABOLISM INDICATORS IN PRESCHOOL-AGED CHILDREN WITH SEVERE IRON DEFICIENCY ANEMIA

Nazarova Malohat Berdibayevna

Senior Lecturer, Department of Hospital Pediatrics and Higher Nursing, Urgench State Medical Institute, PhD(Uzbekistan)

<https://orcid.org/0009-0005-3429-0813>

<https://doi.org/10.5281/zenodo.18346222>

ARTICLE INFO

Received: 19th January 2026

Accepted: 20th January 2026

Online: 21st January 2026

KEYWORDS

To study iron metabolism indices in preschool children with severe iron deficiency anemia

ABSTRACT

In recent years, numerous researchers have demonstrated a wide range of pathological manifestations of iron deficiency in the body, one of the most significant microelementoses in practical healthcare. This has led to significant research interest in studying various aspects of the physiology and pathophysiology of iron metabolism in the body. Despite the abundance of scientific papers devoted to iron deficiency, the scientific literature is markedly lacking in studies that examine specific aspects of iron metabolism in the body from a modern methodological perspective, in relation to specific environmental conditions or the characteristics of the populations being studied. These factors are integral characteristics or indicators of so-called biogeochemical provinces or zones, as defined by Academician Vernadsky, which differ significantly from one another in Uzbekistan. One such characteristic biogeochemical zone is the ecologically disadvantaged areas of the southern Aral Sea region – the Republic of Karakalpakstan and the Khorezm region.

Introduction. In recent years, numerous researchers have demonstrated a wide range of pathological manifestations of iron deficiency in the body, one of the most significant microelementoses in practical healthcare. This has led to significant research interest in studying various aspects of the physiology and pathophysiology of iron metabolism in the body. Despite the abundance of scientific papers devoted to iron deficiency, the scientific literature is markedly lacking in studies that examine specific aspects of iron metabolism in the body from a modern methodological perspective, in relation to specific environmental conditions or the characteristics of the populations being studied. These factors are integral characteristics or indicators of so-called biogeochemical provinces or zones, as defined by Academician Vernadsky, which differ significantly from one another in Uzbekistan. One such characteristic biogeochemical zone is the ecologically disadvantaged areas of the southern Aral Sea region – the Republic of Karakalpakstan and the Khorezm region.

Purpose of the study. To study iron metabolism indices in preschool children with severe iron deficiency anemia.

Materials and methods of research. In order to characterize iron metabolism in children with severe IDA, 26 children of both sexes were examined using a random, non-repetitive selection method, who were diagnosed with severe IDA based on the determination of the level of total hemoglobin in the blood.

Results and discussion. The average total hemoglobin level in the examined children was 60.9 ± 1.19 g/L, with a range of 40.0 g/L (min) to 66.0 g/L (max). The iron status in these children is characterized by significant pathological fluctuations in various functional iron pools in the body, so the labile plasma iron pool, characterized by serum iron, averages only 2.63 ± 0.14 μ mol/L, with a range of 1.36 μ mol/L (min) to 4.09 μ mol/L (max). The average serum immunoreactive transferrin level in the examined children was 5.04 ± 0.02 g/L, with a range of 4.85 g/L (min) to 5.35 g/L (max). Transferrin iron saturation averages only $2.2 \pm 0.12\%$, with a range of 1.1% (min) to 3.4% (max). Analysis of the isotransferrin spectrum reveals characteristic changes: virtually the entire serum transferrin pool in the examined children with severe iron deficiency anemia is represented by unsaturated and low-saturated transferrin isoforms, i.e., apotransferrin and monoferritransferrin, with the lion's share (over 85%) being apotransferrin. Thus, with significant hypertransferrinemia in the examined children with severe anemia, virtually the entire pool of this iron-binding protein, transferrin, is functionally inactive.

Conclusions. The indices of iron metabolism in preschool children with severe iron deficiency anemia were studied; significant changes in these indices, characterizing various functional iron reserves in the body, were noted.

Literature:

1. Даминова, Н. М., Газиёв, З. Х., & Назаров, М. Б. (2016). Этиопатогенез, классификация, диагностика и лечение послеоперационного перитонита. *Здравоохранение Таджикистана*, (4), 65-74.
2. Назарова, М. Б., & Адилбекова, Д. Б. (2023). Изучение морфологического состояния печени потомства, рожденные в условиях хронического токсического гепатита у матери. *Academic research in educational sciences*, (1), 213-219.
3. Nazarova, M. B., & Dilorom, B. A. (2023). STUDY OF THE MORPHOLOGICAL CONDITION OF THE LIVER OF THE CHILD BORN IN THE CONDITIONS OF CHRONIC TOXIC HEPATITIS. *Academic research in educational sciences*, (1), 220-224.
4. Kholmurodova, G. R., Mirkhomidova, N. A., Yuldasheva, R. A., Nazarova, M. B., Barotova, A. R., & Aktamova, I. A. (2023, March). Creation of goods with high fiber quality from the selection of varieties belonging to *G. Hirsutum* L. species. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1142, No. 1, p. 012089). IOP Publishing.
5. Azizov, B. M., Isroilov, B. A., Nazarova, M. B., & Zikiryoyeva, K. F. (2021). The influence of the seed quality on the thickness and yield of autumn wheat grain. *THEORETICAL & APPLIED SCIENCE* Учредители: Теоретическая и прикладная наука, (9), 741-743.
6. Назарова, М. Б., & Назарова, С. З. (2024). Важность игровых технологий в обучении устной речи на немецком языке. *Вестник науки*, 1(3 (72)), 326-329.
7. Назарова, М. Б., & Ораева, Я. Н. (2024). АКТУАЛЬНЫЕ ВОПРОСЫ ИЗУЧЕНИЯ ИНОСТРАННЫХ ЯЗЫКОВ В ТУРИСТИЧЕСКОЙ СФЕРЕ. *Вестник науки*, 3(5 (74)), 702-705.

8. Movlonova, S. S., Shamsiev, F. M., Khudayberganov, M. R., Nazarova, M. B., & Salayeva, Z. S. (2021). Clinical-Pathogenetic Justification Of Therapy In Children With Nosocomial Pneumonia By Correcting The Microelemental Status. *European Journal of Molecular and Clinical Medicine*, 8(2), 1945-1951.
9. Atajanov, K. P., Ollaberganova, S. M., & Masharipova, K. Q. (2025, December). ULTRASONIC DIAGNOSIS OF COMPLICATED PNEUMONIA IN CHILDREN. In *International Conference on Medicine & Agriculture* (Vol. 1, No. 3, pp. 21-23).
10. Makhmudovna, D. N. (2023). HYGIENIC CONTROL OF THE DIET OF RESIDENTS LIVING IN CONDITIONS OF RADIOACTIVE LOADS. *Confrencea*, 11(1), 2-6.
11. Kalandarova, G. D., Raxmonova, S. A., Shamuratova, N. S., & Davlatjonova, N. M. (2023). THE LAWS OF CORRECT DIET AND THE CONSEQUENCES OF IMPROPER DIET. *Web of Medicine: Journal of Medicine, Practice and Nursing*, 1 (8), 64–67.
12. Davlatjonova, N. M., & Xudayberganov, M. R. (2024). OVQATLANISH BUZILISHI UCHUN XAVF OMILLARINING MAKTABGACHA YOSHDAGI BOLALARNING JISMONIY O 'SISHI VA RIVOJLANISHI KO 'RSATKICHLARI BILAN O 'ZARO BOG 'LIQLIGI. *Science and innovation*, 3(Special Issue 54), 127-130.
13. Makhmudovna, D. N. (2023). HYGIENIC CONTROL OF THE DIET OF RESIDENTS LIVING IN CONDITIONS OF RADIOACTIVE LOADS. *Confrencea*, 11(1), 2-6.
14. Atajanov, K. P., Ollaberganova, S. M., & Masharipova, R. T. (2025, December). CHARACTERISTICS OF IRON METABOLISM IN RURAL PRESCHOOL CHILDREN WITH MILD IRON DEFICIENCY ANEMIA. In *International Conference on Health & Technology* (Vol. 1, No. 3, pp. 26-28).
15. Atajanov, K. P., & Ollaberganova, S. M. (2025, December). ECHOGRAPHIC DIAGNOSIS OF PNEUMONIA IN CHILDREN. In *International Conference on Medicine & Agriculture* (Vol. 1, No. 3, pp. 18-20).
16. Atajanov, K. P., Ollaberganova, S. M., & Masharipova, K. Q. (2025, December). ULTRASONIC DIAGNOSIS OF COMPLICATED PNEUMONIA IN CHILDREN. In *International Conference on Medicine & Agriculture* (Vol. 1, N
17. Атажанов, Х. П., & Оллаберганова, Ш. М. (2025). Dynamics of Spirometric Level in Patients with Cystic Fibrosis in the Aral Sea Region. *Spanish Journal of Innovation and Integrity*, 49, 30-32.
18. Атажанов, Х. П., & Оллаберганова, Ш. М. (2025). ОСОБЕННОСТИ ТЕЧЕНИЯ ГОСПИТАЛЬНОЙ ПНЕВМОНИИ У ДЕТЕЙ. *Жоурнал оф Мультидисциплинарй Инноватион ин Ссиенсе анд эдусатион*, 1(3), 105-109.
19. Атажанов, Х. П., Оллаберганова, Ш. М., & Халбаева, М. У. ДИНАМИКА ПОКАЗАТЕЛЕЙ ЭКГ У ДЕТЕЙ С ВРОЖДЕННЫМИ ПОРОКАМИ СЕРДЦА.
20. Атажанов, Х. П., & Оллаберганова, Ш. М. (2025). ОСОБЕННОСТИ ТЕЧЕНИЯ НОЗОКОМИАЛЬНОГО СЕПСИСА У ДЕТЕЙ. *Жоурнал оф Мультидисциплинарй Инноватион ин Ссиенсе анд эдусатион*, 1(3), 123-126.