

process, the foundations of clinical thinking are laid, the professional competencies of the future specialist are consolidated, including those of students from foreign countries.

Keywords: pathological anatomy, teaching, teaching methods

TEACHING METHODOLOGY AT MEDICAL SCHOOL: WHY KNOWLEDGE OF IRON METABOLISM IN HEALTHY CHILDREN AND ADOLESCENTS IS IMPORTANT INTERNATIONALLY

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Resume. According to the World Health Organization (WHO), iron deficiency (J) is a common condition internationally, it affects more than 3 billion people on the Earth. At medical schools we teach that it can manifest as iron deficiency anemia (IDA) in children (especially the first two years of life) and in women of reproductive age. According to S. Osendarp et al., in the world about 50% of preschool children and pregnant women have anemia. According to studies by D. Subramanian et al., 9% of children in their first two years of life have IDA. That's why teaching this subject to students and invite them to do research is important worldwide.

Key words: teaching, metabolism, adolescence, anemia.

Introduction. Iron deficiency conditions (IDC) remain one of the most urgent health problems around the world due to their widespread prevalence, especially among infants, adolescents, menstruating women, who are high-risk groups for the development of iron deficiency (ID) [2,3,7].

In young children, the development of ID is mainly associated with the alimentary factor [1,3,5], and in adolescents - with puberty spurt, poor diets, chronic diseases, menarche in girls, menstrual function disorders [2,7,8], while in young men it can develop with the rapid increase in muscle mass .

Iron deficiency occurs because of a long-term negative balance of iron, the reasons for which are either its insufficient intake into the body, or its increased consumption, sometimes because of a combination of both reasons. Iron is an essential element in all living beings on the Earth, it participates in the implementation of the basic functions of life support. These are, first of all, the production of iron-containing molecules (hemoglobin, myoglobin, etc.) and the normal functioning of iron-dependent reactions (involved in the production of interleukins, T-killers, T-suppressors, metalloenzymes, maintaining the pro-oxidant-antioxidant balance, etc.). Iron reserves are a buffer that protects the body from the development of ID in various situations.

It becomes obvious that ID has a systemic effect on the vital functions of the body, especially during critical periods of growth and mental development. In young children, it can manifest by a delay in psychomotor development (delayed speech skills, impaired movement coordination, changes in behavioral reactions, etc.), in adolescents – by impaired cognitive functions and mental abilities (poor memory, concentration of attention and motivation for learning, emotional lability, increased anxiety, etc.), in adults – as a deterioration in the quality of life (insufficient vital activity and apathy, lack of motivation to achieve goals, low self-esteem), etc. It should be noted that in many even highly developed countries, where the diet of nursing women contains enough iron, "4-6% of infants still develop ID, among adolescent girls the frequency of ID reaches 13-14%, among young men-3-4%. After treatment with iron-containing medications and replenishment of the iron depot, the impaired functions are quickly restored, but in some children the consequences of ID can persist for a long time and

even for life. WHO highlights global importance of this problem and requires universal attention" and actions aimed at combating iron deficiency [2,6,8].

At the same time, in our countries, despite the medical examination of the children's population and the widespread introduction of laboratory tests that assess the indicators of iron metabolism, many aspects of the pathogenesis, diagnosis, consequences and treatment possibilities of ID remain insufficiently studied from the standpoint of modern science and practice. The role of iron metabolism disorders in infectious and inflammatory diseases is not always clearly understood and taught to medical students. From a clinical point of view, this seriously hinders the understanding of the essence of pathophysiological processes in IDA and anemia associated with IDC, hinders the development and implementation of evidence-based laboratory markers of ID, hinders the development of modern protocols for the diagnosis, management, and prevention of IDC.

The purpose of the study. The purpose of this work was to establish the age-related features of iron metabolism and the state of hematopoiesis factors in normal and pathological conditions, including the antenatal period, and to improve the laboratory and clinical diagnosis of its disorders to justify effective treatment methods and develop optimal schemes for the prevention of IDC at the present stage.

Materials and methods of research: A large clinical material was used to study the parameters of iron metabolism in more than 105 children and adolescents from different societies and it was confirmed that in infants iron is primarily associated with the alimentary factor and the social status of the family.

Results of the study: In accordance with this goal, during the early human ontogenesis, the values were determined and the interaction of iron-containing and iron-regulating proteins and several other compounds reflecting iron metabolism was studied (alkaline and acidic isoforms of ferritin, iron, Tf, EPO, rTfR, vit. B12, folates, hepcidin); the levels of cytokines (TNF- α , IL-6) involved in the regulation of iron metabolism were measured.

The examined fetuses and newborn children, depending on the gestational age (GA), were divided into groups, in each of which the values of the studied indicators were determined: in fetuses 5-10 weeks (groups 1 and 2) - in total in all tissues, in fetuses 11-15 weeks (group 3) -separately in liver and spleen tissues, in developing fetuses 26-35 weeks (groups 4 and 5), as well as in newborn children 35-41 weeks (groups 6 and 7) - in umbilical cord blood. The regularities of the formation of iron metabolism in early human ontogenesis associated with the gestational age of the fetus are established, as evidenced by a significant correlation of GA with the level of iron ($g=0.9398$, $p<0.001$), alkaline phosphatase ($g=0.9597$, $p<0.0001$), rTfR ($g=0.9293$, $p<0.0001$), hepcidin ($g=0.8183$, $p<0.001$), EPO ($g=0.8889$, $p<0.0001$), FE ($g=0.8889$, $p<0.0001$), 0.9297 , $p < 0.0001$).

The participation of iron - containing and iron-regulating proteins in maintaining high activity of proliferative and plastic processes is confirmed by close relationships between the content of iron and alkaline phosphatase ($g= -0.894$, $p<0.0001$), alkaline phosphatase and rTfR ($1=0.8399$, $p<0.0001$), alkaline phosphatase and EPO ($g=0.9193$, $p<0.0001$), iron and hepcidin ($g=0.8897$, $p<0.001$), PE and EPO ($g=0.9067$, $p<0.0001$), which makes it possible to use the indicators of alkaline phosphatase, rTfR and hepcidin as important prognostic markers of intrauterine development disorders, and EPO and EF-to assess the degree of hypoxia.

It was found that the highest pro-inflammatory pattern of cytokines (IL-6 and TNF- α) can be markers only for early embryogenesis (before the formation of the placenta), the further dynamics of their content during intrauterine development reflects a clear balance of the processes of alteration and apoptosis, as indicated by a reliable correlation between TNF- α and alkaline phosphatase ($g=0.9197$, $p=0.00001$), TNF- α and rTfR ($g=0.8789$, $p<0.0001$).

Conclusions: It was found that even simple dietary measures (exclusion of whole milk from the diet, inclusion of products rich in iron, their separate use with products that inhibit iron absorption) can reduce the incidence of IDA in young children by 1638%, the rehabilitation period of children and adolescents with IDA - in 80.7% of cases.

Reducing the frequency of IDA in children and adolescents is possible only with the joint work and efforts of pediatricians, parents, social services workers, which will allow timely prevention of ID in high-risk groups. This is an important point for being taught to medical students internationally.

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ACADEMIC AND SOCIAL ADAPTATION OF FOREIGN STUDENTS IN HIGHER EDUCATION INSTITUTIONS OF THE KYRGYZ REPUBLIC

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Annotation. The article discusses the results of a sociological study on the study of the adaptation of foreign students to a new educational system, a new socio-cultural environment, adaptation to new climatic conditions, to a new language of communication. The data were obtained during a prospective random non-repeated survey of respondents in the incognito variant. In total, 215 foreign students from 18 to 32 years old from the first to the fifth year, studying at the universities of the Kyrgyz Republic, took part in the study. The questionnaire included a number of open-ended questions, thanks to which the respondents could give not only direct answers to the questions, but also additional comments and express their emotional attitude.

Key words: foreign students, education, sociological research, adaptation.

Introduction. The relevance of this study is determined by the deepening of international, including educational, contacts of universities in Kyrgyzstan. Cooperation in the field of education is the most important and urgent task, as it allows preparing highly qualified specialists for many countries. In addition, the relevance of studying the adaptation of foreign students to learning is due to the need to increase the competitiveness of Kyrgyz universities