



PRIMARY AND SECONDARY PREVENTION OF IRON DEFICIENCY AT THE PRESENT STAGE

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Annotation. The problem of iron deficiency is primarily a nutritional problem, so the primary prevention of iron deficiency is an adequate, balanced nutrition of a person at any age. The daily iron requirement for an adult is about 1-2 mg, for a child - 0.5-1.2 mg. A normal diet provides an intake of 5 to 15 mg of elemental iron per day. Only 10-15% of dietary iron is absorbed in the GI tract (duodenum and upper jejunum) [3,4].

Keywords: iron, heme iron, hepcidin synthesis, body weight, liver.

The main food source of iron are animal products containing heme iron. The greatest amount of iron is found in beef, lamb, liver, and to a lesser extent in fish, chicken meat. What is important is not how much iron is contained in a product, but its bioavailability. Compared to animal products, non-heme iron found in plant foods (vegetables, fruits, cereals) has reduced bioavailability, which means it is less absorbed. In addition, certain conditions are necessary for iron absorption: vitamin C enhances iron absorption, while substances such as the tannic acid found in tea or phytates found in some foods can significantly inhibit iron absorption [1,2].

In IDA, iron absorption in the duodenum increases dramatically, which is associated with suppression of hepcidin synthesis. At present, appropriate recommendations for the prevention of iron deficiency have been adopted in most countries of the world. They mainly concern young children, pregnant and lactating women, and women of reproductive age. In 2010, the American Academy of Pediatrics revised its recommendations for the prevention of GDM in infants and young children (1-3 years of age) [5].

The main provisions of these recommendations are summarized as follows [11]: - Preterm healthy children have adequate iron stores in the first 4 months of life. Due to the low iron content in breast milk, breastfed children should be supplemented with iron (1 mg of iron per 1 kg of body weight per day) from 4 months of age until the introduction of complementary foods (e.g., iron-fortified porridge); Preterm infants who are mixed-fed (breast milk makes up more than half of the diet) should receive an additional 1 mg of iron per 1 kg of body weight per day, starting at 4 months of age and before complementary feeding; 14 - artificially fed infants receiving iron-fortified infant formulae receive sufficient iron from infant formulae or complementary feeding. Whole cow's milk should not be administered to children under 12



months of age; - Children aged 6-12 months should receive 11 mg of iron per day. Red meat and vegetables with high iron content should be prescribed as complementary foods. In case of insufficient iron intake with formula or complementary feeding, iron in the form of drops or syrup should be additionally prescribed; - children aged 1-3 years should receive 7 mg of iron per day, preferably in the form of food containing sufficient amounts of red meat, iron-rich vegetables and fruits with a high content of vitamin C, which enhances iron absorption. Additional administration of liquid forms of iron preparations or multivitamins is also possible; - all children born prematurely should receive at least 2 mg of iron per 1 kg of body weight per day until 12 months of age, which corresponds to the iron content of fortified infant formula. Children born prematurely and breastfed should receive 2 mg of iron per 1 kg of body weight per day, starting from the 1st month of life and until the transition to artificial feeding with iron-fortified milk mixtures or until the introduction of complementary foods providing 2 mg of iron per 1 kg of body weight per day.

Secondary prophylaxis of iron deficiency (early diagnosis of iron deficiency) is recommended to be carried out at every patient's visit to a doctor, medical check-ups, medical examinations, etc. Physicians should rely on the patient's complaints, medical history, clinical manifestations and changes in laboratory parameters. In the USA, universal and selective screening is provided as a measure of secondary prevention of IDA in infants and preschool children. Universal (common) screening is conducted among children aged 12 months and includes determination of Hb concentration and assessment of risk factors for the development of IDA. Such risk factors include [10, 13]: - low socioeconomic status of the family (socially disadvantaged families, refugees or emigrants); - prematurity or low birth weight; - lead poisoning; - exclusive breastfeeding after 4 months of age without additional iron supplementation; - consumption of whole cow's milk or a diet low in iron. Additional risk factors include: - insufficient nutrition, developmental delay; - special needs due to the state of health. If risk factors for the development of IDA in young children are identified, it is recommended to perform selective screening at any time [10]. In children aged 2-5 years without risk factors, screening for iron deficiency is done annually. Among school-age children and adolescent boys, children with a history of IDA or special needs due to health conditions or low dietary iron intake should be screened for anemia [6,7,8].

Starting in adolescence, screening for anemia is performed in all nonpregnant women every 5 to 10 years throughout their childbearing years. Women with risk factors for IDA (heavy menstrual or other blood loss, inadequate iron intake, and a previous diagnosis of IDA) should be screened annually. A study conducted in Vologda girls showed that heavy menstrual blood loss is an additional risk factor for the development of anemia in adolescent girls [10,12]. When screening in a population with a low prevalence of IDA and absence of severe forms of the disease, it is necessary to focus on changes in laboratory parameters rather than on anamnesis and clinical manifestations (signs of anemia and sideropenia). As studies conducted at the Dmitry Rogachev FNCC DGOI of the Ministry of Health of Russia (Moscow) have shown, Hb, hematocrit, color index, MCV and MCH have the highest overall

accuracy/efficiency in detecting iron deficiency and iron deficiency in adolescent screening. Biochemical indices (SI, TIBC, SF, IST), as having high specificity in detecting iron deficiency, are recommended to be used only to confirm the diagnosis established on the basis of other tests (e.g., hematologic) [11].

So, taking iron preparations for prophylactic purposes is intended for those at risk who are unable to obtain iron-fortified foods. It should be remembered that iron from fortified foods is incorporated into erythropoiesis to a lesser extent than when iron preparations are administered. Dispensary monitoring of patients with IDA Dispensary monitoring of children and adolescents with IDA is carried out in our country for one year from the moment of diagnosis. The patient's well-being and general condition are monitored. Before removing the patient from dispensary observation, a general blood test is performed, all indicators of which should be within normal limits.

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