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IRON METABOLISM IN ELDERLY PEOPLE WITH IRON DEFICIENCY ANEMIA.

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Annotation: Iron deficiency anemia (IDA) represents a serious problem for both scientific medicine and practical healthcare. In a number of regions of Central Asia and, in particular, in Uzbekistan, this is the most common form of anemia among certain groups of the population - children, adolescents, women of fertile age.With great consistency, iron deficiency anemia is detected in elderly and senile people. Anemia, in old age, is quite common an occurring phenomenon that has a certain influence on the processes of other diseases.

Key words: anemia, gland, old age, ferritin.

Among the etiological factors of senile anemia, the main importance is given to iron deficiency, and the main reason for the lack of iron in the body is its insufficientreceipt due tomonotonous, qualitative and quantitative malnutrition, as well as impaired absorption of iron in the gastrointestinal tract, caused by chronic blood loss due to various destructive processes in the digestive organs (1,2).

Iron deficiency developing in old age causes certain changes in ferrokinetic parameters, which certainly affects the plasma and reserve fund of iron in the body (3,4,5).

Objective: The purpose of this study is to study indicators in elderly people suffering from iron deficiency anemia iron metabolism to determine the state of adaptive reactions in this category of patients.

Material and research methods. We examined 25 patients with iron deficiency anemia aged from 60 to 74 years. The diagnosis of iron deficiency anemia was verified on the basis of a comprehensive study of hemoglobin level, red blood cell count, color index, iron content, ferritin and transferritin in the blood serum. In order to compare the above ferrokinetic parameters, similar indicators were studied in 50 young people with iron deficiency anemia, 25 young primary donors, as well as 26 elderly people without anemia (conditionally healthy) residents of the Bukhara region. Blood from patients with iron deficiency anemia was obtained in the hematology department of the Bukhara Multidisciplinary Medical Center, from primary donors in the military-industrial complex, and from apparently healthy elderly patients - on-site. Total blood hemoglobin was determined in an automatic hematology analyzer BC-36000 MINDRAY (China). Determination of serum iron concentration was determined in an automatic bichemical analyzer BS-200 MINDRAY (China). The total iron binding capacity of serum (TIBC) was determined by the magnesium carbonate method using Vital Vector-Best kits.

Quantitative determination of serum transferrin was carried out using immunological methods of radial immunodiffusion and immunoelectrophoresis. Quantitative determination of serum ferritin was carried out by enzyme immunoassay using Accu-Bind Elisa kits.

The iron saturation coefficient of transferrin (ISC) was calculated using the formula:
CST(%)= (Ax 100)/(B x 1.37x0.18),
where A- is the concentration of serum iron in µmol/l,
B - serum transferrin concentration in mg/100 ml

Results. The results of our studies (Table 1) showed that the plasma iron pool in older people decreases, averaging 8.89+0.55 µmol/liter. Comparison of this indicator with the indicators of the plasma iron pool of young people suffering from iron deficiency anemia made it possible to establish that in elderly people with iron deficiency anemia the iron content is significantly lower than in young people with iron deficiency anemia. It is appropriate to note here that a decrease in serum iron levels as the body ages was also discovered by A. Tommaro et al (6,7).

According to our research, it was found that in the elderly, bone marrow iron reserves decrease and the efficiency of iron incorporation into erythroid cells decreases.

The concentration of immunoreactive transferrin in the blood serum of the examined elderly people with concomitant iron deficiency anemia (4.47+0.12 g/l) was 1.6 times higher than normal. A similar picture was found in young people with iron deficiency anemia, which indicates the existence in the above cases of a single compensatory mechanism (8,9,10).

It is interesting to note that in elderly people (see Table 1) the level of immunoreactive transferrin in the blood serum is significantly lower than in young people (4.47+0.12 g/l and 4.95+0.11 g/l respectively). This is explained by the very frequent functional disorders and organic lesions of the liver, the organ responsible for the biosynthesis of transferrin, in old age.

Table 1.

Comparative characteristics of iron metabolism in elderly and young people with iron deficiency anemia

Surveyed	HB g/l	Iron serum µmol/l	Transferrin serum g/l	Transferrin saturation coefficient with iron, %	Ferritin serum ng/ml.
Elderly SGA (n = 25)	102.1 + 1.69	8.89+0.55	4.47+0.12	8.15±0.66	11.5±0.98
Young SGA (n = 50)	94.2+1.81	10.7+0.69 R < 0.05	4.96+0.11 p < 0.01	10.3+0.71 r < 0.05	14.6+1.01 r < 0.05
Donors (ages 25 to 35 years) (n = 50)	135.6+1.5	29.1+1.85	3.17+0.06	37.9+2.1	54.8+2.09
Elderly (conditionally healthy) without anemia (n = 26)	123.2+0.7 p < 0.001	5.2+0.81 p < 0.001	2.85+0.04 p < 0.001	21.4+1.07 p < 0.001	43.2+2.69 p < 0.001

If the question of the level of free transferrin content in blood serum during aging has debatable aspects, then age-related changes in the saturation of transferrin with iron in this category of people with iron deficiency

anemia are definitely. According to our data, the saturation of transferrin with iron in people of the older age group with iron deficiency anemia is clearly reduced, amounting to 8.15 + 0.66%. A comparative analysis of these indicators in younger people and older people shows that the saturation of transferrin with iron at the same degree of iron deficiency anemia is lower in older people than in young people. This is largely due to the smaller plasma iron pool in the elderly (1,2,3).

The level of serum ferritin in elderly people with iron deficiency anemia was reduced (on average to 11.5+0.98 ng/ml). A comparative analysis of serum ferritin levels in elderly and young people with iron deficiency anemia allows us to note that in elderly people with iron deficiency anemia, the ferritin level is significantly lower than in this category of young people (11.5+0.98 ng/ml and 14.6+1 .01 ng/ml, respectively).

Thus, a comprehensive study of the state of iron metabolism in elderly people showed that their iron reserves in the body are more depleted than in young people with the same severity of iron deficiency anemia.

Conclusion. A study of ferrokinetic parameters in apparently healthy elderly individuals showed that these parameters were significantly lower in them than in healthy young people; the latter is apparently associated with a decrease in transferrin formation in the liver with age and impaired iron absorption in the intestine. Quantitative analysis of transferrin and ferritin in blood serum made it possible to adequately assess the reserve fund of iron in the body in elderly people with iron deficiency anemia, which turned out to be significantly lower than in young people with iron deficiency anemia. Based on the conducted research, a diagnostic test program for iron deficiency anemia in the elderly has been proposed, with the help of which the effectiveness of ferrotherapy can be ensured and monitored.

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