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INFLUENCE OF IODINE-DEFICIENCY ON CLINICAL METABOLIC DISORDERS FORMATION IN YOUNGSTERS

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Iodine deficiency as a pathological state is widely common in all population groups of Russia. The value of iodine for a human being is determined by the fact that this trace substance is an obligate structural constituent of thyroid hormones – thyroxin (T4) and triiodothyronine (T3). The iodine deficiency can lead to thyroid hormones production change, especially in the period of an increased demand for this microelement. The teenage is referred to this period.

The development mechanisms of the diseases conditioned by iodine deficiency are complex, many processes taking place in vivo are latent and, as a consequence, poorly known. A methodological approach of this research the investigation of correlation dependencies in the human body in iodine deficiency conditions in healthy young persons has become, that allows reveling the tendency of iodine deficiency pathology development in early stages.

226 youngsters aged 17-21 took part in the investigation, the iodine deficiency being diagnosed in 28% of them on the data of ioduria. Clinical anamnestic data, blood serum lipidic spectrum, hormonal and microelemental status, lipid peroxidation processes', cardiovascular fitness factors were used in the work. The findings were treated by variance analysis and multivariate statistics using the «STATISTICA 6.0» software package. For system and intersystem dependencies structure evaluation the pair and partial correlations of Pearson, which lined up into correlation pleiads with the help of P.V. Terentyev's grouping method, were used. As a rule, inside a pleiad (intrasystem) the relations are more determined (the correlation coefficient $r>0,6$ at $p<0,05$), the interpleiad (intersystem) relations are weaker ($r<0,6$). Based on the weak correlation of interpleiad relations the coefficient $r<0,6$, which formed the structural consistency of subgraphs taken for pleiads, was accepted as a threshold level.

As at the heart of the investigation the analysis of a body reaction at the iodine deficiency "disturbing" effect lied, the structural model was being built with respect to the "iodine content in urine" factor. The carried out analysis has let to revel the intersystem relations of the first, second and third orders. For the *first order* the direct action of iodine deficiency on the body's systems was taken. The *second order* of action testified to the mediation of the influence and the *third order* implied "distant" indirect intersystem dependencies.

As the investigation testified, a low iodine content in urine in youngsters influences (*the first order*) the cardiovascular system state and glutathione-peroxydase closely *(r=0,8)* associated with catalase (the system of lipid peroxidation). In this case the intersystem action of the *first order* is increased ($r=0,5; 0,4$), that testifies to the disturbing action of iodine deficiency. The intersystem dependencies of the *second order* are associated through LPO-AOD system (glutathione-peroxidase, catalase) with the lipid transport system and hormonal status. These relations are also strong enough ($r=0,5; 0,4; 0,6$), that testifies to tension retaining between the systems even in the mediated dependence. The indirect (*the third order*) intersystem relations, which enhance the iodine deficiency in youngsters on account of risk factors influence (smoking, heredity, metabolic processes disturbance) are also considerable in magnitude ($r=0,4$-$0,7$).

The intersystem (interpleiad) relations with the lack of iodine deficiency have demonstrated balanced mutual relations ($r=0,2$-$0,3$), creating system apartness (CVS, LPO-AOD, blood serum lipids, hormonal status), in normal state the iodine content in urine (*the first order*) affecting blood serum lipids and only indirectly influences the LPO-AOD and cardiovascular system.

Thus, at iodine deficiency in youngsters all the systems of the body interact strongly ($r=0,3$-$0,6$), at the lack of iodine deficiency the relations between the systems are weakened ($r=0,2$-$0,3$). At iodine deficiency in youngsters the primary target is the cardiovascular system, which disorganizes all the systems of the body through the LPO-AOD factors and hormonal status. Risk factors (cardiovascular system and metabolism diseases heredity, smoking) enhance this system disorganization. At the lack of iodine deficiency the thyroid hormones absorb iodine and then functionally affect the body through the lipid transport system.

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