THE PHYSIOLOGICAL ROLE OF VITAMIN D AND ITS SIGNIFICANCE FOR CLINICAL PRACTICE

Burkhanova D.S.
Muradova U.R.
Djalilova D.M.
Assistant of the Department of Pharmacology

Annotation: The effect of vitamin D on the body causes and diseases of vitamin D deficiency at an early age and in pregnant women.

Keys words: Physiological evaluation of vitamin D and vitamin D3 in the clinical diagnosis of vitamin D deficiency.

Аннотация: Влияние витамина Д на организм причины и заболевания дефицита витамина Д при раннем возрасте и беременным женщин.

Ключевые слова:Физиологическая роль витамина Д и его значение для клинической практики **.**

Anotatsiya:D vitaminining organizmga ta’siri yosh bolalar va xomilador ayollarda D vitaminining etishmovchiligi sabablari va kasalliklari.

Kalit suz:D vitamini va D3 vitaminini fiziologik axamiyati D vitamin etishmovchiligi klinikasi profilaktikasi.

Vitamin D is a term combining a group of compounds with a similar chemical structure.Several forms of vitamin D are found in products of plant and animal origin, and vitamin D is obtained synthetically. The most important vitamins are vitamins D3 and D2, which are often combined under the common name calciferols.

Vitamin D belongs to the group of fat-soluble vitamins, but unlike other vitamins, vitamin D:

1) not biologically active;

2) is not a cofactor of enzymes;

3) they can be synthesized independently in the body from acetate and cholesterol, for example, steroid hormones;

4) in the process of metabolism, it becomes a hormone-active form in the body and has a biological effect from the place of formation;

5) has a variety of biological effects due to interaction with specific receptors; in this regard, it is called "D-hormone".Vitamin D2 (ergocalciferol) enters the body with a small amount of food and increases the need by 20-30%; absorption occurs in the duodenum and stomach in the presence of bile acids.Vitamin D interacts

with tauronic acid to form chylomicrons of cholecalciferol omolate, which are transported through the intestinal lymphatic system.Vitamin D3 (cholecalciferol; D3) is formed in the range of 270-300 nm from 7-dehydrocoliferol in the malpighian layer of the skin during the photolysis reaction under the action of ultraviolet light.Vitamin D is stored in reticulocytes, which creates optimal conditions for the conversion of the vitamin itself into calcidiol due to the release of enzyme activity, and then maintains the necessary level of active forms in the body by transporting it to hepatocytes. In hepatocytes, vitamin D is converted into its active metabolite calcidiol D, 4-hydroxyvitamin D in the presence of the microsomal enzyme 25-hydroxylase and cytochrome isoenzymes. With the accumulation of a significant amount of vitamin D in hepatocytes, the rate of formation of its active forms decreases, and the hydroxylation reaction leads to an increase in the level of D in the blood serum, which reflects the level of vitamin D formation in the skin and its consumption. The lifetime of calcidiol in the blood is 20-30 days.D3 is transported to the kidneys by transport proteins, where, under the action of enzymes 1-hydroxylase and 24-hydroxylase, it turns into a hormonally active compound – calcitriol (1,25-dihydroxycholecalciferol; D-hormone; 1,25-dihydroxyvitamin D) and an alternative metabolite secacalcifediol (24,25-dihydroxycholecalciferol). Vitamin D synthesis can also occur in the cells of many organs and tissues due to the cytochrome P-25 isoenzyme and mitochondrial enzyme D3 and its transformation. The target of active vitamin D3 metabolites are vitamin D3 receptors located in more than 40 tissues and organs of the body.The classic effect of vitamin D is to maintain the homeostasis of calcium and phosphorus in the body: calcitriol enhances intestinal absorption of calcium in the small intestine, stimulates the reabsorption of calcium and phosphorus in the kidneys, leading to an increase in their concentration in the blood to the level necessary for adequate mineralization of osteoids.Thus, the biological and clinical effects of vitamin D on the body are not limited to the appearance of bones. Vitamin D is one of the key factors in maintaining genome stability.The main cause of hypovitaminosis D is the lack of prevention with cholecalciferol preparations: regardless of the type of diet, it is impossible to fight hypovitaminosis D if children of the first year of life are insufficiently provided with vitamin D without oral administration of cholecalciferol. The need for vitamin D increases without proper hardening of the developing organism and timely use of sunlight, which leads to a progressive increase in the frequency of hypovitaminosis D in children of the second and third years of life and increased susceptibility to infectious diseases. one of the key factors in maintaining the stability of the genome with a neurotrophic effect is manna.Given that vitamin D has only a calcemic effect and is aimed only at children of the first 2 years of life, modern prevention strategies require a change in the principle of prescribing cholecalciferol under the slogan "from early prevention of rickets to effective prevention of hypovitaminosis D". "; this means not stopping prescribing preventive and daily doses of vitamin D preparations to achieve the target level, i.e. maintaining at least 30 ng/ml in the blood and "non-calcemic" effects.For the prevention and treatment of rickets, the dose of vitamin D is 400 IU / day, after 12

months - 600 IU / day to ensure a young child with proper nutrition and adequate intake of vitamin D for the prevention of rickets and osteomalacia in children in the first year of life, modern approaches to the correction of vitamin D deficiency in children and adolescents should be recommended, such as as serum 30(OH)D, norms of preventive intake of vitamin D, etc.Thus, the epidemiology of vitamin D deficiency / deficiency, its impact on health in different age groups, the need to revise the existing norms of vitamin D intake and substantiate the need for prolonged vitamin D intake in children with calcium and non-calcium deficiency. it is related to the realization of the mystery and requires further study.Vitamin D deficiency is one of the most serious health problems. Due to the discovery of genomic and non-genomic mechanisms of biological effects of vitamin D, "calcemic" and "non-calcemic" effects, the role of vitamin D in the formation of health is currently being actively discussed and revised.

Objective: to determine the health status of children with vitamin D deficiency at different ages and to evaluate the effectiveness of vitamin D prevention in young children.

1. Anamnesis analysis, assessment of physical development and health of young children.

2. To study the presence of vitamin D, to identify low-risk factors and its relationship with the health of children in the first three years of life.

3. To study the indicators of phosphorus-calcium metabolism in children of the first three years of life with different levels of vitamin D.

4. Assessment of bone strength in young children by ultrasound densitometry, depending on the presence of vitamin D.

5.To evaluate the effectiveness of vitamin D prophylaxis in correcting its deficiency /deficiency in young children.

Material and method: A study was conducted in 105 patients.Of these, 10 are pregnant women, 15 mothers, 30 young children and 50 school-age children:Measures to explain the risk of vitamin D deficiency in young children and the need for preventive vitamin D intake before and during pregnancy and for the prevention of acute and chronic infectious and inflammatory diseases in pregnant women.

Result: Vitamin D intake for 30 children for prophylactic administration in young children is 1.9 ng /ml per 33.9 schoolchildren, the best indicators of semi-safety were found in children of the first year of life for young children; The highest frequency of vitamin D deficiency occurs in children aged two (46.7%) and three (88.5%) years. The absolute risk of vitamin D deficiency increases by 49.3% by the age of three. AP = 49.3% CI 95% of mothers with preeclampsia during pregnancy (or = 4.2 CI 95% [1.9-9.1]); vitamin D deficiency prevention of rickets (or = 3.5 CI 95 [1.6-7.3]); feeding period before the introduction of complementary

foods (or = 5.2; CI 95% [1.8-14,4]). Vitamin D deficiency increases the risk of frequent respiratory diseases in young children by 10 times . Vitamin D has been shown to have no effect on physical development or bone strength. There is no correlation between vitamin D levels and the "traditional" symptoms for rickets — neck width and delayed tooth extraction. Vitamin D deficiency should be considered not only as a nutritional problem, but also as an endocrinological problem. Evidence has been obtained that low vitamin D levels increase the likelihood of developing various diseases of the skeleton, that these are non-calcemic manifestations of vitamin D deficiency and that taking vitamin D preparations can improve the health of the population Vitamin D in the skin is involved in the differentiation of keratocytes, growth and regeneration of hair, and its deficiency increases the risk of alopecia. Low vitamin D levels can also lead to decreased reproductive function, which can lead to infertility. Renal pathology also leads to the development of vitamin D deficiency; however, vitamin D deficiency contributes to the exacerbation of kidney disease. Vitamin D helps to reduce proteinuria in stage 3-4 of chronic kidney disease. Vitamin D deficiency is associated with increased excretion of stone-forming substances (calcium, uric acid, oxalates, cystine) and increased diuresis; decreased bone strength in patients with urolithiasis. A decrease in vitamin D levels leads to type 2 diabetes and its complications. Taking vitamin D supplements reduces the risk of developing type 1 diabetes. Vitamin D receptors bind calcitriol, increasing the expression of the gene responsible for "suppressing aging" and reducing wrinkles on the skin. The "slow" effect of vitamin D on muscle tissue affects the metabolism of calcium phosphate, prevents atherosclerosis, forms the structure of muscle cells and differentiates myelocytes. Vitamin D also plays an important role in the level of intracellular calcium and in the movement of muscle fiber strands. Vitamin D has neuroprotective and neurotrophic effects, and also affects the recovery of the central nervous system after injuries. Vitamin D deficiency affects mental function and is associated with cerebrovascular pathology (stroke, heart attack and ischemic stroke), hyperactivity, attention deficit disorder; increases the frequency of cognitive impairment.

Used literature:

1.Lover R. Tractus de corde 1669in Gunther R.editor .EarlyScience in Oxford.Sawsons. Oxford UK 1932

2.Krehl L.Kentniss der falling und entlering des herzens.Abh.Math.Phys.

3.Jabbarova Z.Burxanova D.S.Clinic and comparative diagnosis methods of the adinamic companent in depressive disorders.Journal of biomedicine and practice .Volum 6,ISSUE1.265-269.