ASSESSMENT OF VITAMIN D DEFICIENCY IN EARLY CHILDREN IN ANDIJAN PROVINCE

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Annotation: *In the spring-autumn season of 2021-2022, children of both sexes under the age of three living in Andijan region (n=120) were examined. After entering the study, blood was drawn to determine the concentration of 25-OH vitamin D. Vitamin D deficiency (25-OH vitamin D concentration in blood plasma below 30 ng/ml) was found in 56% of children. The high prevalence of vitamin D deficiency among young children living in the region has been found to require the introduction of prevention programs.*

Key words: *vitamin D, vitamin D deficiency, young children*

ОЦЕНКА НЕДОСТАТКА ВИТАМИНА D У ДЕТЕЙ РАННЕГО ВОЗРАСТА В АНДИЖАНСКОЙ ОБЛАСТИ

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Аннотация: *В весенне-осеннем сезоне 2021-2022 гг. были обследованы дети обоего пола в возрасте до трех лет, проживающие в Андижанской области (n=120). После включения в исследование была взята кровь для определения концентрации 25-ОН витамина D. Дефицит витамина D (концентрация 25-ОН витамина D в плазме крови ниже 30 нг/мл) выявлен у 56% детей. Установлено, что высокая распространенность дефицита витамина D среди детей раннего возраста, проживающих в регионе, требует внедрения профилактических программ.*

Ключевые слова: *витамин D, дефицит витамина D, дети раннего возраста.*

АНДИЖОН ВИЛОЯТИДА ЭРТА БОЛАЛАРДА ВИТАМИНИ Д ЕТИШМАСЛИГИНИ БАХОЛАШ

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Изоҳ: *2021-2022 йиллар баҳор-куз мавсумида Андижон вилоятида яшовчи (н=120) уч ёшгача бўлган ҳар икки жинсдаги болалар кўрикдан ўтказилди.*

Тадқиқотга киритилгандан сўнг, 25-ОҲ витамини Д концентрациясини аниқлаш учун қон олинган. Д витамини етишмовчилиги (қон плазмасидаги 25-ОҲ витамини Д концентрацияси 30 нг / мл дан паст) болаларнинг 56 фоизида топилган. Минтақада яшовчи ёш болаларда Д витамини танқислигининг турли даражадаги юқори тарқалиши профилактика дастурларини жорий этишни талаб қилиши аниқланган.

Калит сўзлар: *Д витамини, Д витамини етишмовчилиги, ёш болалар*

Currently, interest in vitamin D has increased in the scientific literature. Over the past 50 years, more than 60 thousand articles on this topic have been published. The main focus of modern scientific research is the non-skeletal effects of vitamin D [1,3]. So, for example, it has been established that with a deficiency of vitamin D, the risk of developing cancer (small, colon, pancreatic and prostate, mammary glands), diabetes mellitus, arterial hypertension, heart failure, peripheral arterial diseases, myocardial infarction, autoimmune and inflammatory diseases increases. diseases, dysfunctions of the immune system [2,4,8,11]. Some studies have demonstrated a link between the amount of vitamin D consumed and decreased mortality rates. It is recognized that in order to ensure all non-skeletal effects of vitamin D on the human body, it is necessary to maintain the concentration of its main metabolite - 25(OH)D - above 30 ng/ml [4,6,10]..

The selection of children was carried out according to the order of admission to medical institutions based on the following inclusion criteria:

- age from 1 month. up to 3 years;
- children without organic pathology and genetic syndromes;
- permanent residents of the regions participating in the project.

The study did not include children with an established diagnosis of rickets, impaired hepatic and renal function (jaundice, diarrhea), or mental development disorders.

Methods for recording outcomes. To assess children's vitamin D status, 25-hydroxyvitamin D (25-OH vitamin D) and other hydroxylated vitamin D metabolites were quantified in serum and plasma with EDTA and lithium heparin by chemiluminescence immunoassay (CLIA) using a LIAISON analyzer. The presence of vitamin D deficiency was established at a plasma 25(OH)D concentration of 20 ng/ml, deficiency - at a 25(OH)D concentration of 21–29 ng/ml. Values above 30 ng/ml were taken as the norm for 25(OH)D in blood serum.

Duration of the study Duration of laboratory examination of children: November 2021–October 2022

Statistical analysis. When determining the required sample size, we took into account the number of children aged 1 month to 3 years living in Uzbekistan (4.7 million as of January 20, 2021), and the expected prevalence of vitamin D deficiency

and insufficiency (which, according to our estimates could reach 40–50%). The calculation was made using an online calculator.

Main results of the study. In the analyzed sample, only every third child had a normal level of 25(OH)D (30 ng/ml). In 300 (24.4%) children, the level of 25(OH)D in the blood plasma indicated vitamin D deficiency, in 513 (41.7%) - its deficiency. The prevalence of vitamin D insufficiency and deficiency did not depend on the geographical location and level of insolation of the region, or the place of permanent residence of children.

Discussion. Despite the popularity in Uzbekistan of measures to prevent the formation of low vitamin D supply and rickets in children under one year of age, low vitamin D status was present in 61% of children aged 1–6 months. and in 40% of children aged 6–12 months.

These data may indicate the insufficient adequacy of preventive measures carried out in modern conditions. A similar Canadian study demonstrated the highest incidence of vitamin D deficiency in children 2 years of age [4,7,13]. Consequently, this fact allows us to assume that parents pay more attention to the prevention of rickets among infants, and upon reaching the age of 1 year, recommendations are implemented irregularly.

In addition to the above, the AAP recommends starting the prevention of hypovitaminosis D from the first days, and not from the second month of life, regardless of the type of feeding of the infant [6,12]. This, however, may not be enough. Zeghoud et al. showed that only 1000, but not 500 IU/day of ergocalciferol for a month can normalize PTH levels in children with subclinical vitamin D deficiency [8,10,13].

A study of seasonal variations in serum 25 (OH)D showed a high prevalence of low vitamin D status across all seasons.

Even in the summer months of the year, normal vitamin D concentrations were determined only in 33–44% of the children examined.

Limitations of the study. The study involved children admitted to hospital treatment; therefore, a group of children who did not require treatment for any disease was not included. Thus, it is impossible to assess the impact of an acute illness or exacerbation of a chronic disease on patients' vitamin D status.

Conclusion. Due to the widespread prevalence of low vitamin D status in young children in modern conditions, drug supplementation of vitamin D is necessary. Taking into account the results of our study, it is necessary to revise outdated dosages and create National recommendations for the prevention of vitamin D deficiency in children in Uzbekistan, based on scientific research . It is necessary to recommend that young children living in different regions of Uzbekistan take preventive vitamin D in the summer, as well as increase the dosage of vitamin D prescribed in the autumn-winter-spring period, taking into account regional characteristics. The inadequacy of preventive measures carried out in modern conditions to prevent vitamin D deficiency in young children dictates the need to revise current guidelines taking into account

new approaches to the prevention and treatment of vitamin D deficiency, making appropriate changes and introducing them into clinical practice.

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