

O. V. Tyazhka, Z. V. Selska

Characteristic of the clinical course of allergic diseases in children with vitamin D administrating in complex therapy

Bohomolets' National Medical University, Kyiv City, Ukraine

Purpose. Assess the clinical course of allergic diseases in children in the use of vitamin D in them.

Materials and methods. We observed 53 patients were children with allergic diseases — asthma, atopic dermatitis and allergic rhinitis. All children surveyed was determined 25(OH)D in serum. Among all the patients were children who received one course of vitamin D and patients who are vitamin D was administered in two treatments, then these patients was determined 25(OH)D in serum and the control group was children with allergic diseases which vitamin D not used. Definition hidroksykaltsyferolu performed using електрохемілюмініцентного method. Assessing vitamin D was carried out according to the classification of MF Holick et al. (2011.)

Results. All 53 children (100%), which was determined by the level of vitamin D in blood serum were determined deficiency of 25(OH)D, the average was 22.54 nmol/l. Treatment of vitamin D performed in 31 children, patients received 2000 IU of water-soluble vitamin D3 daily for 2 — oh months. After ingestion of vitamin D average rate of the vitamin in the serum was 36.54 nmol/l. Despite the insufficient level of 25(OH)D in serum, all children of vitamin D in the treatment of allergic diseases has been suspended in connection with the spring-summer period. The 19 children who were reported after the summer deficiency of vitamin D, cholecalciferol was appointed in high doses. Children receiving vitamin D dose of 4000 IU during remission and exacerbation of the disease and start to completion was 5000 IU dose, the treatment lasted for 2 months. After receiving vitamin D average 25 (OH)D levels was 44.08 nmol/l. Although children with allergies who used vitamin E, failed to reach normal values 25(OH)D in serum was noted improvement in their general condition and for the use of vitamin D in children allergic disease course was easier than the purpose of this vitamin in the treatment . In children (22 children) that vitamin D is not used , the improvement of general condition were observed, and the course of the underlying disease remained unchanged.

Conclusions. Thus, the use of vitamin D in the treatment of asthma, atopic dermatitis and allergic rhinitis in children makes it easier course of illness they have and improve their general condition. Presumably, vitamin D may one means of prevention and treatment of allergic diseases in children and is administered in the treatment for these patients.

Keywords. children, allergic disease , vitamin D , clinical treatment.

According to the world statistic information at the time being, allergic diseases extend much among population in different countries of the world. For patients suffering from these diseases they are one of the led causes of living standards decline and capacitation that have a social and economic value in region they are living. In children allergy is presented more often than in adults, the every third child is diagnosed with allergy. Long-term practice testifies that if children at an early age with presentation of allergy and allergologic genetic anamnesis record are not to take necessary preventive and medical measures directed on prevention of further development of allergic processes in human body than it will stimulate such diseases as bronchial asthma, atopic eczema and allergic rhinitis.

Nowadays the main preventive measures of allergic diseases are based on hypoallergic diet and allergen elimination. The medicamental prevention consists in medication administrating in remission and directed on the prevention of the disease exacerbation development. By presence of respiratory allergosis being as background therapy it is to administrate the inhaled glucocorticosteroids, leukotriene receptor antagonists and combined medication. By presence of atopic eczema it is to administrate sorbents and probiotics which prevent the absorbing of the allergenic substances in intestinal canal. During the previous years in the quality of prophylactic remedy of allergic

diseases it is widely used by doctors the specific immunoprophylaxis. However in spite of wide range of the preventive measures how to prevent the allergic process development in human body finding optimal ways of the problem solving continues up to date.

It is known nowadays the part of vitamin D in human body is essentially completed. According to the numeral researches data it is established that vitamin D operates not only as a mineral turnover regulator but also has a lot of extraskeletal effects, this is connected with that vitamin D is found in almost all cells in human body. Also this vitamin is synthesized by almost all human body cells. It is also investigated that vitamin D-shortage in blood serum may stimulate the progression of different diseases. In recent years there are studied the mechanisms how vitamin D-shortage effects on allergic disease development, according to already received results of the researches done, this effect is produced by vitamin-D that takes place in immune processes.

Goal. Evaluate the characteristics of clinical course in children with bronchial asthma, atopic eczema and allergic rhinitis by way of administrating of vitamin D.

Methods and materials. Under our supervision there were 53 children with allergic diseases: 23 of them diagnosed with bronchial asthma, 5 children with atopic eczema, 2 children with allergic rhinitis, 13 children simultaneously diagnosed with bronchial asthma and allergic rhinitis,

10 children with bronchial asthma and atopic eczema. All the examined children were from 3 to 16. At the period of examination among patients belonged to the main group 17 of them were in exacerbation of disease and 36 ones in remission. In all the examined children it was detected vitamin D level in blood serum. Among children were the patients put the one-course treatment of vitamin D in and to the others vitamin D was put in two-courses of treatment on, after that these patients were detected the 25-hydroxyvitamin-D in blood serum and it was a control group of children diagnosed with allergic diseases which were not administrated of vitamin D at all. The diseases by way of which may be interrupted the synthesis of intermediate (transition) form of vitamin D it were not revealed in the examined children at all. In 10 children was hard extent of the allergic disease, in 34 was average extent and 11 children have mild case.

Detecting the 25-hydroxyvitamin D was carried out with the help of ECL method on Eleksys 2010 Analyzer (Roche Diagnostics, Germany) test of Cobas system in Chebotaryev State Institute of Gerontology AMS of Ukraine.

Assessing the vitamin D-supporting was carried out according to M.F. Holick [4] classification, according to which the vitamin D-deficiency was fixed by the level of 25-hydroxyvitamin D in blood serum lower than 50 nmol/l, vitamin D-shortage was diagnosed by a norm of 25-hydroxyvitamin D between 50 and 75 nmol/l, concentration of 25-hydroxyvitamin D from 75 to 150 nmol/l was considered to be a norm.

Results of the investigation and their consideration.

In all of the 53 children (they are 100%) in which was detected the vitamin D level in blood serum it was established 25-hydroxyvitamin D-deficiency, the indexes of vitamin D ranged from 8.69 nmol/l to 37.68 nmol/l, the average index was 22.54 nmol/l. When contrasting the severity of allergic disease progression and vitamin D-level indexes in blood serum in the examined children it was detected the interrelation between these facts: the more serious was a progression of disease the lower vitamin D level was detected in blood serum. It was also determined a dependence of vitamin D level on the age of disease: the more long-lasting was a disease the lower was vitamin D level in blood serum, in general.

Treatment with vitamin D was carried out in 31 children: in 13 of them have bronchial asthma, in 6 was atopic eczema, 2 has allergic rhinitis, in 5 were simultaneously bronchial asthma and allergic rhinitis, and the rest 5 children have bronchial asthma and atopic eczema. At the time of vitamin D-administrating 13 of the children were in remission, 18 were in disease exacerbation period. Patients got 2000 international units of water-soluble vitamin D3 every day during 2 months. Level of vitamin D was fixed before and after the course of treatment by its' medication. In diseased children that were administrated of vitamin D average index of vitamin D level in blood serum before treatment was 21.51 nmol/l. To children that were in remission period it were put vitamin D-monotherapy on or in complex with the background therapy with topical glucocorticosteroids. If children were in exacerbation of disease the given complex therapy included the medication of vitamin D. After 2-months course of vitamin D administration the average index of this vitamin in blood serum was 36.54 nmol/l, in 27 children the level of vitamin D was

in the range of deficiency index, in 4 children it was established vitamin D-shortage, it was not come up to the normal level of vitamin D in blood serum in any child. The total increase of vitamin D was 15 nmol/l. It should be noted that vitamin D increase was lower in children with exacerbation of disease during the initial examination or they had episodes of disease exacerbation during the administrating of vitamin D medication. In spite of the insufficient 25-hydroxyvitamin D level in blood serum, the administration of vitamin D in complex therapy in all the children was stopped because of the spring-summer period beginning so we feared of the hypervitaminosis of vitamin D in patients. After this period finishing 21 children with allergic diseases were examined, it was known from anamnesis that during spring-summer period it was not fixed the exacerbation of disease period in any child however in the day of examination 10 children were in exacerbation period and 11 were in remission. The research shows that vitamin D level ranged from 15.70 nmol/l to 55.84 nmol/l, the average index was 37.51 nmol/l, so hydrocalciferol consistence in blood serum did not change actually during the spring-summer period. In 19 children in which after summer period was fixed vitamin D-deficiency cholecalciferol was administrated in a large dose: children got vitamin D in dose of 4000 International Units during remission period, from the beginning of the exacerbation till the end dose was 5000 International Units and treatment course continued 2 months. After the treatment course vitamin D level in blood serum of children ranged from 29.02 nmol/l to 66.17 nmol/l, the average index was 44.08 nmol/l, in 6 children was fixed the 25-hydroxyvitamin D-deficiency, in the rest of the 13 children it was fixed the shortage of hydrocalciferol, but the indexes were higher than previous ones and were near to shortage index. The ionized calcium level in blood serum in children that were administrated of vitamin D in a large dose ranged in general in lower limit of the norm and in 4 children it was below normal: from 1.10 nmol/l to 1/22 nmol/l by a norm of 1/13 nmol/l to 1/32 nmol/l, so these doses during 2 months were good to administrate to children with allergic diseases. When comparing the results of 25-hydroxyvitamin D and ionized calcium the correlative relationship was not found.

However in children diagnosed with bronchial asthma, allergic rhinitis and atopic eczema which were administrated of vitamin D it wasn't come up to the normal indexes of 25-hydroxyvitamin D in blood serum, there was observed a general well-being mend of them. That is, during the led therapy time it was observed the physical and mental activity increase, rapid fatigability and asthenia effects decrease, cephalalgia and faintness episodes decrease, sleep and appetite improvement; by way of objective examination the skin was not pale but pale-pink, skin dryness and skin cover became more non-crushing, there were also observed acute respiratory disease episodes decrease which are as it known the start procedure of the allergic disease exacerbation development. Having interviewed patients at the same time investigated that during the administrating of vitamin D medication the allergic disease have proceeded in mild case than before administration of this vitamin in the complex therapy that showed as a disease exacerbation episodes amount decrease and the disease exacerbation episodes duration decrease itself. Some of patients with bronchial asthma and allergic rhinitis during the led therapy of vitamin D went to lower doses of inhaled glucocorticosteroids

that are used in disease remission being as background therapy. To children with atopic eczema vitamin D administration let less use of topical glucocorticosteroids in treatment. At the same time the children (they are 100%) which were not administrated of vitamin D the general well-being mend was not observed and the clinical course was changeless.

Summaries. Looking at the given data we may suppose that vitamin D plays a role in allergic disease pathogenesis because its' administrating in the complex therapy of bronchial asthma, atopic eczema and allergic rhinitis stimulates the disease to be progressed in a milder case and general well-being mend in children. Evidently, vitamin D is

supposed to be one of the preventive and curative measures of allergic diseases in children and have to be administrated in the complex therapy for a given category of diseased patients.

Further researches prospects. In future it is necessary to continue the investigations, that would be directed on learning of the effect technique of vitamin D on allergic disease pathogenesis that would prove the reasonability of its' administration in complex therapy of bronchial asthma, atopic eczema and allergic rhinitis in children to make the main clinical course easier and general well-being mend in patients.

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НОВОСТИ

У годовалых детей развито чувство справедливости

К такому выводу пришли исследователи из Вашингтонского университета (США): профессор психологии Джессика Соммервиль и ее коллеги из лаборатории сознания в раннем детстве (Early Childhood Cognition Lab) изучали, как дети развивают социальное поведение, в том числе такие черты, как доброта и щедрость.

Еще пару лет назад ученые заметили, что младенцы без явного повода предпочитают одних сотрудников лаборатории другим, выбирая их в качестве партнеров для игр и предлагая им свои игрушки. Почему? Чтобы ответить на этот вопрос, были проведены несколько экспериментов. Первый показал, что дети выбирают людей похожего этнического типа (этот феномен известен как внутригрупповая привязанность) или предпо-

читают тех, кто имеет одинаковые с ними характеристики.

Результаты второго эксперимента опубликованы в журнале *Frontiers at psychology*. Группе 15-месячных младенцев предложили поиграть, причем одни сотрудники распределяли игрушки честно между всеми малышами — участниками эксперимента, а другие были «несправедливы». Дети предпочитали играть с теми, кто был честен, — особенно если те относились к той же этнической группе. «Удивительно видеть эти социальные черты высокой оценки справедливости в таком раннем возрасте», — говорит Соммервиль. Остается процитировать Аристотеля: «Справедливость является величайшей из добродетелей, более удивительной и блестящей, чем вечерняя или утренняя звезда».

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