

## CAUSES OF RICKETS, TREATMENT METHODS, PREVENTIVE MEASURES

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**Abstract.** *Rickets is a disease associated with vitamin D deficiency and mineral metabolism in the body. Rickets most often affects children under one year of age, and the most common category of patients are premature and formula-fed babies. Rickets is not dangerous for a child's life, but if it is not treated correctly, it can leave a lifelong mark on the child's life - significant deformations (skews) of the skeleton, curvature of the pricus, flat feet and other similar diseases.*

**Keywords:** *Symptoms of rickets, origin, treatment, prevention.*

**Аннотация.** *Рахит – заболевание, связанное с дефицитом витамина D и нарушениями минерального обмена в организме. Наиболее часто рахитом болеют дети до года, а самая распространенная категория больных — недоношенные дети и дети, находящиеся на искусственном вскармливании. Рахит не опасен для жизни ребенка, но при неправильном лечении может оставить пожизненный след в жизни ребенка - значительные деформации (перекосы) скелета, искривление макушки, плоскостопие и другие подобные заболевания.*

**Ключевые слова:** *Симптомы рахита, происхождение, лечение, профилактика.*

## CAUSES AND MECHANISMS OF RICKET DEVELOPMENT

It is known that phosphorus, calcium and vitamin D are necessary for proper absorption of bones in the intestine. These components enter the child's body with food (mother's milk, eggs, fish, vegetables, etc.), and vitamin D is also produced under the skin under the influence of sunlight.

Newborn babies come to life with a reserve of calcium, phosphorus and vitamin D (these substances begin to accumulate actively in the last weeks of the child's life in the mother's womb, of course, if the mother eats properly and regularly and walks in the sun), therefore, bones develop normally in 1-2 months of a child's life. Later, the child's body will need more "building" material as a result of the rapid growth of the child and the depletion of reserves. If this need is not met, calcium and phosphorus begin to wash out of the child's bones. Therefore, the density of bone tissue decreases and deformation occurs easily. As a result, unpleasant manifestations of rickets occur in the skeleton.

In addition to the fact that the disturbance of phosphorus-calcium metabolism has a negative effect on bone tissue, it also affects the nervous system and muscles. Slowdown of psychomotor development, muscle hypotonia and other pathological symptoms are observed in patients.

Thus, the main cause of rickets is vitamin D deficiency, calcium and phosphorus deficiency also play a certain role in the development of the disease. Their deficiency occurs in the following cases:

- If the child does not receive the necessary substances with food. For example, if the child is given artificial mixtures or cow's milk instead of mother's milk, late introduction of complementary foods (after 6-8 months), if porridges, especially semolina, make up most of the child's diet if he does

- If the child's skin has not been exposed to sunlight for a long time.

• If the activity of absorption and digestion in the intestine is disturbed (in such cases, giving the child even the most nutritious food does not reduce the risk of rickets).

#### RISK FACTORS FOR RICKETS

In addition to the obvious causes of rickets, there are several contributing risk factors:

• Premature birth - firstly, premature babies do not have time to "reserve" their nutrients, and secondly, they often have problems with the intestines and disorders related to the digestive system in general. ladi

• The weight of the newborn (the heavier the baby, the more food and vitamins it needs).  
• Multiple pregnancy. Babies born from such pregnancies, as a rule, feel calcium and phosphorus deficiency. In addition, these babies can often be born prematurely.

• Congenital diseases of the digestive system.

• Darker skin color (darker children produce less vitamin D when exposed to sunlight).

#### SYMPTOMS AND SYMPTOMS OF RICKETS

Early signs of rickets (parents should pay attention to the presence of these signs):

- Excessive sweating.
- Poor sleep, unreasonable anxiety, crying.
- Hair loss and baldness in the nape of the neck.
- Constipation (muscle hypotonia develops in rickets, as well as intestinal muscles, as a result of which intestinal peristaltic movements are disturbed and feces move slowly).

These symptoms can appear as early as 3-4 months of a child's life. If the disease is detected at this stage (called the beginning) and treated, it will not cause negative consequences for the health of the child. If this time is missed, the disease will develop (it will go to the exacerbation stage) and the child will develop more serious symptoms of the pathology:

• Deformations of the skull, limbs and body. An indicator feature is a straight neck, a large forehead, O or X-shaped bent legs, etc.

• Weakness of muscles, as a result of which another symptom is "frog belly", that is, hanging of the abdomen, lack of muscle tension.

• Slowness in motor development (the child is not able to hold his head, turn, sit, although his peers are already doing it).

• Late teething.

• Disorders of internal organs (primarily gastrointestinal tract).

Gradually, the child certainly improved (the recovery phase begins approximately 6-7 months after the onset of the disease), but the developed bone deformities do not disappear completely, sometimes remain for life. This is a narrow pelvis, wrong pricus, flat feet, deformation of the chest (compressed from both sides and protruding forward).

#### DIAGNOSIS

An experienced doctor can detect rickets simply by conducting an examination, but to confirm the diagnosis, a urinalysis according to Sulkovcih should be performed. This is a qualitative analysis for calcium in the urine taken from the baby before feeding in the morning. It is necessary to prepare for the analysis (it is necessary to get a urine collector, to put some restrictions on eating, etc.).

In severe cases, when doctors need to determine the level of calcium-phosphorus metabolism and damage to bone tissue, patients undergo more extensive tests:

- Analysis of blood electrolytes (calcium and phosphorus), alkaline phosphatase activity (an indicator of bone tissue damage) and analysis of metabolites of vitamin D;
- Determination of calcium and phosphorus in daily urine;
- Ultrasound examination of wrist bones.
- X-ray (rarely used lately).

#### TREATMENT OF RICKETS

Treatment of rickets in children should be carried out using complex - special and non-special methods (taking into account the cause of the disease).

Non-specific methods include proper nutrition, the correct routine of the child's day, and various general strengthening treatments (massage, gymnastics, herbal and salt baths, etc.).

Special methods - prescribing vitamin D, calcium and phosphorus preparations, exposing the skin to artificial ultraviolet rays.

#### NUTRITION AND DIET

The nutrition of children with rickets should be aimed at providing the body with the necessary substances. The best food for children under one year old is breast milk. If it is not possible to breastfeed the baby, you can use an adapted milk mixture, cow's and goat's milk are not suitable for this.

In addition, timely introduction of additional nutrition is also important, the demand of the child's body for useful substances is increasing, while the amount of useful substances in mother's milk, on the contrary, decreases month by month. Therefore, pediatricians do not recommend exclusively breastfeeding a child after 6 months of age.

The first complementary food for a child with rickets can be introduced from the age of 4 months, and it is even better if it is vegetable porridge. Later, natural sources of vitamin D - vegetable oil, egg yolk, and starting from 7-8 months - fish and meat can be introduced. In addition, a sick child needs fruit purees and juices, as well as cottage cheese and dairy products. But it is advisable to limit porridges, especially semolina porridge.

As for the daily schedule, it is necessary to arrange that the child is outside for at least 2 hours every day. It is not necessary to keep the child under direct sunlight (it is even harmful), the light passing through the green leaves of the trees will be enough.

In addition, you should engage in baby gymnastics, take him to a massage (or do it yourself according to the advice of a specialist). Also, children suffering from rickets are shown baths with salt and conifers (which one should be chosen by the doctor). After such methods, the child eats and sleeps well.

#### DRUG TREATMENT OF RICKETS

The mainstay of treatment is vitamin D intake. The dose of the drug used is indicated only by a pediatrician, because both a small amount (does not help) and a large amount (leads to hypervitaminosis) are considered dangerous.

In addition to vitamin D, the child can be prescribed calcium and phosphorus supplements (it is ineffective to take vitamin D). Premature babies are often recommended complex medicines that contain vitamins other than vitamin D, as well as all the necessary minerals.

#### PREVENTION OF RICKETS IN CHILDREN

Rickets belongs to the class of diseases that are very easy to prevent with the help of many preventive measures. Such measures include:

- Taking vitamin D every day throughout the year except May-September. For premature babies, the doctor may prescribe a large amount of vitamin D.
- Rational nutrition. In the second months of the child's life, only mother's milk, only after 4 months to introduce some supplements.
- Daily walks in the fresh air. In hot, sunny months, it is not necessary to wrap the child too much, leaving open skin areas that can be indirectly (not directly) affected by the sun.

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