American Journal of Bioscience and Clinical Integrity
https://biojournals.us/index.php/AJBCI
ISSN: 2997-7347

Fluorosis, Etiology and Treatment. Epidemiological Situation in Our Region, Measures to Prevent Fluorosis

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Received: 2025, 15, Jan
Accepted: 2025, 21, Feb
Published: 2025, 21, Mar

Annotation: Fluorosis is a chronic pathology of tooth enamel caused by an increased concentration of fluoride in the body. It manifests itself in the formation of spots and defects of various sizes, colors and shapes on the enamel. The disease is epidemic in nature. Dental fluorosis is common in areas with a high fluoride content in drinking water. Workers of some industrial enterprises (aluminum smelters, laser equipment, etc.) are also susceptible to the disease due to an increased concentration of fluoride compounds in the air. Causes of fluorosis Fluoride is an element that enters the body with water, vitamin supplements, food and air. It participates in the formation of tooth and bone tissue, strengthens enamel and prevents the leaching of calcium from the body. However, if a lack of fluoride increases the risk of dental caries, then an excess leads to the development of enamel fluorosis.

Keywords: Types, Symptoms, Diagnosis, Treatment, Prevention.

Introduction: The permissible level of this trace element in water is 1-1.5 mg/l. In areas where the fluoride content per liter is several times higher than the norm, endemic fluorosis reaches fatal proportions. Usually, permanent teeth and their rudiments are susceptible to damage. In rare cases, the disease affects baby teeth, as a rule, it appears immediately after the eruption of permanent teeth.

According to anthropogenesis, fluorosis is divided into endemic and professional. Although the clinical manifestations of both types of the disease are similar, the approach to treatment is different. In the professional form of the disease, not only tooth enamel is affected, but also bone tissue, osteosclerosis and osteoporosis develop. As the disease progresses, disorders of the vascular system and liver are added, and the risk of developing osteosarcoma increases many times. In this case, fluorosis spots on the enamel layer are often absent. Forms of fluorosis: spotty; linear; erosive; chalky spotty; destructive. Spotty and linear fluorosis are considered mild forms of pathology, while erosive and destructive fluorosis are severe forms. A patient can be diagnosed with different forms of the disease at the same time - different clinical manifestations are observed in individual teeth or groups of teeth.

Dental fluorosis is a dental pathology caused by an excess of fluoride. It is a chronic epidemic. It is more common in some areas where there is an excess of fluoride in drinking water. How to detect the disease in time and how to protect yourself from fluorosis - we will tell you in this article.

Research methods and materials: According to generally accepted sanitary standards, the maximum concentration of fluoride compounds in water should not exceed 1.5 mg / l. However, it should be remembered that fluoride also enters the body through breathing and food. An excess of this trace element negatively affects tooth enamel and begins to destroy it. If you do not consult a doctor in time, bone tissue pathologies may develop - osteoporosis or osteosclerosis.

Important! The occurrence of the disease is associated with the individual characteristics of the body. Sometimes fluorosis develops even with low concentrations of fluoride.

Most often, permanent teeth are affected, and rarely, baby teeth in children. This is due to the fact that the mineralization of the baby's first teeth begins and ends during intrauterine development. At this time, the placenta protects the baby's body from excess fluoride. However, if a pregnant woman lives in an area where the amount of fluoride compounds in the water significantly exceeds the norm, the disease can also affect the baby's baby teeth.

Results: Children aged 3 to 4 years are at risk if they drink highly fluoridated water for 3 or more years. This disease is also diagnosed in adults who work in industrial plants with high levels of fluoride in the air.

Striation - characterized by the appearance of small lines or bumps on the surface of the tooth. Most often, this form affects the upper jaw. The lines are poorly defined and are not always visible independently. Over time, they merge into one point, on which you can also distinguish the bumps.

Spotted - this form is characterized by the presence of multiple chalky spots. They are well defined and located over the entire surface of the tooth. Large spots are formed during drainage.

Chalky modified form - characterized by the presence of an affected light brown area that turns into healthy enamel. This lesion is most often observed on the upper and lower incisors.

Chalky spots - characterized by the presence of clearly pigmented spots. Sometimes there may be a variant of the presence of several yellowish dots on the enamel. With this form, rapid thinning of the enamel is observed.

Erosive - in addition to stains on the enamel, erosive defects appear. They contribute to the destruction of not only enamel, but also dentin.

Destructive - the most severe form of tooth crown deformity. It occurs due to thinning of the enamel and destruction of the hard tissues of the tooth. The teeth themselves are very fragile, prone to various injuries (cracking, breaking).

The disease can be mild, moderate or severe. It depends on the number of teeth affected, as well as the depth of the pathological process. In severe cases, the patient has damage to more than 80% of the teeth. In this case, the dentin is affected and the crown is deformed. Fluorosis can also lead

to pathological deformation of the bones of the skeleton.

Symptoms depend on the form and severity of the disease. At the very beginning (at the stage of the spotted or linear form), discolored areas appear on the surface of the teeth. Streaks and lines are also visible. The enamel itself becomes rough, small bumps appear.

Later, small spots lead to the formation of larger pathological areas. Uneven mineralization of tooth enamel occurs. It deteriorates and acquires a dull, matte color. At the same time, smoothness and shine are lost.

X-rays show areas of reduced density, which indicates the process of demineralization, that is, the loss of minerals in the enamel. This is precisely why coloring agents can penetrate the porous structure of the tooth surface, which leads to the appearance of pigmented areas.

dental fluorosis 2.jpgDiagnosis is made during a visit to the dentist. Only a specialist can distinguish the manifestation of fluorosis from chalk spots, which are the initial stage of carious lesions. An important characteristic is that fluorosis spots are multiple in nature and affect permanent teeth almost immediately after eruption. At the spot stage, initial caries is observed on individual teeth.

Treatment is selected individually and depends on how severely the enamel is damaged. In the early stages of the disease, it is recommended to undergo a course of professional whitening after strengthening the enamel with remineralization.

In this case, whitening is carried out using a mild composition based on inorganic acids. The number of procedures is selected by the doctor. Usually at least 10 sessions. It is recommended to take calcium preparations during the whitening period. The result lasts 6-8 months, then a repeated course of professional cleaning and whitening is required.

The remineralization process helps strengthen the enamel structure by saturating it with minerals. Calcium and phosphorus compounds penetrate the dentin, restoring the enamel from the inside. This procedure is carried out in several ways:

If the disease has already spread to the dentin, then simple bleaching will be ineffective. In cases of moderate fluorosis, aesthetic tooth restoration methods are used:

Such methods are recommended not only for aesthetic purposes, but also for therapeutic purposes. They help stop further tooth decay and reduce enamel sensitivity.

Home care is also important - using toothpastes containing fluoride, taking vitamin and mineral complexes, and reducing fluoride intake with water and food.

Dental fluorosis. The main preventive measure against fluorosis is to control the amount of fluoride in drinking water and air. Such measures are especially important for regions where excessive fluoride levels have been detected in the water supply. Such measures are carried out at the state level. On an individual basis, it is recommended to use purchased purified water for drinking or use tap filters for additional purification. It is important to engage in prevention from the moment of conception. A pregnant woman should be especially careful when choosing food products and drinking water. Additional intake of vitamins C, D and calcium gluconate can reduce the risk of fluorosis several times, especially in children.

Discussion: After birth, it is recommended to breastfeed your baby as much as possible. After introducing complementary foods, use juices or dairy products instead of water, if possible. If you live permanently in an endemic area, you should take your children to other areas every year to improve their health. Changing the water source for 3-4 months helps strengthen tooth enamel and stop the progression of the disease.

An important point in the prevention of the disease is nutrition. Limit or completely exclude foods containing fluoride. These are sea fish, nuts, spinach and seaweed. You should eat more fresh vegetables or fruits.

Dental fluorosis is characterized by the appearance of pale spots or numerous streaks on the enamel. As the disease progresses, the defects acquire a yellow, brown color. Most often, defects affect the maxillary teeth, against the background of an excessive concentration of fluoride compounds, the disease affects all teeth. Increased wear of the enamel develops, chips and erosive areas appear on it. Symptomatic manifestations depend on the type of pathology: Styrich fluorosis - small streaks (stripes) appear on the enamel, at first they are faintly visible, then they merge into one large spot, the structure of which consists of individual strokes. Spotted - this form is characterized by the appearance of numerous whitish (chalky) spots that merge with each other. The spots are characterized by a smooth, shiny surface (similar to caries in the point stage). Unlike a carious defect, they do not have clear boundaries, but smoothly merge with healthy areas of the enamel. Chalky spots - pigment spots with clear boundaries are formed, several dots are visible. The enamel layer turns yellow, thins quickly, the dentin is exposed, the tooth becomes very sensitive to mechanical, chemical and thermal irritants. Erosive fluorosis - volumetric defects appear - erosion. In these areas, the tooth enamel is completely absent, the dentin tissue is exposed. Destructive - this is a severe degree, in which not only enamel, but also dentin is absent. The tooth is brittle, prone to decay and breakage, the crown part is deformed, the defects are very noticeable. The destructive type occurs in areas where the level of fluoride compounds in the water is 10 mg / l or higher. Pathology can affect several teeth or an entire row. Diagnostic methods It is not difficult to diagnose dental fluorosis. The doctor relies on the clinical picture characteristic of each degree of damage.

Differential diagnostics includes: Soft enamel opacities are detected by drying the surface to assess the condition of the protective layer in the area of changed pigmentation. Vital staining method - in fluorosis, the damaged areas of the enamel are not susceptible to staining with methylene blue, unlike carious defects. Luminescent examination - mild forms of the disease glow weakly in ultraviolet light, while in moderate and severe forms, partial fluorescence extinction occurs. Microradiography is aimed at determining the depth of damage to the dentinal tissue. It is very important to send drinking water to the laboratory for analysis to determine the percentage of fluoride compounds.

Conclusion: Treatment of dental fluorosis is selected taking into account the type of pathology, symptoms and their severity. Preparation of defective areas with subsequent filling is ineffective, since the risk of further destruction of tooth tissue is high. To strengthen the enamel, calcium and fluoride-containing preparations are prescribed. In the early stages of the disease, a course of teeth whitening is performed, followed by enamel remineralization. Chemical, laser and LED methods are used. Bleaching for fluorosis is carried out using safe products based on inorganic acids. The course of treatment includes 10-15 sessions. A repeated course is recommended after 8-10 months to consolidate the results of therapy. In moderate and severe forms of fluorosis, high-quality bleaching is not possible. The following methods of aesthetic restoration are used: Installation of veneers, lumineers - thin coatings (plates) made of porcelain, ceramics, zirconium are attached to the outer part of the tooth with a special compound. Composite restoration - the doctor consistently, layer by layer, restores the tooth surface. Composite materials of various shades and light transmittance are used. This allows you to choose a natural shade, and the restored units do not stand out from the general row. Prosthetic crowns - artificial metal-ceramic and ceramic crowns are installed on previously prepared fluorotic teeth (depulpation, grinding). An example of tooth restoration with zirconium dioxide crowns: Orthopedic treatment is guaranteed to eliminate cosmetic defects, as well as prevent further destruction of tooth tissue and eliminate tooth sensitivity. Prevention If you consult a dentist in a timely manner and follow the doctor's recommendations, the prognosis is favorable. Even the most severe course of the disease leaves a chance to restore the aesthetics of a smile. The sooner the patient sees a doctor, the easier and more effective the treatment will be. Measures to prevent fluorosis include monitoring the level of fluoride in drinking water. It is recommended to use additional filters to purify tap water and to purchase bottled water.

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