

ROLE OF ELECTRONEUROSTIMULATION IN PREVENTIVE THERAPY OF PATIENTS OF SCHOOL AGE WITH RISK OF MYOPIA DEVELOPMENT AND PROGRESSING

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Concept of school myopia became wider in the last years. Myopia develops at the age of 5-6 years old due to earlier and more intense education, usage of computers during school process. More rapid than in previous years myopia aggravation was registered. Peaks of the disease progression fall on 7-9 and 12-14 years old periods. These age periods coincide with periods of hormonal changes in a body. In recent years an increase of nearsighted people a year makes about 5 %, in above mentioned periods and among students of gymnasiums and lyceums it could reach up to 7-10 %. Increase of nearsightedness prevalence in those children in double was caused by 6-yers old beginning of the study. Number of shortsighted schoolchildren between students of 11-th grade reaches 60 %.

Thus, there is obvious influence of excess visual load on spasm of accommodation appearance and myopia progression. At the same time, number of patients with high myopia degree does not increase significantly. Myopia of low and medium degree without serious changes in a retina could be found more frequently. This fact is an evidence of an acquired character of myopia.

Several factors could explain mechanism of such myopia development:

- continuous overexertion of ciliary muscle, its spasm;
- sclera weakness, which favours an accommodation cramp transition to axial myopia;
- worsening of blood supply of eyebulb and CNS in general. This is caused by high axial load on the spine in the sitting position, by incorrect posture. As a rule, vasoconstriction of a retina and a brain is detected, venous outflow disturbamce is revealed;
- general asthenisation of the body;
- digestive system disorder, pathology of small intestine especially. Thus, there should be a complex treatment of myopia.

It makes sense to carry out a preventive treatment of children during the period of asthenopic complaints appearance due to high possibility of myopia development in a definite group of children that present a risk group (age, intense study, incorrect posture, susceptibility to frequent catarrhal illnesses, etc.)

The most effective and safe is treatment by means of physiotherapeutic procedures. Methods of magnetotherapy, electrophoresis and laser therapy have positive but very short-term effect.

Prescription of mydriatics is effective enough (iriphryn 2.5%), they relax ciliary muscle. However, this muscle will spasm later if not trained. Special exercises for eyes gives a positive effect but it should be done regularly. Therewith, infancy habits should be taken into consideration. Some diligence is required; unfortunately, it is impossible to control correctness of its application.

Dynamic electroneurostimulation method has been applied in ophthalmology since recent times. Numerous previous researches are the evidence of that fact that multilevel reflex and neurochemical reactions that start up a cascade of regulatory and adaptive mechanisms of the body underlie a therapeutic action of dynamic electroneurostimulation (DENS). As a result, pain syndromes are eliminated, blood flow is improved, anti-inflammatory action takes place, biologically active substances formation is activated, metabolic processes in tissues occur, muscle and vascular tone is normalized.

The purpose of this work is to study an effectiveness of preventive DENS in children of infancy with risk of myopia progression.

Group of patients with myopia of low and middle degree in the age interval from 7 to 16 years old was chosen. There were 48 patients altogether. This group was using DENS method in 15 sessions course in a "Therapy" mode at 77 Hz frequency at minimal comfortable level of intensity. Duration of session was 10 minutes. Duration of follow-ups of patients made up to 1.5 years. Sessions were repeated in accordance with individual indications, depending on asthenopic complains appearance. All the patients were examined thoroughly (central visual acuity determination, spare accommodation determination, biomicroscopy, ophthalmoscopy, ultrasonic diagnostics, autorefractometry).

Group of patients with myopia was observed during 2-3 years which gives an opportunity to make a comparison with the results of previous treatment courses (without DENS-therapy). Effectiveness of treatment increased and constituted 0.5-1.5 diopter when using dynamic electroneurostimulation. Especially evident effect was received in patients with spasm of accommodation (92 %) and myopia of low degree (86 %). Reserve of positive part of accommodation increased from (-)0.5 to (-)3.0 diopters and higher virtually in all patients with accommodation cramp. 70 % of refraction normalized in patients with low degree of myopia. Reserve of positive part of accommodation normalized. For patients with medium degree of myopia an effect turned to be not that high. Myopia reduction made up 1.0 diopter in average. Reserve of positive part of accommodation increased from (-)0.0 to (-)2.0 diopters.

Asthenopic complaints were eliminated in 90 % of cases at the end of treatment. No side effects or complications were noticed during DENS application. Therapeutic effect remained in average during 3-4 months when having myopia of medium degree and up to 6 month when having myopia of low degree. Comparative analyses of effectiveness with previous traditional therapy in the same group of patients demonstrated high percentage of myopia stabilization - near 90 %. Only 50 % of patients demonstrated stabilization previously.

Thus, DENS application for prophylaxis of myopia of low and medium degree development and treatment has an evident therapeutic effect. Course duration is about 10 to 15 days. It is necessary to select repeated courses individually and in accordance with asthenopic complaints of patients appearance and clinical examination results. Refractometry and accommodation reserve determination should be considered as main diagnostic methods. Preventive character of DENS application provides myopia stabilization. It is reasonable to apply it in groups with increased risk of myopia progression.