

STUDYING OF THE LOAD ON THE VISUAL ANALYZER OF STOMATOLOGISTS

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Abstract: results of researches allowed to draw a conclusion that in the course of work at working deterioration in indicators of the capacity of the visual analyzer develops that can be regarded as implication of production fatigue which reason in warm season (hot months), the adverse microclimate is making negative impact on all organism in general, including the visual analyzer. Thus, in workplaces of stomatologists, there can be a depression of functional condition of the visual analyzer during all working day.

Keywords: stomatologist, functional condition, visual analyzer, critical frequency of merge of light flashings, capacity of the visual analyzer, visual tension, production exhaustion.

ИЗУЧЕНИЕ НАГРУЗКИ НА ЗРИТЕЛЬНЫЙ АНАЛИЗАТОР ВРАЧЕЙ- СТОМАТОЛОГОВ

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Аннотация: результаты исследований позволили сделать вывод, что в процессе трудовой деятельности у работающих развивается ухудшение показателей пропускной способности зрительного анализатора, что можно расценивать как проявление производственного утомления, причиной которого в теплое время года (жаркие месяцы) является неблагоприятный микроклимат, оказывающий отрицательное воздействие на весь организм в целом, в том числе и зрительный анализатор. Таким образом, на рабочих местах врачей-стоматологов может быть снижение функционального состояния зрительного анализатора в течение всего рабочего дня.

Ключевые слова: врач-стоматолог, функциональное состояние, зрительный анализатор, критическая частота слияния световых мельканий, пропускная способность зрительного анализатора, зрительное напряжение, производственное утомление.

Stomatologists represent one of the most numerous medical specialties. Work of stomatologists is characterized by influence of a series of production factors, adverse for health, among which the leading place is taken by a visual strain [1, 2]. Introduction in medical process of the modern medical equipment imposes special requirements to working conditions therefore carrying out researches for the purpose of studying of influence of these factors on an organism of working is of great importance. Besides, effective professional activity of stomatologists fully depends not only on their skill level and existence of the modern equipment, but also on a condition of their health [3, 4, 5], as served as the purpose for carrying out this research.

At the research of a functional condition of the visual analyzer, the ability of eyes to distinguish the largest frequency of light flickers was studied. Determination of critical frequency of merge of light flickers was carried out by means of the device. And, when it is higher, the functional condition of the visual analyzer then is better. Also use of tables with Landolt's rings was one of the methods allowing studying the bandwidth of the visual analyzer. Results of research were estimated by quantity of passed rings and time, which was spent for viewing of all table, and the total amount of the lost information in unit of time:

$$S = \frac{358,8 - Ln}{T}, \text{ where}$$

S - capacity reduction of the visual analyzer in bit/sec.;

358,8 bits – the volume of information of all table;

L - the number of the lost information at the admission of one ring;

n – quantity of passed rings;

T – time spent for viewing of the table in seconds.

For the purpose of definition of influence of production lighting on the functional condition of the visual analyzer of stomatologists, the researches in dynamics of shift (before work, in operating time and after the working day), during the cold and warm periods of year were conducted.

Critical frequency of merge of light flickers and the capacity of the visual analyzer were determined. The researches conducted during the warm period of year showed that during the shift there is a depression of critical frequency of merge of light flickers.

So, the average size critical frequency of merge of light flickers, that is an opportunity to distinguish vision separate light flickers, to the shift extremity at stomatologists decreased by 26%. During the cold period of critical frequency of merge of light flickers was 0,4-3,2 Hz higher, than during the warm period of year. The obtained data showed that the performed work as stomatologists demands a strain of the visual analyzer, continuous concentration, as leads to fatigue of the visual analyzer.

The capacity of the visual analyzer indicators at stomatologists changed quite distinctly. The number of passed Landolt's rings especially was enlarged to the extremity of the working day. Results of researches showed that before work during the warm period of year of the capacity of the visual analyzer at stomatologists made $1,35 \pm 0,025$ bit/sec. In the first semi-change and also to the extremity of the working day at many workers some reliable augmentation, both quantities of passed rings, and time spent for viewing of the table Landolt's from initial indicators became perceptible. So, to the extremity of a shift of the capacity of the visual analyzer it was also authentically enlarged on average by 28%. During the cold period background indicators of the capacity of the visual analyzer were slightly lower, than during the warm period of year on 0,2-0,5 bit/sec. It increased in the first half of the working day on 0,21 bit/sec. To the shift extremity the reliable augmentation of the capacity of the visual analyzer on average at 19% of initial sizes also became perceptible.

Results of researches allowed to draw a conclusion that in the course of work at working deterioration in indicators of the capacity of the visual analyzer develops that can be regarded as implication of a production fatigue which reason in warm season (hot months), the adverse microclimate is making negative impact on all organisms in general, including the visual analyzer.

Thus, performance of work in the conditions of insufficient and irregular illuminating intensity in workplaces of stomatologists can cause depression of functional condition of the visual analyzer during all working day.

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