

device for its implementation (Patents No. 2206300, 2230534). The technology of color therapy is based on six principles of "similarity" that ensure the correction of human health. The main ones are the effects of the natural rhythmically pulsating spectrum of visible light (natural therapy), i.e. solar energy through a visual analyzer; gentle threshold or subthreshold color stimulation, specific for the diseased organ; biofeedback, manifested in a mirror image of the response of the retinal macula and visual neurons (entoptic phenomenon of TP Teterina). These principles of color pulse therapy ensure the activation of neurons in the cortex and subcortical structures of the brain (hypothalamus, pituitary gland, pineal gland, etc.), improving the mechanisms of adaptation of the body to the conditions of the external and internal environment and normalization of the biorhythms of the brain and the body as a whole. In addition, the author's phenomenon (mirror image of the macular response) provides information about the state of macular photosynthesis during color therapy.

The aim of the work was to study the possibility of color therapy in the prevention of aging of the eyes and the human body.

To achieve the goal, the following tasks were set:

1. To investigate the visual acuity in the distance and near, as well as the psychosomatic state in patients 35–65 years old.
2. Assess the functional state of the retinal macula during its interaction with spectrum of visible light.
3. To evaluate the effectiveness of color pulse therapy in the prevention of eye aging and the human body.

Material and methods

The study included 96 patients (192 eyes) with presbyopia aged 35 to 65 years. By age, patients were distributed as follows: from 35 to 40 years old - 12 people (24 eyes), 41-45 years old - 12 (24 eyes), 46–50 years old - 26 (52 eyes), 51–55 years old - 26 (52 eyes), 56–60 years old - 10 (20 eyes) and 61–65 years old - 10 people (20 eyes). Men - 34, women - 62.

For the treatment of patients, the method of color-pulse therapy was used using the Teterina apparatus, which is a pair of glasses that generate light pulses of a given color, duration and frequency of the wave period. The wavelength range of light signals was from 460 to 650nm. The choice of the method of treatment was carried out depending on the nature of the disease of the organism.

Results and its discussion

For clarity of the results obtained, we present a table of indicators of distance and near visual acuity without correction before and after color therapy, depending on the age of the presbyopes.

The table shows that in patients aged 35 to 40 years with distance visual acuity equal to 1.0 and normal (emmetropic) refraction of the eye, near vision decreases by 50% and is 0.5 instead of 1.0. Already at this age, they have asthenopic complaints associated with excessive fatigue during visual work near, especially with a computer.

In patients from 41 to 50 years old, near visual acuity decreases by 70%, although a high visual acuity of 1.0–0.96 is still preserved in the distance. In patients older than 56 years, a decrease in distance visual acuity is observed on average by 50%, but with 1.0 diopters of glass, vision is corrected to normal values of 1.0.

table

Dynamics of visual acuity without correction in presbyopes before and after color therapy

Age	Number of patients ent	Of eyes	Visual acuity			
			In the distance		Close	
			to lay down.	after treatment	before treatment	after treatment
35-40	12	24	1.0	1.0	0.5	0.97
41-45	12	24	1.0	1.0	0.35	0.74
46-50	26	52	0.96	1.0	0.3	0.67
51-55	26	52	0.87	0.96	0.2	0.6
56-60	10	twenty	0.55	0.91	0.15	0.6
61-65	10	twenty	0.48	0.91	0.13	0.4
Total	96	192	0.64	0.96	0.1	0.66

Near visual acuity in patients over 50 years old decreases by 84% and averages only 0.16, which requires correction of vision with positive glasses in the range of (+) 2.0 - (+) 2.5 diopters for the age of 51-55 years and (+) 3.0 - (+) 3.5 diopters for the age of 60-65 years.

In the study of the functional state of the macula and the periphery of the retina by the method of mirror feedback, it was found that in most presbyopes their response to color stimuli is either not manifested or very weakly expressed. Along with this, signs of a violation of the function of photosynthesis in the macula were revealed when it interacts with the spectrum of visible light.

In all age groups, syndromes of systemic psychosomatic pathology were observed with the involvement of many functional systems of the body (central nervous system, ANS, CVS, endocrine, immune and other systems) in the process.

After color therapy, distance visual acuity without correction returned to normal in presbyopes aged 50 to 65 years, and near visual acuity at the age of 35 to 50 years, and significantly improved in presbyopes over 50 years old. A significant part of the patients (52.1%) did not need spectacle vision correction during visual work at close range.

In the process of color therapy, there was an improvement in the functional state of the macula and its response, i.e. feedback on color stimuli, which was accompanied by an improvement in visual functions.

Thus, in all patients of different age groups, normalization or significant improvement of visual functions was achieved with vision both far and near, which was due to an improvement in the functional state of both the macula and the periphery of the retina, as well as brain neurons. At the same time, in the process of color therapy, patients had a mirror image of the response of the macula and the periphery of the retina to color stimuli (feedback).

In addition, there was also observed a mirror image and the phenomena of photosynthesis of the macula when it interacts with the mid-wave and short-wave parts of the spectrum of visible light. At the same time, patients personally observed the phenomena of absorption, emission and reflection of this spectrum by the structures of their own macula and its autonomous pulsation in response to rhythmic effects of color stimuli, regardless of the pulsation of the peripheral retina.

Along with the improvement of visual functions in patients, there was an improvement in the general psychosomatic state. This was evidenced by the normalization of blood pressure and the improvement of the functions of the endocrine, digestive, genitourinary, immune and other systems of the body. The rejuvenating effect of color therapy was also noted.

Conclusions:

1. It has been found that one of the first signs of premature aging of the body is a decrease in vision during visual work near in persons with normal vision in the distance, starting from the age of 35-40 years.
2. The main cause of premature aging of both vision and the body, as well as its progression is a violation of the energetic function of photosynthesis of the macula of the retina and neurons of the brain during their interaction with the spectrum of visible light.
3. One of the tests of impairment of the photoenergetic function of the eye are indicators the phenomenon of mirroring the processes of photosynthesis (absorption, emission and reflection

light) structures of the macula when interacting with the short-wave and medium-wave parts of the visible light spectrum.

4. Dysfunctions of the photoenergetic system of the eye and brain are one of the reasons for the development of systemic psychosomatic disorders at all levels of the body.

5. The decrease in the function of the accommodative apparatus of the eye in presbyopia is secondary, and not the primary character in the etiology of both physiological and premature aging of vision (presbyopia).

6. Color therapy through the visual analyzer according to the method of TP. Teterinum has a high effectiveness in the prevention of both natural physiological and premature aging of vision and the body as a whole, as well as a rejuvenating effect.

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