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An approach to the prevention of global warming impact on human health

Abstract

Global climate warming leads to an increase in eye, somatic and mental diseases, but the trigger of these processes is unknown, so treatment is ineffective.

The author's hypothesis is that the trigger of health deterioration in global warming may be excessively constricted pupils, which trigger pathological biochemical processes in the body through the optic-vegetative system.

It is proposed to moderately dilate the pupils of people who are sensitive to suboptimal temperatures in the course of a weather forecast of heat or cold, which will mitigate the course of their diseases and reduce mortality.

Keywords: global warming, eye, somatic and mental diseases, pupil, trigger, optic-vegetative system, mydriasis

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Introduction

Global climate warming leads to an increase in eye, somatic and mental illnesses.[1,3,4,6,7,16,22] The trigger of these processes is unknown.[11,15] Therefore, treatment is ineffective. Let's look at the problem through the eyes of an ophthalmologist.

As air temperature rises, the incidence of cataracts, glaucoma, age-related macular degeneration, retinal detachment, central artery and retinal vein occlusion, diabetic retinopathy, uveitis, eye tumors, etc. increases.[2,8,9,10,13–16,21] The mechanism of thermal effects is unclear.[12]

At the same time, it is known that in most eye diseases, overheating or hypothermia are risk factors for triggering pathology or its recurrence.

Why does this happen?

We have developed a hypothesis of the etiopathogenesis of eye diseases, in which the trigger of the pathological process in the eye is considered to be weakness of accommodation.[17] The anatomical basis of poor accommodation is a genetically programmed small distance between the lens equator and the ciliary body (less than the age-related norm). Visually, this is manifested in excessive pupillary constriction (synergistic parasympathetic innervation of the iris sphincters and ciliary muscle).

Prolonged pupil constriction occurs against the background of chronic stress (extreme temperatures are also stressful for the body). At the same time, the distance "lens equator - ciliary body" becomes less than the age-related norm, the Zinn' s ligaments sag slightly, the influence of the ciliary body on the lens configuration weakens, and the volume of accommodation decreases. At critical values, protective reactions are triggered (in the form of the initial stages of eye diseases) aimed at restoring the accommodative capacity of the eyes. In each case, the brain calculates which defense reaction will be the most ergonomic and triggers the corresponding autoimmune processes in the eye. If the accommodation is restored, the process stabilizes, if not, the eye falls into a vicious circle and goes blind.

Let's take a broader look at the problem

It is known that "all diseases are from the nerves". In genetically predisposed individuals, chronic stress causes excessive pupil constriction through the cortico-nuclear pathways. Constricted pupils (reduced luminous flux) trigger pathological biochemical processes in the body through the optic-vegetative system, which leads to a deterioration in the mental and physical conditions of patients.

Where there is a "weak link" in the body (which is genetically programmed), it "breaks" (i.e., the pathological process is realized).[18,19] Comorbidity of pathologies is possible. The Bible says:" Have mercy on me, O Lord... my eyes are weary with sorrow, my soul and my bowels are exhausted." (Psalm 31:10).

Indeed, with global warming, in addition to the growth of ophthalmopathology, there is a deterioration of mental health, an increase in cardiovascular and respiratory diseases, an increase in pregnancy complications, allergies, oncology and the like.[1,3,4,22] It is not surprising that the sections of the population vulnerable to heat are: the elderly; members of marginalized racial and ethnic groups; persons with low socio-economic status; patients with diabetes and dementia.[4,5] All these groups are characterized by relatively narrower pupils (compared to prosperous people) against the background of chronic stress associated with poverty, malnutrition, the presence of chronic diseases, as well as the age factor (in old age, the pupil is narrower than in youth). Interesting facts: both high and low air temperatures increase the risk of mortality from neurodegenerative diseases (Alzheimer's, Parkinson's, non-Alzheimer's dementias), strokes,[1,23] although different pathophysiological mechanisms potentially operate at different temperatures. These facts can be explained by the fact that the trigger for these processes is one - excessively narrowed pupils.[19] By the way, the global epidemics of non-infectious diseases of the 21st century - hypertension, type 2 diabetes, oncology, obesity - are, in our opinion, also the consequences of chronic stress, and excessively narrowed pupils trigger the pathological process in the body.[20] Thus, eye diseases, mental and somatic can have a common trigger - excessively narrowed pupils. And this factor increases against the background of additional stress associated with global warming.

What to do in the optic-vegetative system, there is a principle of "direct communication - feedback"

If the body - through the cerebral cortex, hypothalamus, reticular formation - acts on the size of the pupil, then the size of the pupil also affects the entire body. When the pupil is dilated - the mood is elevated, the person is physically and intellectually active; when the pupil is narrowed (due to prolonged negative emotions) - mood, physical and intellectual activity are reduced. Therefore, we suggest that in case of a synoptic forecast of heat or cold, prophylactically moderately dilate the pupils of people who are sensitive to suboptimal temperatures. This will soften the course of their existing diseases and reduce mortality. Pharmacologists must develop a mydriatic that will be safe; will have little effect on accommodation; the duration of which may vary. In our opinion, this method should prevent (combined with lifestyle modification) the negative impact of global climate warming on people's health.

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Conflicts of interest

The author declares that there are no conflicts of interest.

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