Geomagnetic storms as a risk factor for exacerbation of chronic headaches

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Abstract. This thesis analyzes the effect of geomagnetic storms on the human body, especially on chronic headache attacks. It is highlighted that changes in the activity of the nervous system and blood vessels during periods of magnetic activity can cause migraines and headaches to intensify. It also discusses preventive measures and issues of meteosensitivity.

Keywords: geomagnetic storm, chronic headache, migraine, meteosensitivity, nervous system, blood vessels, solar activity, prevention, neurology, human health.

The influence of environmental factors on human health has long been the focus of attention of scientists. In particular, it has been established that natural processes such as climate change, atmospheric pressure, air temperature, and solar activity have a significant impact on the functional state of the human body. Among these factors, geomagnetic storms are also of great importance. Geomagnetic storms are strong changes in the Earth's magnetic field as a result of solar flares and plasma flows. This process can affect the human nervous system, cardiovascular system, and brain function. In recent years, an increase in attacks of the disease has been observed during periods of geomagnetic activity in patients with chronic headaches, especially migraines and tension headaches. Headaches have a negative impact not only on a person's physical condition, but also on their working capacity, psychological stability, and quality of life. Therefore, the scientific study of the effect of geomagnetic storms on headaches is of great importance.

This thesis analyzes the mechanism of origin of geomagnetic storms, their impact on the human body, and their role in aggravating chronic headache attacks. Preventive measures and medical recommendations are also discussed.[2]

A geomagnetic storm is a temporary disruption of the Earth's magnetic field, which occurs mainly as a result of explosions on the Sun. When charged particles from the Sun reach the Earth's atmosphere, they create various oscillations in the magnetic field. This process can last from several hours to several days.

Scientists estimate the strength of geomagnetic storms using special indices. The most commonly used indices are the K-index and Ap-index. The higher the index, the stronger the geomagnetic activity. Strong geomagnetic storms can affect not only equipment and communication systems, but also the human body.

According to studies, approximately 30-40 percent of the population is sensitive to geomagnetic changes. Such people are called “meteosensitive” individuals. They often experience headaches, fatigue, changes in blood pressure, insomnia, and irritability.[1]

Chronic headache is a condition of headaches that occur for at least 15 days or more per month. This disease seriously affects a person’s quality of life. Its most common types are:

Migraine is a severe, often one-sided pulsating headache, accompanied by nausea, sensitivity to light and sound. Geomagnetic storms are considered one of the factors that trigger migraine attacks.

This type of headache is manifested by a feeling of pressure or “tightness” around the head. The main causes are stress, nervous tension and muscle tension. Geomagnetic fluctuations can affect the functioning of the nervous system, which can aggravate these pains.

A rare but very severe type of headache, which is felt mainly around the eyes. Some studies have noted a connection between geomagnetic activity and cluster headache attacks.

The human body is a complex structure with biological electrical systems. Brain neurons, heart activity and nerve impulses operate on the basis of electrical signals. Therefore, external magnetic fluctuations can affect the body to a certain extent.[1]

Geomagnetic storms can change the functioning of the central nervous system. This condition leads to nervousness, impaired attention, sleep disorders and headaches in humans. Patients with migraines have a violation of serotonin metabolism. Geomagnetic activity, in turn, can affect the amount of this hormone and aggravate pain attacks.

In conclusion, geomagnetic storms are one of the important natural factors affecting human health. In particular, patients with chronic headaches may experience an increase in attacks during periods of magnetic activity. This is believed to be associated with changes in the nervous system, blood vessels, and hormonal levels.

Scientific studies have shown that there is a certain connection between geomagnetic storms and migraines. Therefore, it is important for weather-sensitive patients to strengthen preventive measures, adhere to a healthy lifestyle, and follow the recommendations of their doctors.

In the future, more in-depth research in this area will allow us to determine the mechanism of influence of geomagnetic factors on the human body and develop effective treatment methods.

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