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PROPHYLAXIS OF RESPIRATORY SYNDROMES BY NEUROIMMUNOMODULATORY ACTION OF NATURAL ENVIRONMENTAL FACTORS

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Review demonstrated particular interest on neuromodulation of inflammation, based on immunomodulatory action of parasympathetic nervous system and an indirect inhibition on the cytokine storm triggered by acute respiratory distress syndrome (ARDS). ARDS can be induced by direct lung injury due to bacterial or viral infection, inhalation of smoke, toxic chemicals, or aspiration of gastric contents, or indirect lung injury. Vagal neuromodulation may be a promising alternative immunomodulatory prophylaxis for respiratory syndromes due to its potent systemic anti-inflammatory effects. As a result, the release of pro-inflammatory cytokines is weakened, coagulation is modulated, and circulatory failure is prevented. The cholinergic anti-inflammatory pathway (CAIP) is a potent anti-inflammatory indirect mechanism of action on the spleen. Vagus immunomodulation is realized through the α7nAChR receptor, which is found not only on neurons and macrophages, but also on other non-neuronal cells, including immune cells such as monocytes, T- and B-lymphocytes, and dendritic cells. The impact on the body of natural environmental factors is favorable due to its neuromodulatory influence, which produces an immunomodulatory effect of the parasympathetic nervous system on adaptive immunity. Urbanization and rising living standards are associated with unhealthy diet, lack of physical activity and air pollution, hypoxia, hypercapnia, noise, leading to an imbalance in the sympathetic and parasympathetic components of the autonomic nervous system.

The organization of green recreational areas, environmentally friendly urban planning, transport traffic, the exclusion of desynchronosis and central fatigue during occupational activities, somatosensory stimulation are the basic components of a complex neuroimmunomodulatory preventive effect.

Keywords: acute respiratory distress syndrome, autonomic nervous system, neuromodulatory influence, alternative immunomodulatory prophylaxis.