

CARBOXYTHERAPY

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Introduction. About a third of the world's population suffers from various disorders in the locomotor system. Osteoarthritis is diagnosed in 20-45% of the population all over the world: every hundredth inhabitant of the planet, mostly older women (Statistics about Arthritis, 2014). Among the drugs chosen for the treatment of these diseases, nonsteroidal anti-inflammatory drugs (NSAIDs) and chondroprotectors hold a leading position. But, the traditional treatment of diseases of the joints is not always effective and safe. Medicine is the most dynamic area of science. Research in the field of medicine, pharmacy and aesthetic medicine opens new directions in the treatment of pathologies of various origins. The main task of medicine is to develop possible treatment technologies of locomotor system pathologies without surgical intervention and to limit medical treatment only to therapeutic remedies. Carboxytherapy is a promising direction – it is an effective aid for rehabilitation processes which are associated with restoration of affected cartilage and bone, eliminating pain and degenerative syndromes.

Aim. To investigate the current status and benefits of treatment with carboxytherapy in literary data. **Materials and methods.** Information on the application of carboxytherapy in medicine and aesthetic medicine was researched.

Results and discussion. Carboxytherapy is an innovative, affordable and convenient therapy for the patient, which is certified in Europe; it consists of safe invasive and non-invasive methods of injecting CO₂ that does not require an anesthetic. Carboxytherapy is effective both in the first and second phase of the pathological process (desynchronization and functional disorders), affecting all locomotor system segments' parts: muscles, ligaments, bones, joints. Carboxytherapy is used, primarily for diseases of the joints, which are weakly receptive to therapy (NSAIDs, chondroprotectors, rehabilitation exercises, physiotherapy, balneotherapy). In carboxytherapy, gas is injected into the patient's skin subdermally and intramuscularly. Excess of carbon dioxide in the tissue (hypercapnia) provides cells with oxygen. Approximately 70% of carbon dioxide in the body reacts with plasma, forming carbonic acid. And ultimately, bicarbonate dissolves in blood plasma. These reactions cause the blood's pH-balance to reduce the release of oxygen in the tissue cells, increasing capillary circulation. This, in turn, provokes the Bohr effect (Oxyhemoglobin curve) that shows how easy the hemoglobin gets and releases the oxygen molecules in the fluid that surrounds it. The increased concentration of carbon dioxide results in less ability of oxygen and hemoglobin to conjugate. Furthermore, there are growth factors, such as local angiogenic growth factors, that cause the circulation, stimulate lipolysis and skin regeneration.

Conclusions. Having analyzed the studied material, we can conclude that carboxytherapy is a very promising and modern direction in medical practice.