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Hypobaric hypoxic adaptation as a treatment method of psychoneurological disorders in children

Shalkevich L, Kudlach A, Stepaniuk A and **Horlikova O**
Minsk Regional Clinical Hospital, Republic of Belarus

Introduction: The effect of artificially created hypoxia is based on the sanogenetic mechanisms of the body cells and tissues activation. This method has a positive effect primarily on the nervous system due to its high sensitivity to hypoxia. The dosed hypoxic effect causes neurons adaptation to oxygen deficiency. After the termination of hypoxia, it results in improvement of neuronal functioning under increased stress conditions.

Purpose: To study the effect of created by hypobaric adaptation hypoxia on various neurological and psychiatric state disorders in children.

Materials and methods: The study included 28 patients aged 1 to 16 years (mean age 4.7 3.8 years). The spectrum of neurological disorders was following: infantile cerebral palsy (n = 9), epilepsy (n = 10), psychomotor or psycho-speech development disorder (n = 9). All patients underwent a training course in conditions of artificially oxygen deficiency. The course was presented by 15 sessions of intermittent dosed hypobaric adaptation. Hypoxia was created artificially in pressure chambers. The chamber conditions simulate lifting into high altitude conditions (3000 meters above sea level). Psychical and neurological state was determined before and after the course.

Results: Positive changes in the neurological state were reported in 21.4% (n=6) patients: normalization of muscle tone and coordination in 10.7% (n=3), acquisition of new motor skills in 17.9% (n=5). Improvement of mental state was noted in 78.6% (n=22) patients: normalization of sleep in 46.4% (n=13), improvement of attention function in 39.3% (n=11) and memory 35.7% (n=10), the normalization of emotional state in 71.4% (n=20), the acquisition of new speech skills in 28.6% (n=8). OR improvement in mental state in comparison with improvement in motor state after passing the course of hypobaric adaptation was 13.44 (CI 3.75-48.19) ($\chi 2 = 18.3$ $p < 0.001$).

Conclusions: Hypobaric adaptation to hypoxia shows a nonspecific positive effect primarily on mental functions. This method should be a part of complex treatment in psychoneurological pathology in children.

Shalkevich_@tut.by