

[Neurofeedback therapy influence on clinical status and some EEG parameters in children with localized epilepsy].

[Article in Polish]

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Abstract

Neurofeedback (EEG biofeedback, NF) is one of the methods of non-pharmacological instrumental therapy. In the treatment of epilepsy it is considered as a complementary method, reducing the number of seizures. The aim of this study was to investigate the effect of NF on the incidence of clinical attacks and bioelectrical activity of the brain in children with epilepsy with partial seizures and secondarily generalized seizures.

MATERIAL AND METHODS:

The study involved a group of 78 children with partial seizures, additionally 30 of them had second-ry generalized seizures. There were 35 girls and 43 boys ranging in age from 5 to 17.5 years. They were treated with NF in the Neuromedica Institute in Krakow, in the period 2005-2015. Treatment time ranged from 6 months to 3 years. We have evaluated the incidence of seizures before and after NF therapy. Visual analysis of EEG recordings with assessment of background activity, location of focal changes, presence of paroxysmal pattern and epileptic graphoelements.

RESULTS:

In 41/78 children seizures occurred 1-2 times a month, in 19/78 every day and 9 children were diagnosed with epileptic syndrome. During NF therapy 52/78 children experienced resolution of clinical seizures. NF therapy was ineffective in only one child. In 18 child withdrawal of antiepileptic treatment was achieved and in 22 reduction of drug doses. Epileptic graphoelements occurred in 46/78 children before treatment and in 21/78 children after treatment. Before NF therapy irregular bio-electrical activity was found in 51 children versus 27 children with regular bioelectric activity and in 27 children versus 51 children after the therapy. The amplitude of this activity returned to normal in 19 children, and in 29 children the frequency of background activity. Particularly surprising was to restore synchrony and symmetry of EEG pattern in 44 children (11 children before NF treatment to 55 children after the treatment). Even more significant effect of NF therapy was observed in EEG patterns, abolition of paroxysmal pattern and reduction of continuous, localized and generalized changes. NF therapy also advantageously reduced the number of localized changes and decreased sensitivity of EEG pattern to hyperventilation and photostimulation.

CONCLUSIONS:

During NF therapy in almost all children with epileptic partial seizures and secondarily generalized seizures resolution or reduction of clinical seizures was observed. In nearly 1/4 of children withdrawal of antiepileptic treatment was achieved and in higher number reduction of pharmacotherapy. All parameters of the background EEG bioelectric activity in these children have improved, especially synchrony and symmetry of EEG pattern and paroxysmal changes subsided.

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