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## Neuromarkers of depression in a patient with schizophrenia spectrum complicated with TIA – effect of individually-tailored neurofeedback

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**Background:** The aim of the study was to evaluate the effectiveness of individually tailored neurofeedback protocol for the reduction of depression which was diagnosed in the patient with schizophrenia spectrum complicated with TIA. The neuromarkers in Quantitative EEG (QEEG) and Event-related potentials (ERPs) were utilized in the construction of protocol and evaluation.

**Case study:** A 54-year-old patient, experienced TIA. The patient was treated before for more than 20 years for schizophrenia. However the patient complained low mood, difficulties with sleeping as well as an inability to continue work in his given profession. Specialist tests were to show the presence within him of depression. As a result of which the patient was provided with neurofeedback therapy. The effectiveness of this therapy in the reduction (eradication) of the symptoms of depression were evaluated through the utilization of quantitative EEG (QEEG) and Event related potentials (ERPs).

**Results:** It was found that in the first examination that ERPs display the most significant deviations from the reference in the two components: (1) the one component is generated within the cingulate cortex. The pattern of its deviation from the norms. In contrast to healthy subjects the component repeats itself twice; (2) the second component is generated in the medial prefrontal cortex. Its pattern (neuromarker) is similar to that found in depressive patients. In the second examination, after neurofeedback training, the ERPs were similar to the norm. The patient returned to work. **Conclusions.** Chronic depression developed within the patient with schizophrenia spectrum. The application of a method of therapy (neurofeedback) resulted in the withdrawal of the syndrome symptoms. ERPs in a GO/NOGO task can be used to plan neurofeedback and in the assessment of functional brain changes induced by neurotherapeutic programmes.

### Biography

Maria Pachalska has completed her PhD at the age of 30 years from Gdańsk University, and her full Professor from Gdansk University. She is the head of the Chair of Neuropsychology at Cracow University, and consultant in Center for Cognition and Communication, New York, NY, USA. She is the President of the Polish Neuropsychological Society since 1992 and the Editor in chief of Acta Neuropsychologica. She published 9 books and more than 200 papers in reputed journals and has been serving as an editorial board member of 11 reputed journals for many years.

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