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The Neurological Basis of Eating Disorders. I: EEG Findings and the Clinical Outcome of Adding Symptom-Based, QEEG-Based, and Analog/QEEG-Based Remedial Neurofeedback Training to Traditional Treatment Plans.

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Introduction

Eating disorders are associated with the highest mortality of any DSM-IV diagnosis (Fichter & Quadflieg, 1999). Despite dedicated efforts, intervention has proven only modestly effective. Because of this resistance to treatment, neurofeedback was added to the more traditional treatment modalities to determine if clinical outcomes could be improved. Previous EEG research in those with eating disorders revealed significant generalized abnormalities and unstable responses to hyperventilation (Crisp & Fenton, 1968), and inappropriate Theta activity in the right parietal region, both before and after weight gain (Grunwold & Etrior, 2001). Our study was designed to further evaluate the EEG findings in those with eating disorders, report the clinical benefit of adding neurofeedback to traditional medical and psychological treatment modalities, and compare the initial results of three different approaches to neurofeedback training.

Method

Personality, stress indices, and attentional screening tests were administered to 120 patients being admitted to a residential treatment center. One third of the treatment group received pre-QEEG evaluation prior to neurotherapy interventions.

The neurofeedback protocols used were from one of three basic clinical approaches: (a) symptom-based, (b) QEEG-based, using traditional neurofeedback protocols, and (c) task-activated, analog/QEEG-based training using research-confirmed training protocols.

Results

In all three neurofeedback approaches, BDI scores, neuroticism scores, and EDI scores demonstrated significant change. Weight changes were in the desired direction.

EEG/QEEG findings will be reviewed, but, in summary, right brain dysfunction and significantly increased Delta slow wave activity with cognitive challenge were common.

The initially determined difference in the three neurofeedback training approaches is that the research-designed training protocols are statistically more likely to reduce or eliminate the need for medication.

Conclusion

Our study confirms that EEG abnormalities are commonly present in those with eating disorders. Importantly, adding neurofeedback to traditional treatment protocols to address these neurological issues significantly enhances treatment outcome.

References

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Fichter, M. M. & Quadflieg, N. (1999). Six-year course of anorexia nervosa. *International Journal of Eating Disorders*, 26, 359-385.

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The Neurological Basis of Eating Disorders. II: Follow Up Report of Adding Symptom-Based, QEEG-Based, and Analog/QEEG-based Remedial Neurofeedback Training to Traditional Eating Disorders Treatment Plans (R/C)

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Introduction

We previously reported that adding neurofeedback to the treatment of eating disorders significantly enhances clinical outcomes, and compared the results of symptom-based (SB), Quantitative EEG-based (QEEG), and task activated analog/QEEG-based Remedial Neurofeedback Training (RNT; Smith, Sams, & Sherlin, 2003). Of the three approaches, we found that the task activated RNT yielded greater reductions in the need for medication. This study reports additional follow-up findings.

Method

Personality, stress indices, attention testing (TOVA or IVA continuous performance tests) and one of three types of neurofeedback training were administered to 142 patients. The neurofeedback protocols used were from one of three approaches: (a) symptom-based (no QEEG); (b) QEEG-based, using traditionally accepted training protocols; and, (c) custom protocols based on the data from task-activated, analog/QEEG data. Three months after discharge, follow-up testing was collected and statistically analyzed on approximately 25 percent of the group.

Results

Follow-up testing confirmed that all treatment approaches led to symptom reduction. Medication reduction was significant ($p < .003$), with the RNT group showing the greatest decrease. Depression screening using the BDI-2 showed significant interaction effect ($p < .02$), with the RNT group showing the greatest decreases from pre- to post-testing. Pre- versus post-EDI and MMPI testing showed few statistically significant differences. However, the RNT group showed superior outcomes from the perspective of clinical significance. Although starting with higher initial scores, the RNT group also showed the greatest reductions in depression, markers of psychopathology, and symptoms associated with eating disorders,

Conclusion

Adding neurofeedback training to traditional eating disorders treatment protocols improved clinical outcomes. The task activated, analog/QEEG-based neurofeedback approach, using custom, non-traditional protocols, produced stronger positive clinical effects, namely reduction in the need for medication and lowered levels of depression.

References

Smith, P. N., Sams, M. W., & Sherlin, L., (2003, September). The neurological basis of eating disorders. I: EEG findings and the clinical outcome of adding symptom-based, QEEG-based, and analog/QEEG-based remedial neurofeedback training to traditional treatment plans. Paper presented at International Society for Neuronal Regulation Annual Conference, Houston, Texas.