Cordance as a biomarker in sleep-EEG for depression: differences in responders versus non-responders – a naturalistic study after antidepressant medication

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Introduction

Cordance is a relatively new quantitative EEG-method, which has shown usability as a biomarker for depression within the resting-state in wake patients. Sleep EEG shows distinctive alterations in a depressive episode and changes after antidepressants. We wanted to test whether differences in cordance derived from sleep EEG exist between responders and non-responders after antidepressant medication.

Material and Methods

20 in-patients (mean 48 y.) with a depressive episode [ICD-10 F 31.4, F 32.1-3, F 33.1-3] were treated with various antidepressants of “doctor’s choice”. The change of the Hamilton depression scores between the first and fifth week of treatment provided evidence about response. Response to treatment was defined as a \( \geq 50\% \) reduction of Hamilton score. Cordance values for the prefrontal theta-EEG were calculated from sleep EEG during the first week with active medication. Additionally 7 healthy young subjects have been included for three consecutive nights to calculate prefrontal theta cordance values.

Results

Results showed significant differences: 8 responders compared to 12 non-responders showed higher Cordance values in prefrontal EEG-sites (z-score -1.57 \( \pm \) 0.79 versus -2.64 \( \pm \) 0.69, \( p = 0.0055 \); Mann-Whitney U-Test). Between responders and non-responders had been no significant differences in age, HAM-D score at first week or medication.

Conclusions

These results suggest that cordance derived from sleep EEG provides a biomarker for depression.

There are significant differences between responders and non-responders within prefrontal theta cordance.

Cordance in depressed patients correlates moderately strong with HAM-D score.

Z-Cordance value of healthy subjects is like the one of responders.

Disclosure

There are no conflicts of interest.