SYM POSIUM
Toward Personalizing Treatment for Depression: New Imaging and Physiological Findings
Friday, May 17, 2013, 3:00 PM - 5:00 PM
Continental 5 - Ballroom Level
Chair: Gerard E. Bruder
Co-Chair: Diego A. Pizzagalli*

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430. Current Source Density (CSC) Measures of Auditory Intensity Modulation and EEG at Rest as Predictors for Serotonergic Antidepressant Response
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Background: Resting EEG alpha power may have clinical value for predicting whether patients having a depressive disorder will benefit from a selective serotonin reuptake inhibitor (SSRI). Also, the loudness-dependency slope of auditory event-related potentials (ERPs) has been hypothesized to reflect central serotonergic activity and may therefore predict SSRI treatment response.

Methods: EEG (72-channel) was recorded at rest and during passive listening to tones (60-100 dB, 1000-Hz, 1.6-2.1 s ISI) from unmedicated depressed patients and healthy controls. Subsequently, patients were treated with an SSRI, NDRI (bupropion), or dual treatment with both antidepressants or an SNRI. CSD spectra and waveforms obtained from EEG/ERP were submitted to frequency or temporal principal components analysis (PCA) to derive reference-free, data-driven measures.

Results: Reduced condition-dependent (eyes closed-minus-open) posterior alpha was found in nonresponders independent of drug treatment. This had high positive predictive value and specificity (> 92%) for SSRI/dual treatment response, but lower sensitivity (50%). N1 amplitude to tones (linked-mastoids reference) showed predicted slope differences between responders (R; steep) and nonresponders (NR; shallow) to SSRI/dual treatment, but the CSD tangential N1 sink indicative of auditory cortex activation showed only overall differences in amplitude (R > NR). Slopes were strongly correlated with amplitudes but had markedly lower internal consistency (Cronbach’s α, slope = .67, amplitude = .95). N1 sink amplitude showed good positive predictive value (88%) and acceptable specificity (70%) and sensitivity (69%) for predicting SSRI/dual treatment response.

Conclusions: CSD-PCA measures of tonic and functional neuronal activation can provide reliable and independent predictors of serotonergic treatment response.
Keywords: EEG, ERP, depression, antidepressants, clinical response
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