

Electroconvulsive Therapy Modulates Loudness Dependence of Auditory Evoked Potential: an MEG study

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BACKGROUND

- Pathological changes of central serotonergic neurotransmission are associated with an array of psychiatric conditions, including depression
- An indicator of serotonergic activity is the Loudness Dependence of Auditory Evoked Potential. LDAEP refers to the change in amplitude of evoked potential in response to different auditory stimulus intensities; it is thought to be a measure of the modulation of activity in primary auditory cortex by serotonergic neurons originating in the dorsal raphe... High LDAEP reflects low central serotonin neurotransmission
- Goal of study is to determine effect of electroconvulsive therapy on serotonin function by measuring pre-post LDAEP changes

PATIENTS & ECT TREATMENT

- 9 patients (6 females) with MDD
- Age = 68.1 ± 10.7
- Course of ultrabrief right unilateral ECT
- Baseline HAMD₂₄ = 37.2 ± 12.8
- Post ECT HAMD₂₄ = 9.1 ± 7.6 (6 responders)
- Structural MRI and magnetoencephalography acquired before and after ECT course

SUMMARY

- Studies have shown serum serotonin levels significantly increased following ECT
- Paradoxically, we found a significant increase in LDAEP post ECT, which implies lower serotonin levels
- LDAEP may be modulated by multiple neuromodulatory systems in addition to the serotonergic system... could this be related to dopamine?
- Next: investigate laterality, resting-state MEG, DCM?

