

Resting-state occipital alpha power is associated with treatment outcome in patients with chronic migraine

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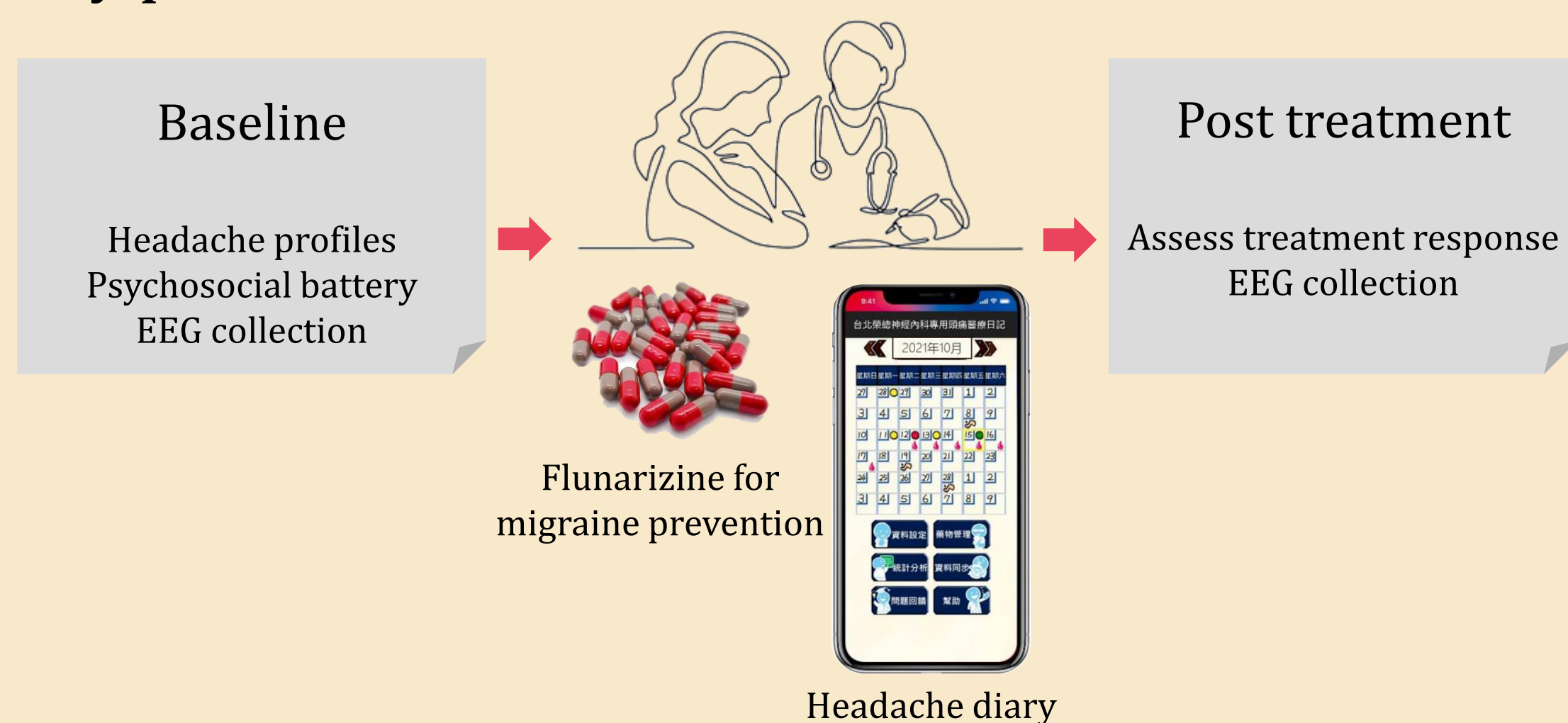


Objective

- Preventive treatment is crucial for patients with chronic migraine (CM)
- This study explored the association between resting-state cortical oscillations and 3-month treatment outcome in patients with CM.

- Treatment naïve CM patients (by the International Classification of Headache Disorders, 3rd edition) were recruited at the Headache Clinic of Taipei Veterans General Hospital.

- Study procedures



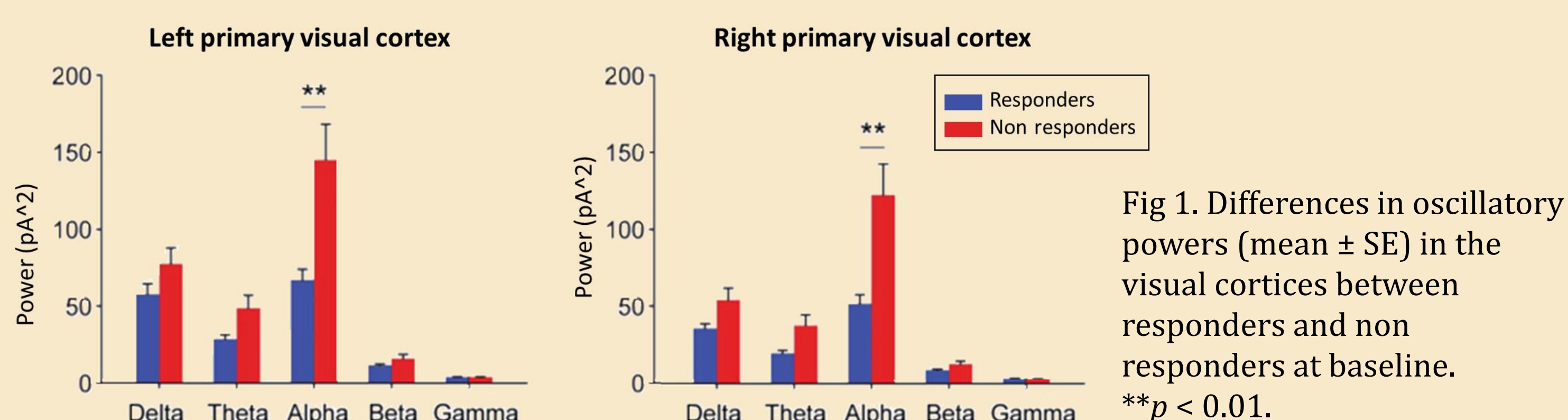
- We collected and analyzed EEG of 72 CM. (Table 1)

Table 1. Demographics and headache profiles of the subjects

	Non responders	responders	p
N	34	38	-
age (yrs.)	37.9 ± 11.2	37.5 ± 11.6	0.871
sex (F%)	91%	95%	0.553
BMI (kg/m ²)	23.3 ± 5.1	22.5 ± 3.9	0.461
Disease duration (yrs.)	18.4 ± 11.0	18.0 ± 11.7	0.878
Headache frequency (d/m)	22.4 ± 6.3	20.8 ± 6.0	0.285
Visual aura	35%	42%	0.554
HADS-A	8.2 ± 3.1	8.7 ± 4.4	0.544
HADS-D	6.0 ± 3.4	6.1 ± 3.5	0.921
PSS	25.8 ± 7.4	27.3 ± 8.7	0.429
MIDAS	43.6 ± 54.1	31.5 ± 37.7	0.273

BMI: body mass index; HADS-A, Hospital Anxiety and Depression Scale-Anxiety Scale; HADS-D, Hospital Anxiety and Depression Scale-Depression Scale; PSS, Perceived Stress Scale; MIDAS, Migraine Disability Assessment.

- Non responders showed higher baseline occipital alpha power. (Fig.1)



- CM with augmented resting-state occipital alpha activity were less likely to be responsive to preventive treatment

- These findings can be used for developing personalized migraine treatment plans

Methods

- Five-minute resting EEG was collected using Quik-Cap with Ag/AgCl electrodes (Compumedics Ltd).
- BrainStorm software was used for EEG power spectral analyses.
- Flunarizine (5-10 mg per day) was administered as prophylactics and sumatriptan or nonsteroidal anti-inflammatory drugs were administered as abortive medication.
- Treatment responders: ≥50% MHD reduction in the 3rd month after treatment compared to baseline
- Independent *t* and χ^2 tests were used to compared the differences between groups and logistic regression analyses controlled with age, sex, anxiety, and depression were used for calculation of odds ratio (OR) toward treatment response.

Results

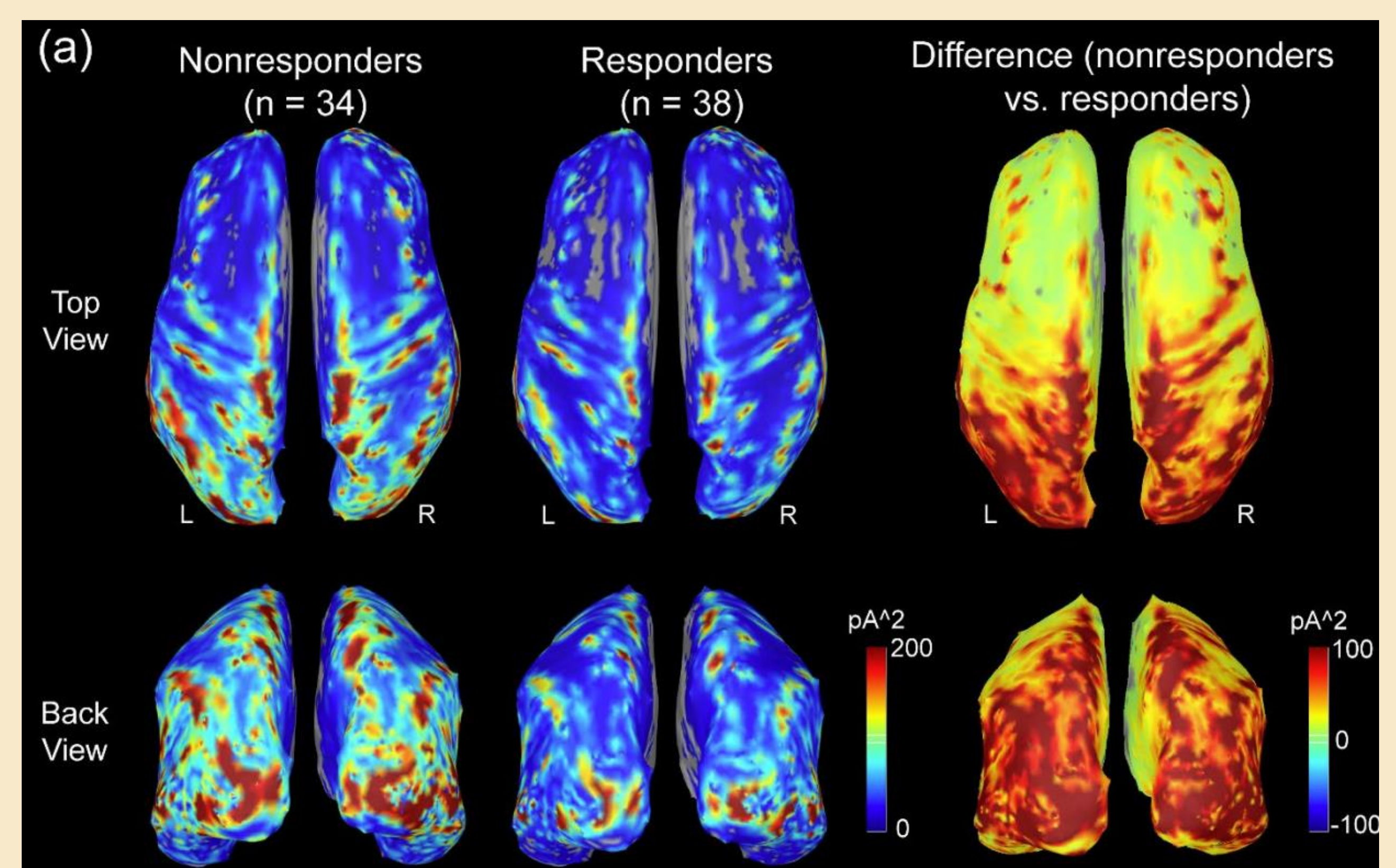


Fig 2. Source-based averaged alpha power distribution in non responders and responders, and the difference between two groups

- Logistic regression analysis revealed that augmented occipital alpha power (>mean+1SD) was associated with poor outcome
 - Left: OR: 5.96; 95% CI: 1.53-21.14; *p* = 0.009
 - Right: OR: 11.01; 95% CI: 2.20-54.94; *p* = 0.003

Conclusion



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