INHIBITION IMPAIRMENTS IN TEMPORAL LOBE EPILEPSY PATIENTS: ELEKTRONEUROENCEPHALOGRAPHY EVIDENCE FROM A GO/NOGO STUDY

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INTRODUCTION: Temporal lobe epilepsy (TLE) is a common type of epilepsy that easily run an intractable course. It can harm cognitive inhibition function, an essential executive function that enables us to suppress inappropriate actions in a given context at different levels. The aim of this study was to investigate whether TLE also affects related Go/Nogo-potentials related to the inhibition using high-resolution electroencephalography (EEG) technology.

METHODS: Participants were recruited in epilepsy clinics in Queen Mary Hospital, including refractory TLE patients (n=16), well-controlled TLE patients (n=11), and healthy control subjects (n=10). A Go/Nogo task was designed in which subjects were instructed to rapidly push a button in response to stimulus presentation. EEG data were collected by 128-channel Neuroscan system. The data were analysed by Neuroscan software.

RESULTS: We chose frontal for N2 detection in Go/Nogo task, central for Nogo P3 detection, and parietal for Go P3 detection. Analysis of variance showed that N2 amplitude in the Nogo condition was different among the three groups (P=0.048). Post-hoc analysis showed that the mean amplitude in the refractory TLE group (−0.73 ± 2.02 μV) was smaller compared with healthy people (−2.91 ± 1.44 μV), whereas the group effect was not significant in the Go condition (P=0.48). The P3 amplitude in the Nogo condition was significant (P=0.042). Post-hoc analysis indicated P3 amplitude in the refractory TLE patients (1.40 ± 1.86 μV) was smaller than healthy people (3.92 ± 4.12 μV). The group effect was also significant in the Go-P3 (P=0.038), healthy people (2.89 ± 2.05 μV) had larger mean amplitude over refractory TLE patients (0.75 ± 1.51 μV).

CONCLUSION: The event-related potential data suggest that there is selective impairment of inhibitory function in TLE. Impaired inhibitory executive function may lie in the frontal lobe.

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