Consultations from Neurosurgical ICU

홍 정 호
계명대학교 의과대학 신경과

Jeong-Ho Hong, MD, PhD
Department of Neurology, Keimyung University Dongsan Medical Center, Daegu, Korea

One of the most common consultations from neurosurgical ICU is unexplained mental change. Nonconvulsive statue epilepticus in comatose patients without no clinical evidence of seizures is 8% and accounts for about 10% in neuro-ICU. The most established application of cEEG in the neurosurgical ICU is the detection and treatment of subclinical seizures and nonconvulsive status epilepticus. Additionally, quantification of seizure frequency and titration medications used to treat seizures can be facilitated using qEEG parameters. cEEG is essential in guiding successful treatment of refractory status epilepticus. It gives clinicians an end point that allows adjustment of IV medication to maintain enough suppression of the EEG background while minimizing adverse effects. cEEG may also provide information about the level of sedation in the critically ill, especially in the setting of neuromuscular blockade.
The goal of neuromonitoring in neurosurgical ICU is to forestall secondary brain injury as soon as possible, and to prevent permanent injury by triggering timely interventions. Ischemia can be detected using cEEG, and detection of delayed cerebral ischemia (DCI) from vasospasm is another clinical application. A previous study reported that alpha-delta ratio (ADR) demonstrated the strongest association with DCI. This association was based on EEG changes correlating with the degree of neuronal injury and cerebral blood flow impairment. The onset of clinical symptoms due to vasospasm after aneurysmal SAH may be preceded by decrement and asymmetry of ADR on cEEG, which can be detected in real time. Timely recognition of ischemic insults and the use of interventions such as stat chemical or balloon angioplasty can prevent the progression of these symptoms to infarction. These changes occurred several hours before TCD velocities were obtained and clinical symptoms were noted.

Key Words: Mental change; cEEG; Neuromonitoring; Status epilepticus; Delayed cerebral ischemia; Vasospasm

Jeong-Ho Hong, MD, PhD
Department of Neurology, Keimyung University Dongsan Medical Center, 56 Dalseong-ro Jung-gu, Daegu 700-712, Korea
TEL: +82-53-250-7317 FAX: +82-53-250-7840
E-mail: neurohong79@gmail.com