**Electroencephalogram recordings**

Electroencephalogram (EEG) studies from 12, 25, 27, 28, 30, 33 day of status epilepticus and concomitant treatments.

All EEG recordings are shown in time base of 30 mm/s, read at 10 µV/mm, with notch filter of 60Hz applied. Electromyographic channel (EMG) recorded muscle activity of left deltoid muscle.

**Abbreviations:** ASMs, antiseizure medications; CBZ, carbamazepine; ECG, electrocardiogram; EEG, electroencephalogram; EMG, electromyographic activity; KET, ketamine; LCM, lacosamide; LEV, levetiracetam; LTG, lamotrigine; MDZ, midazolam; PER, perampanel; PHT, phenytoin; TPS, sodium thiopental.

**Day 12:** Resolution of second episode of focal motor status epilepticus.
Attenuated background activity without epileptiform discharges during MDZ 0.77 mg/kg/h.
Current ASMs: CBZ 1200 mg, LTG 900 mg, PHT 1250 mg.

**Day 25:** Burst-suppression pattern reached with high-dose of anaesthetics.
The burst suppression pattern was characterized by burst of background activity alternated with epileptiform burst followed by long phases of suppression lasting 20 seconds.
Continuous MDZ 2mg/kg/h, KET 5 mg/kg/h and TPS 5mg/kg/h administration.
Current ASMs: CBZ 2400 mg, LTG 900 mg, LCM 400 mg, added LEV 3000 mg.
**Day 27:** Discontinuous pattern characterized by epileptiform burst followed by background activity suppression lasting 1-2 seconds.
Continuous TPS 5mg/kg/h administration.
Current ASMs: CBZ 2400 mg, LTG 900 mg, LCM 400 mg, LEV 3000 mg.

**Day 28:** Persistence of discontinuous pattern characterized by frequent epileptiform burst lasting 1 second followed by background activity suppression lasting 1-2 seconds.
Progressive reduction of TPS at 2,6 mg/kg/h.
Current ASMs were unchanged: CBZ 2400 mg, LTG 900 mg, LCM 400 mg, LEV 3000 mg.
**Day 30:** TPS withdrawal attempt resulted in increase of epileptiform bursts lasting 1-2 seconds followed by short phases of background activity attenuation. Epileptiform activity was not correlated to clinical seizures. Current ASMs were unchanged: CBZ 2400 mg, LTG 900 mg, LCM 400 mg, LEV 3000 mg.

**Day 33:** EEG recording after withdrawal from all anaesthetic. EEG showed frequent burst of diffuse spiky activity clinically correlated to left shoulder jerks. Current ASMs: CBZ 2400 mg, LTG 900 mg, LEV 6000 mg, PER 12 mg. Vagus nerve stimulation parameters: intensity 1.75 mA (30” ON, 1.8” OFF) Methylprednisolone 1 g/day.