Bilateral Bispectral index (BIS) monitoring on epileptiform activity detection: an anti-NMDA encephalitis case

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INTRODUCTION

- Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is a disorder characterized by acute behaviour and psychiatric changes, seizures, speech disorders and disautonomia.
- Despite the severity of the disorder, the prognosis is usually good.
- Bilateral Bispectral Index (BIS) monitoring displays four channels of electroencephalogram (EEG) and also allow monitoring density spectral array (DSA).

CASE REPORT

- ❑ 18 year-old male;
- ❑ No relevant medical history.

1 month

- ✓ Neuropsychiatric changes and speech disorder;
- ✓ Autonomic dysfunction;
- ✓ Hypoventilation periods;
- ✓ Refractory seizures.

Anti-NMDA antibodies in the blood and cerebrospinal fluid (CSF) positive

Autoimmune anti-NMDA encephalitis

Depression of level of consciousness and severe hypoventilation

ICU

- ✓ Standard monitoring of ICU;
- ✓ Bilateral bispectral index (BIS) monitor;
- ✓ Plasmaferesis.

Day 2 after admission

- Episodes of **hyperthermia**, with no identifiable infectious source;
- DSA pattern showed an **abrupt change** with increase density in high frequencies domain;
- BIS monitor also revealed **epileptiform discharges**, similar to the ones on conventional EEG

- **Tiopental** bolus was administered.
- ✓ Conventional EEG performed afterwards was compatible with electrical *status epilepticus*;
- ✓ Sedative and anti-epileptic medications were adjusted;
- ✓ Succeeding reductions in sedative and analgesic medications was performed according to DSA monitoring and conventional EEG results.

- No recurrence of epileptiform discharges or a predominant high frequency DSA pattern;
- Clinical evolution during hospitalization was favourable with totally recovery on follow-up.

DISCUSSION

- Continuous EEG monitoring of this patients is highly desirable, however resource unavailability limits its use;
- On the other side, EEG interpretation is complex, which lead to development of quantitative analysis based algorithms, such as processed EEG and density spectral array;
- In this case, identification of a DSA pattern compatible with epileptiform activity was decisive on patient's treatment and prognosis.

LEARNING POINTS

- ✓ Bilateral BIS monitoring can be an adjuvant tool on epileptiform activity diagnosis, especially when continuous EEG is not available.