

## Neuroréanimation (infectieux, épilepsie)

ID: 239

### Feasibility and safety of monitoring invasive cortical depolarizations after acute brain injury.

B. Balança\*(1), J.Bado\*(1)

(1) Anesthésie-réanimation neurologique, Hospices civils de Lyon, Lyon, France

\*Auteur présenté comme orateur

#### Position du problème et objectif(s) de l'étude:

Spreading depolarizations (SDs) occur when the cortex is injured and create cellular oedema [1]. After severe traumatic brain injury (TBI) and subarachnoid hemorrhage (SAH), SD has been associated with a poor prognosis [2] or early and delayed cortical injury [3]. The implementation of this monitoring in the acute phase could therefore allow optimizing the management of these patients. SDs are recorded in research protocols in expert centers, with few data regarding the feasibility and safety.

#### Matériel et méthodes:

We are currently conducting a prospective feasibility and safety study of SD recording in the neurological intensive care unit of the Civil Hospitals of Lyon (NCT04585503). The inclusion criteria were hospitalization for severe TBI or high-grade SAH requiring either a neurosurgical intervention allowing the placement of a strip of 6 electrodes on the surface of the cortex or the implantation of an intracranial monitoring allowing the placement of an intracortical electrode of 8 contacts (DIXI medical, France). The primary endpoint was the quality of the electrocorticographic recording made with the CNS monitor (MOBERG group MICROMED, France). The study was approved by the Comité de protection des personnes. The consent of the patient or their relatives were received, if it was not available, a third-party certificate was necessary and then consent of a relative for the pursue of the study.

#### Résultats & Discussion:

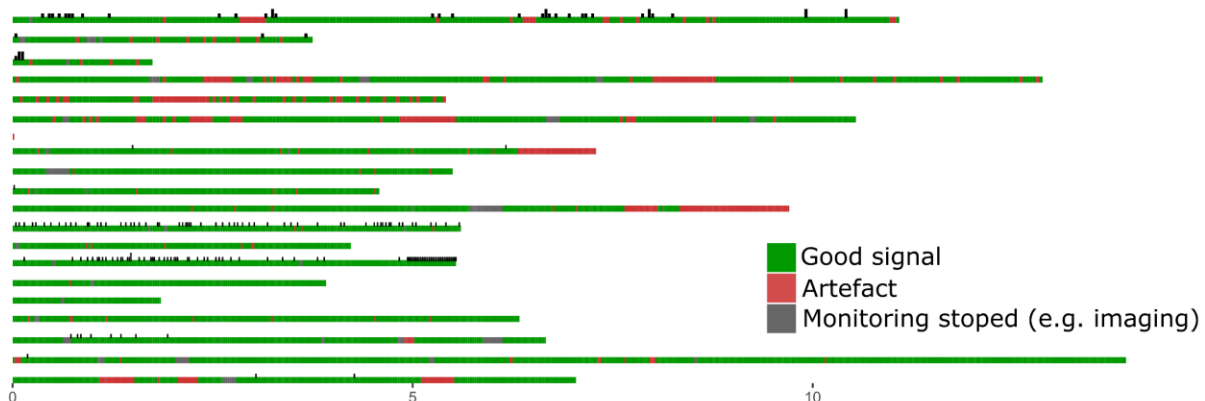
All the patients were included between January 2021 and March 2023 (12 SAH and 8 TBI). 5 patients had intraoperatively positioned cortical strips, 11 patients had intraparenchymal electrodes placed in the ICU, and 4 patients had an intracortical electrode voluntarily positioned in the subdural space during a neurosurgical procedure such as the placement of an external ventricular shunt. The recording was interpretable in all patients with a duration of 3 to 14 days. SDs were recorded in 10 patients (Figure 1) each line describes one patient's ECoG signal quality timeline, the occurrence of SD is presented as vertical black bars. 1 CSF leak occurred with spontaneous resolution. Ventriculitis was reported in 1 patient in whom the removed electrode was sterile. 1 local skin infection located on the scar without impact. No complications were observed with intracortical electrodes.

#### Conclusion:

The implantation of cortical electrodes for SD monitoring during the first weeks after severe TBI or high-grade SAH appears feasible and safe. Further study will have to demonstrate the benefit of this monitoring device in the management of patients with severe TBI or high-grade SAH in the acute phase.

#### Références bibliographiques:

1. Dreier et al. Neuropharmacology. 2018;134:189-207 2. Hartings et al. Jama Neurol. 2020;77(4):489-499. 3. Dreier et al. Front Neurosci-switz. 2019;13:373.



Les auteurs déclarent ne pas avoir toute relation financière impliquant l'auteur ou ses proches (salaires, honoraires, soutien financier éducationnel) et susceptible d'affecter l'impartialité de la présentation.