Does the cerebral state index separate consciousness from unconsciousness?

Abstract:

The Cerebral State Monitor™ (CSM) is an electroencephalogram (EEG)-based monitor that is claimed to measure the depth of hypnosis during general anesthesia. We calculated the prediction probability (P(K)) for its ability to separate consciousness from unconsciousness in surgical patients with different anesthetic regimens. Digitized EEG recordings of a previous study of 40 nonpremedicated, adult patients undergoing elective surgery under general anesthesia were replayed using an EEG player and reanalyzed using the CSM. Patients were randomly assigned to receive either sevoflurane-remifentanil or propofol-remifentanil. The study design included a slow induction of anesthesia and an episode of intended wakefulness. CSM values at loss and return of consciousness were compared. P(K) was calculated from values 30 seconds before and 30 seconds after loss and return of consciousness. The P(K) for the differentiation between consciousness and unconsciousness was 0.75 ± 0.03 (mean ± SE). For sevoflurane-remifentanil, P(K) was 0.71 ± 0.04. For propofol-remifentanil, P(K) was 0.81 ± 0.03. The ability of CSM for separation of consciousness and unconsciousness was comparable to other commercially available EEG-based indices.