Agreement of cerebral state index and glasgow coma scale in brain-injured patients

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Background: Cerebral state index (CSI) is derived from electroencephalograms to monitor the level of consciousness during anesthesia. Some evidence shows that this indicator has been used to detect cerebral ischemia and prognostic outcomes for traumatic brain injury (TBI).

Objectives: The present study was designed to investigate the correlation between Glasgow Coma Score (GCS) and CSI for brain-injured patients.

Materials and Methods: In 60 patients with head injury who did not require sedative medication, GCS and CSI were measured once a day for the first 10 days of hospitalization. Correlation between GCS and CSI was studied by Pearson’s correlation test. Gamma agreement coefficient between the two variables for the first day of hospitalization was calculated.

Results: A significant correlation coefficient of 0.611–0.796 between CSI and GCS in the 10 day period of the study were observed (p<0.001). Gamma agreement coefficient for CSI and GCS for the first day of hospitalization was 0.79(P<0.001). Correlation of GCS increased significantly day-by-day during hospitalization. The same condition was observed for CSI as well. However, this increase was less for CSI than for GCS. The mean GCS and CSI for patients who died during hospitalization in the ICU were 4±1.4 and 45.6±38.2, respectively.

Conclusions: In patients with traumatic brain injury, there was a statistically significant correlation and agreement between GCS and CSI. Although we have found the correlation of GCS and BIS in patients during all days of hospitalization interestingly, we found GCS was more consistent than CSI.

Keywords: Cerebral state index, Glasgow Coma Score, traumatic brain injury