ABSTRACT

The Relationship Between Glasgow Coma Scale (GCS), Pupil Reactivity, and Midline Shift with Glasgow Outcome Scale (GOS) in Trauma Patients with Acute Subdural Hematoma Following Decompressive Craniectomy

Background Acute Subdural Hematoma (ASDH) is a life-threatening neurosurgical emergency that often requires decompressive craniectomy to relieve intracranial pressure. Despite surgical advances, postoperative outcomes remain highly variable. Clinical indicators such as the Glasgow Coma Scale (GCS), pupillary reactivity, and midline shift are often linked to prognosis, but findings are inconsistent. No prior studies in Indonesia have examined these predictors among ASDH patients after decompressive craniectomy. This study aimed to assess the association between GCS, pupillary reactivity, and midline shift with the Glasgow Outcome Scale (GOS).
Method A cross-sectional study was conducted using secondary data from 40 ASDH patients who underwent decompressive craniectomy at Dr. Sardjito General Hospital between January 2022 and June 2024. Participants were trauma-related ASDH patients aged 15–64 years with complete data on GCS, pupillary reactivity, midline shift, and three-month GOS. Bivariate analysis evaluated associations between each variable and GOS, followed by multivariate logistic regression to determine adjusted relationships.
Result No statistically significant association was found between GCS, pupillary reactivity, or midline shift and the three-month GOS after decompressive craniectomy ($p>0.05$).
Conclusion Although not statistically significant, higher GCS scores and reactive pupils tended to correlate with better functional outcomes, while a large midline shift did not always indicate poor prognosis when timely and effective intervention was provided. These findings suggest that neurological recovery after decompressive craniectomy in ASDH patients is multifactorial, influenced by initial neurological status, intracranial pressure dynamics, treatment timeliness, and systemic condition. Larger studies are needed to confirm these trends and support improved prognostic evaluation and surgical decision-making.

Keyword: ASDH, Decompressive Craniectomy, Prognosis, GOS