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The Hospital Frailty Risk Score independently predicts postoperative outcomes in glioblastoma patients

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Abstract

Background and objective: The Hospital Frailty Risk Score (HFRS) was recently introduced as a tool for quantifying patient frailty using ICD-10 codes. The utility of HFRS has not yet been evaluated. The objective of the study is to determine the utility of HFRS in predicting surgical outcomes following resection of GBM and compare its prognostic ability to other validated indices, such as the American Society of Anesthesiologists (ASA) physical status classification and Charlson Comorbidity Index (CCI).

Methods: A retrospective analysis was conducted using a GBM patient database (2017 to 2019) at a single institution. HFRS was calculated using ICD-10 codes. Bivariate logistic regression was used to model the prognostic ability of each frailty index, and model discrimination was assessed using the area under the receiver operating characteristic curve (AUROC). Multivariate linear and logistic regression models were used to assess for significant associations between HFRS and continuous and binary postoperative outcomes, respectively.

Results: 263 GBM patients were included in the study. HFRS had a significantly greater AUROC when compared to ASA (p=0.016) and CCI (p=0.037) for predicting 30-day readmission. On multivariate analysis, HFRS was significantly and independently associated with hospital length of stay (LOS) (p=0.0038), nonroutine discharge (p=0.018) and 30-day readmission (p=0.0051).

Conclusion: HFRS has utility in predicting postoperative outcomes for GBM patients and more effectively predicts 30-day readmission than other frailty indices. HFRS may be used as a tool for optimizing clinical decision-making to reduce adverse post-operative outcomes among GBM patients.

Keywords: frailty; glioblastoma; neuro-oncology; outcomes.