Neutrophil to lymphocyte ratio for intracerebral hemorrhage

Inflammatory response plays a vital role in the pathological mechanism of intracerebral hemorrhage. It has been recently reported that neutrophil to lymphocyte ratio (NLR) could represent a novel composite inflammatory marker for predicting the prognosis of intracranial hemorrhage (ICH).

A retrospective cohort study was conducted to identify patients with ICH who underwent hematoma evacuation from January 2013 to December 2018. Data on demographics, clinical features, laboratory tests (admission and postoperative) and imaging information were collected. The associations between variables and 30-day mortality were assessed by multivariable logistic regression analysis. The predictive power of independent predictors was evaluated by receiver operating characteristic curve (ROC).

A total of 380 patients were included. Multivariable analysis identified admission Glasgow Coma Scale score (odds ratio [OR] 0.61; 95% confidence interval [CI] 0.53-0.70, P < 0.001) and initial hematoma volume (OR 1.01; 95% CI 1.01-1.02, P = 0.022) were independently associated with 30-day mortality. With regard to laboratory biomarkers, postoperative NLR (OR 1.04; 95% CI 1.01-1.08, P = 0.014) was independently correlated with 30-day death, but admission NLR (OR 1.00; 95% CI 0.97-1.03, P = 0.944) was not. The best predictive cut-off point of 12.97 for postoperative NLR (area under curve 0.606, P = 0.006) for predicting 30-day mortality was determined by ROC analysis.

In patients with ICH undergoing hematoma evacuation, admission Glasgow Coma Scale score, initial hematoma volume and postoperative NLR were independently associated with 30-day mortality. Postoperative NLR may be a prognostic marker in surgical ICH patients and future studies are needed to confirm this finding [1].

The clinical data of 558 consecutive patients from the Ulanqab Central Hospital, with intracerebral hemorrhage (ICH) were retrospectively analyzed. Neutrophil to lymphocyte ratio is calculated by absolute lymphocyte count divided by absolute monocyte count.

Of these patients, 166 patients experienced neurological deterioration (ND) during the first week after admission and 72 patients died within 90 days. Multivariate analysis indicated that white blood cells (WBC), absolute neutrophil count (ANC), absolute lymphocyte count (ALC), neutrophil-to-lymphocyte ratio (NLR), LMR were significantly associated with ND during the initial week after ICH onset and also were associated with 90-day mortality. Moreover, NLR and LMR showed a higher predictive ability in ND during the initial week after ICH onset than 90-day mortality in receiver operating characteristic analysis. The best cut-off points of NLR and LMR in predicting ND and 90-day mortality were 10.24 and 2.21 and 16.81 and 2.19, respectively.

The results suggest that LMR on admission is a predictive factor for ND during the initial week after ICH onset, as well as 90-day mortality [2].

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104 patients with acute ICH admitted to West China Hospital, Sichuan University, Chengdu, China, from October 2016 to January 2018 were retrospectively enrolled. Admission absolute neutrophil count, lymphocyte count and white blood count were extracted from electronic medical records of patents with ICH. The associations between outcome and laboratory biomarkers were assessed by multivariable logistic regression analysis. The comparison of predictive power of independent predictors was evaluated by receiver operating characteristic curves (ROC).

59 ICH patients with surgical treatment exhibited unfavorable outcome, which associated with higher admission NLR (OR 0.692, 95%CI 0.518-0.925, P=0.01; OR 1.148, 95%CI 1.078-1.222, P<0.01; OR 1.215, 95%CI 1.015-1.454, P=0.03), lower GCS and larger hematoma. NLR showed the best predictive power by comparing with other laboratorial variables (area under the curve [AUC] 0.668, 95%CI 0.569-0.757, P<0.01), and was also found to linearly correlate with GCS at admission, hematoma volume, ANC, ALC and hydrocephalus. Meanwhile, the best predictive cutoff point of 6.46 for NLR was also identified.

Other than the association of prognosis of ICH patients, NLR exhibited potential independently predictive ability for 90-day functional outcome of ICH patients after surgery [3].

[1]

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Last update: **2024/06/07 02:58**