Neutrophil to lymphocyte ratio for subarachnoid hemorrhage

Experimental studies have shown that leukocyte infiltration and platelet activation occur immediately after aneurysmal subarachnoid hemorrhage (SAH) and that decreased leucocyte counts can improve early cerebral ischemia, delayed cerebral vasospasm, and subsequent functional outcome ¹.

It has been reported that patients with traumatic subarachnoid hemorrhage have increased leukocyte counts on hospital admission, which is an important parameter of severity of injury and an additional marker of neurological outcome in patients with severe traumatic brain injury ²⁾.

NLR and PLR are inflammatory biomarkers as independent predictors of DCI development and functional outcome after acute aSAH. When combined together, they may help to identify high-risk patients more powerfully ³⁾.

The study of Al-Mufti et al. provides further evidence of the association between inflammation and DCI. Admission NLR is a readily available and convenient biomarker that may be a clinically useful tool for prognostication when evaluating aSAH ⁴.

A retrospective examination was made of patients with SAH diagnosed secondary to isolated head trauma, isolated anterior communicating artery aneurysm rupture, and angiography-negative SAH. Age, gender, Glasgow Coma Scale (GCS) scores, and Fisher's grade scores, Glasgow Outcome Scale (GOS) scores, leukocyte count, neutrophil count, lymphocyte count, platelet count, Neutrophil to lymphocyte ratio (NLR) and platelet lymphocyte ratio results (PLR) were evaluated.

NLR and PLR values, which were similar in patients with spontaneous SAH, were significantly high in patients with traumatic SAH. NLR and PLR values could be 80% sensitive and 75% specific for distinguishing traumatic SAH from spontaneous SAH. Eosinophil count was lower in patients with angiography-negative SAH and patients with aneurysmal SAH than in patients with traumatic SAH. Initially measured GCS score, Fisher's grade score, eosinophil, neutrophil and lymphocyte counts could be prognostic in all patients with SAH. Moreover, it was concluded that the initially measured number of eosinophils might be directly related to patient prognosis. The eosinophil count was generally found to be high in traumatic SAH patients and it was observed that this parameter could be predictive for these patients. Lymphocyte count and NLR values could be prognostic markers in patients with angiography-negative SAH.

NLR, PLR and eosinophil count values could be predictive for etiological factors (traumatic SAH or spontaneous SAH) of patients who were admitted unconscious to the emergency room with SAH detected on radiological imaging ⁵).

update: upuate. 2024/06/07 neutrophil_to_lymphocyte_ratio_for_subarachnoid_hemorrhage https://neurosurgerywiki.com/wiki/doku.php?id=neutrophil_to_lymphocyte_ratio_for_subarachnoid_hemorrhage 02:52

References

1)

Friedrich V, Flores R, Muller A, et al. Reduction of neutrophil activity decreases early microvascular injury after subarachnoid haemorrhage. J Neuroinflammation. 2011;8:103 2)

Rovlias A, Kotsou S. The blood leukocyte count and its prognostic significance in severe head injury. Surg Neurol. 2001;55(4):190-196.

3)

Tao C, Wang J, Hu X, Ma J, Li H, You C. Clinical Value of Neutrophil to Lymphocyte and Platelet-tolymphocyte ratio After Aneurysmal Subarachnoid Hemorrhage. Neurocrit Care. 2017 Jun;26(3):393-401. doi: 10.1007/s12028-016-0332-0. PMID: 28028791. 4)

Al-Mufti F, Amuluru K, Damodara N, Dodson V, Roh D, Agarwal S, Meyers PM, Connolly ES Jr, Schmidt MJ, Claassen J, Park S. Admission neutrophil-lymphocyte ratio predicts delayed cerebral ischemia following aneurysmal subarachnoid hemorrhage. J Neurointerv Surg. 2019 Nov;11(11):1135-1140. doi: 10.1136/neurintsurg-2019-014759. Epub 2019 Apr 12. PMID: 30979846. 5)

Ogden M, Bakar B, Karagedik MI, Bulut IU, Cetin C, Aydin G, Kisa U, Ozveren MF. Analysis of biochemical laboratory values to determine etiology and prognosis in patients with subarachnoid hemorrhage: a clinical study. Neurol Res. 2018 Nov 10:1-12. doi: 10.1080/01616412.2018.1545414. [Epub ahead of print] PubMed PMID: 30417744.

From: https://neurosurgerywiki.com/wiki/ - Neurosurgery Wiki Permanent link: https://neurosurgerywiki.com/wiki/doku.php?id=neutrophil_to_lymphocyte_ratio_for_subarachnoid_hemorrhag Last update: 2024/06/07 02:52

