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NEUTROPHIL EXTRACELLULAR TRAPS IN PATIENTS WITH SEVERE ISCHEMIC STROKE AND ENDOVASCULAR THERAPY

Elisabeth Culmann[1], Friederike Liesche-Starnecker[2,3], Manuel Feisst[4], Leonie Gabor[1], Roxana Kremmer[1], Christoph J. Maurer[5], Berlis Ansgar[5], Markus Naumann[1], Hauke Schneider[1]

[1]*Department of Neurology, University Hospital Augsburg, Augsburg, Germany*

[2]*Institute of Pathology; University Hospital Augsburg, Augsburg, Germany*

[3]*Institute of Pathology, University Hosptal Ulm, Ulm, Germany*

[4]*Institute for Medical Biometry, University of Heidelberg, Heidelberg, Germany*

[5]*Diagnostic and Interventional Neuroradiology, University Hospital Augsburg, Augsburg, Germany*

Background and aims: Neutrophil extracellular traps (NETs) are extracellular structures composed of DNA, proteins and enzymes, released by activated neutrophils. NETs were found in brain tissue and in thrombi of ischemic stroke patients, and thrombo-inflammatory functions of NETs in ischemic stroke were proposed. We aimed to investigate the potential role of neutrophils and NET components in thrombi as biomarkers in patients with ischemic stroke.

Methods: We conducted a prospective, single-center cohort study recruiting endovascular treated patients with ischemic stroke, and collected clinical, laboratory, imaging, and 3-month outcome data. Furthermore, thrombi where collected during endovascular therapy. We analysed the histological composition of thrombi stained with HE for content of red blood cells (RBC), white blood cells (WBC), and fibrin/plasma (F/P, including thrombocytes). Immunohistochemical staining was performed for citrullinated histone H3(H3Cit), neutrophil elastase(NE), and myeoloperoxidase(MPO).

Results: During January 2023 and January 2025 we included 74 patients with severe ischemic stroke, endovascular treatment, and available thrombi (median age 80 years, median NIHSS score 15). At 3 months, median modified Rankin scale score was 4. Thrombi were predominantly composed either of fibrin/plasma (58.5%) or RBC (39.5%), rarely mainly of WBC (2%). Immunostaining revealed the presence of H3Cit (mean 2.3%[SD 2.55] of tissue area), NE (mean 1.04%[SD 1.33], and MPO (mean 5.42%[SD 2.46]. Further analyses, including for correlations with outcomes measures, will be presented.

Conclusions: NET components are present in thrombi of ischemic stroke patients. Further analyses may reveal their potential role as biomarkers in patients with severe ischemic stroke.

Conflict of interest: The authors have nothing to disclose.