PERIPHERAL MARKERS OF INFLAMMATION IN INDIVIDUALS WITH MILD COGNITIVE IMPAIRMENT

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INTRODUCTION AND AIM

Neuroinflammation plays a crucial role in the pathogenesis of Alzheimer's disease (AD). Among peripheral markers of inflammation counts of platelets, leukocytes, and related ratios, including the neutrophil-lymphocyte ratio (NLR) and the platelet-to-lymphocyte ratio (PLR), represent inexpensive and easily addressed peripheral markers that can be abnormal in AD. Specifically, the NLR was described higher in elderly and AD subjects.

This study aimed to explore the peripheral markers of inflammation in mild cognitive impairment (MCI), a transitional condition between normal aging and dementia, often associated with the future development of AD.

METHODS

We included 95 MCI with a follow-up from two to five years, retrospectively classified into *CONVERTERS* (MCI converting to AD dementia over the disease course) and *NON-CONVERTERS* (MCI showing stability at the last follow-up).

Global cognitive status was annually assessed by the mini-mental state examination (MMSE) score. Baseline peripheral markers of inflammation, including global count of leukocytes, lymphocytes, monocytes, neutrophils, platelets, the NLR, and the PLR, were derived and correlated with cognitive measures.

RESULTS

- *CONVERTERS* and *NON-CONVERTERS* showed no difference regarding age at baseline, sex, and educational level.

- *CONVERTERS* showed lower baseline MMSE scores (*p=0.01*), higher NLR (*p=0.02*) and a higher PLR (*p=0.03*) than *NON-CONVERTERS*.

- The total lymphocytes count, the NLR and the baseline Clock Drawing Test score significantly correlated with the loss of MMSE points per year (Figure 1).

Figure 1
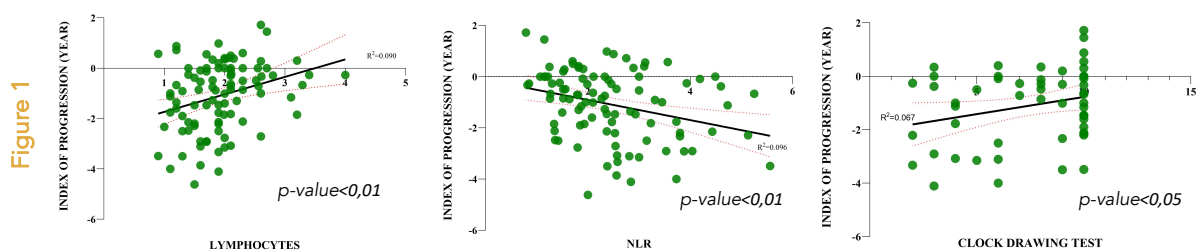
- Baseline MMSE score and the NLR predicted conversion to dementia in the linear regression analysis. In the ROC analysis the NLR value of 2.35 had moderate sensitivity (0.65) and specificity (0.67) in predicting the conversion from MCI to dementia.

CONCLUSIONS

- *CONVERTERS* MCI had significantly higher NLR and PLR than *NON-CONVERTERS* MCI and a worse baseline global cognitive status.

- NLR predicted conversion to dementia, directly correlating with the degree of cognitive decline.

A dysregulation of peripheral inflammation, involving both lymphocytes and neutrophils, may play a role in the pathogenesis of AD, even at the early stages of neurodegeneration.