

## RELATIONSHIP BETWEEN INFLAMMATORY MEDIATORS AND WHITE MATTER INTEGRITY IN ALZHEIMER DISEASE AND MILD COGNITIVE IMPAIRMENT

Mariana de Abreu (1); Thamires N. C. Magalhães (1); Christian L. B. Gerbelli (1); Luciana R. P. Silva (1); Camila V. L. Teixeira (1); Thiago J. R. de Rezende (1); Fernando Cendes (1); Marcio L. F. Balthazar (1).

1: Neuroimaging Laboratory, Department of Neurology, University of Campinas (Unicamp), Brazil.

**Introduction:** Alzheimer's disease (AD) is a progressive neurodegenerative disease whose pathophysiologic mechanisms are not completely understood. New evidences demonstrate that inflammation may play an important role in the pathogenesis of AD, by the imbalance of regular homeostasis with up and down regulation of certain cytokines. However it is not known how inflammatory cytokines may be related to white matter integrity in AD spectrum (amnestic mild cognitive impairment –aMCI- due to AD and mild AD dementia). To evaluate the relation of serum IL-6, MCP-1 and IL-18 and cerebrospinal fluid (CSF) MCP-1 with white matter (WM) integrity in mild AD, aMCI due to AD and normal elderly.

**Materials and Methods:** All subjects underwent (n=137): blood analyses to quantify cytokines levels and Magnetic Resonance Imaging in a 3T scanner. To analyze WM integrity, we used an automated segmentation method – MultiAtlas, which evaluates Diffusion Tensor Imaging (DTI) data. Partial correlations was used to explore the relationship between inflammatory mediators' levels and fractional anisotropy (FA) measures of WM from regions of interest using the SPSS software controlling the data for age and schooling. The WM regions were chosen considering previous literature in AD [1].

**Results:** There were no significant correlations in control and aMCI groups. In AD group, there were moderate to strong correlations between left Posterior Corona Radiata and IL-6 ( $r=-0.405/p=0.033$ ); left Superior Corona Radiata and serum MCP-1 ( $r=0.508/p=0.031$ ); left Cingulum and CSF MCP-1 ( $r=0.667/p=0.002$ ); right Cingulum and CSF MCP-1 ( $r=0.498/p=0.036$ ); right Posterior Corona Radiata and IL-6 ( $r=-0.509/p=0.006$ ); right Fornix and IL-6 ( $r=0.378/p=0.047$ ); right CorpusCallosum Genu and IL-6 ( $r=0.379/p=0.047$ ).

**Discussion:** We found both positive and negative significant correlations between inflammatory cytokines and WM integrity. Unexpected positive correlations (simultaneous increase of pro-inflammatory cytokine levels and WM integrity) might signify that, in some concentrations, even pro-inflammatory cytokines might have protective effects in AD.

**Conclusion:** These findings highlight the importance of systemic inflammation in AD pathophysiological process.

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**References:** [1] doi:10.1016/j.neurobiolaging.2014.05.027