Brain Injury in SLE

**Background** Cognitive impairment (CI) is one of the most common manifestations of neuropsychiatric lupus (NPSLE), which may occur in the absence of active Systemic Lupus Erythematosus (SLE) and negatively impacts patients’ daily functioning and health-related quality of life. Therefore, identifying patients at high risk of developing CI is essential to prevent the accrual of damage and disability. However, its pathogenesis is largely unknown, and currently, biomarkers for the risk of CI are lacking. Here we investigated whether SLE patients with CI have elevated serum levels of cytokines that previous studies have suggested to have a potential pathogenic role in NPSLE.

**Methods** 291 individuals between 18-65 years old who met the 2019 EULAR/ACR classification criteria for SLE were included. Cognitive assessment was performed by a psychologist and included the comprehensive 1-hour ACR Neuropsychological Battery (ACR-NB), which encompasses 19 cognitive tests representing six cognitive domains. The serum levels of nine cytokines (IL-10, IL-6, IFN-γ, TNF-α, TWEAK, MMP-9, S100 A8/A9, NGAL, and S100B) were determined using ELISA kits (R&D Systems). Differences in the serum levels of the cytokine profile between patients with and without CI (defined as a z-score of $£-1.5$ in two or more domains in the ACR-NB) were determined using Mann-Whitney U test. Correlations were assessed using Spearman’s rank correlation coefficient and the association of the different cytokine levels with each CI test score by logistic regression.

**Results** Forty percent of the patients ($n=116$) had CI. While no differences in the demographic characteristics and disease...