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Poster Session 10th Annual Meeting of the Lupus Academy 2021

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Poster title	Immunophenotype of systemic lupus erythematosus and Sjogren´s syndrome patients identified two endotypes with potential therapeutic implications.
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Abstract (max. 250 words)

Background: Systemic lupus erythematosus (SLE) and primary Sjögren´s syndrome (pSS) are chronic autoimmune rheumatic diseases. Up to 20% of SLE patients present with features of both diseases, known as having SLE associated with SS (SLE/SS).Previously, we identified similarities between the immune-cell profiles of patients with SLE compared with pSS. Thus, we hypothesised that immune-based endotypes could be shared between SLE, SLE/SS and pSS patients which can inform therapeutic strategies.

Methods: Immune-phenotyping of 29 immune-cell subsets in peripheral blood from patients with SLE (n=29), SLE/SS (n=14), pSS (n=45) and sex-matched healthy controls (n=31), was performed using flow cytometry. Data were analysed using logistic regression, multiple t-tests and supervised machine learning (balanced random forest-BRF, sparse partial least squares discriminant analysis-sPLS-DA). Patients were stratified by k-means clustering. Clinical trajectories were analysed over 5 year follow-up.

Results: Unsupervised k-means clustering was applied to the immunological features of the combined patient cohorts and two distinct patient endotypes were identified: Group-1 (n=49; SLE=19, SLE/SS=6, pSS=24,) and Group-2 (n=39; SLE=10, SLE/SS=8, pSS=21). Significant differences in immune-cell phenotypes across B-cell and T-cell subsets were identified by logistic regression, BRF (AUC=0.9942, assessed by 10-fold cross-validation) and sPLS-DA analysis. Comparison of the multiple analysis approaches identified eight common immune-cell subsets, including total and memory CD4+ and CD8+ T-cell subsets but no B-cell subsets. Interestingly, patients in Group-2 had elevated disease activity measures at baseline and over a 5-year trajectory compared to Group-1.

Conclusion: An immune-cell toolkit could differentiate patients across diseases with high accuracy for targeted therapeutic approaches.

The Lupus Academy is a long-term initiative committed to improving patient outcomes in SLE and allied diseases. By providing a highly interactive educational forum, the Lupus Academy is dedicated to sharing best clinical practice through the dissemination and discussion of cutting edge scientific and clinical research.