

**P170 ANTIMALARIAL AGENT USE IS ASSOCIATED WITH FAVOURABLE PHYSICAL FUNCTIONING IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS**

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**Background** Patients with Systemic Lupus Erythematosus (SLE) suffer an impaired health-related quality of life (HRQoL), and the majority of them experience fatigue as a major problem. Traditionally, treatment of SLE has been symptomatic, and antimalarial agents (AMA) are considered a cornerstone of SLE treatment. In previous literature, results regarding the effect of AMA on HRQoL have been conflicting. In this study, we aimed at investigating the potential influence of AMA on SLE patients' self-perception of HRQoL aspects.

**Methods** We utilised pooled baseline data from the BLISS-52 and BLISS-76 clinical trials of belimumab (N=1684). Access to data was granted by GlaxoSmithKline. The patients' HRQoL and fatigue were self-reported using the Medical Outcomes Study short form 36 (SF-36) health survey, the functional assessment of chronic illness therapy (FACIT)-Fatigue scale and the three-level EuroQol 5 Dimension (EQ-5D) questionnaire. Minimal clinically important difference (MCID) was set to  $\geq 5.0$  points for SF-36 subscales,  $\geq 2.5$  points for SF-36 component summary scores, and  $\geq 4$  points for FACIT-Fatigue scores. The Mann-Whitney U test was used for comparisons. Linear regression models were next used to adjust for possible confounding factors; these included age, sex, ethnic origin, disease activity and duration, organ damage, corticosteroid use and use of immunosuppressants.

**Results** Patients receiving AMA (N=1098) performed better than patients who did not receive AMA (N=586) with regard to SF-36 physical component summary score, physical functioning, role physical, bodily pain, FACIT-Fatigue scores, EQ-5D score and EQ-5D visual analogue scale score. The difference in SF-36 physical functioning was the greatest one among the SF-36 parameters, exceeding the corresponding MCID. The association between AMA use and better physical functioning was still significant after adjustment for potential confounding factors ( $\beta=0.08$ ;  $P=0.001$ ). In this analysis, Asian patients performed better in physical functioning ( $\beta=0.07$ ;  $P=0.004$ ) while African/African American patients performed worse ( $\beta=-0.07$ ;  $P=0.003$ ). High disease activity ( $\beta=-0.09$ ;  $P<0.001$ ) and organ damage ( $\beta=-0.12$ ;  $P<0.001$ ) were also independent factors of worse physical functioning, whereas corticosteroid use independently improved the outcome ( $\beta=0.06$ ;  $P=0.022$ ).

**Conclusions** AMA use is associated with favourable physical functioning in patients with SLE, independently of other factors.

**P171 CARDIOVASCULAR RISK IN YOUNG PATIENTS WITH LUPUS: INVESTIGATING METABOLIC BIOMARKERS AND THE IMMUNOLOGICAL PHENOTYPE**

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**Background** Cardiovascular disease is the leading cause of mortality in patients with Juvenile-onset Systemic Lupus Erythematosus (JSLE) not attributable to lupus flare. This study used a multi-omic approach to investigate cardiovascular risk (CVR) in JSLE patients.

**Methods** NMR-based serum metabolomic biomarker analysis (including 113 different lipoprotein measures assessing lipoprotein size and lipid content) was performed on a discovery cohort of JSLE patients (n=31, median age 19). Data was analysed using cluster, receiver operating characteristic (ROC) and logistic regression analysis. Results were validated in a second JSLE cohort (n=31, median age 19). Flow cytometry evaluated 28 immune cell subsets and RNAseq assessed gene expression in matched patient samples.

**Results** Unbiased hierarchical clustering of metabolomic data identified 2 JSLE patient groups, each with a complex and unique lipoprotein profile. Group-1 had decreased high density lipoproteins (HDL) and increased very low and low density lipoproteins (VLDL/LDL) and Group-2 had elevated HDL but reduced VLDL/LDL indicating an association with high and low CVR respectively. These groups were validated in a separate JSLE cohort and Apolipoprotein (Apo) B:A1 ratio was identified as a predictive and longitudinally stable biomarker of CVR (ROC area under the curve  $>0.99$ ).

The high and low CVR groups were also associated with a unique immune phenotype characterised by altered correlations between T and B-cell subsets and significantly increased CD4+ and reduced CD8+T-cell subsets in high vs low CVR. Transcriptomic analysis of T-cell subsets identified 70 genes upregulated and 62 downregulated in High vs Low CVR patients and pathway analysis identified membrane sphingolipid metabolism and lipid-mediated signalling as the top regulated pathways associated with CVR. Additionally, genes previously related with increased CVR, including IFNG and NLRP2, were significantly increased in the high CVR group.

**Conclusion** Multiomic analysis identified a putative predictive biomarker (ApoB:A1 ratio) and novel immunopathogenic pathways associated with increased CVR in JSLE.

**P172 MAINZER LUPUS SCORE (MLS) A NEW QUESTIONNAIRE FOR LUPUS TREATMENT**

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**Background** For the diagnosis and treatment of the systemic lupus erythematosus (SLE), numerous scores and indices already exist with different focal points, which are mostly extensive and time consuming. The MLS is a short newly developed questionnaire consisting out of four items to consider whether it is necessary to adjust current therapy: Occurrence of new lupus-specific symptoms, subjective measurement of quality of life (QoL), change of serological abnormalities and the occurrence of organ damage accrual.

**Methods** Patients who had at least 3 visits since 2016 in our clinic were able to participate. Spearman-correlation was used to correlate MLS and several other well established scores for disease activity in SLE (SLEDAI, ECLAM, SLICC). Additionally, scores for subjective assessment of mental and physical state were used (FSMC, BDI, WAI) to obtain a preliminary