LSO-017 ANTI-TCP1 ANTIBODY IS THE POTENTIAL BIOMARKER OF SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

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Background Systemic lupus erythematosus (SLE) is chronic inflammatory disease caused by the production of various autoantibodies such as antinuclear antibodies and anti-dsDNA.. Previous studies have shown that genetic and environmental factors influence onset, but the exact cause of SLE is unclear. The SLE is diagnosed with various clinical and immunologic indicators. We focused on finding biomarkers for a diagnosis of SLE.

Methods We compared the serum of normal (NC) and patients with SLE through screening, and selected highly expressed TCP1 antibodies as a candidate for SLE-specific biomarker. We produced GST-fusion TCP1 as a TCP1 antigen using SF9 cell and used RPLP 0, 1, 2 known as lupus autoantibodies as controls. We confirmed the possibility of TCP1 autoantibody as a SLE-specific biomarker using sera of the NC patients with SLE or other autoimmune disease through Dot blot assay.

Results TCP1 antibody was expressed high in the most of SLE (n=10) patients as compared with the NCs (n=5). We performed Dot blot analysis using serum from NC (n=50), patients with SLE (n=100), and patients with other autoimmune disease including rheumatoid arthritis (n=25), systemic sclerosis (n=30), and Bechet's disease (n=15). As a result, the TCP1 antibody were detected 79 out of 100 patients with SLE and it was more commonly expressed compared with NC and other autoimmune diseases. The sensitivity of TCP1 antibody in SLE patients was 79%, and the specificity was 90%.

Conclusions Therefore, TCP1 antibody is the potential to be a specific biomarker of SLE and is expected to be a new biomarker for the diagnosis of SLE.

LSO-018 IC3B/C3 RATIOS MORE STRONGLY CORRELATE WITH SLE DISEASE ACTIVITY IN AFRICAN- AMERICANS COMPARED WITH WHITES

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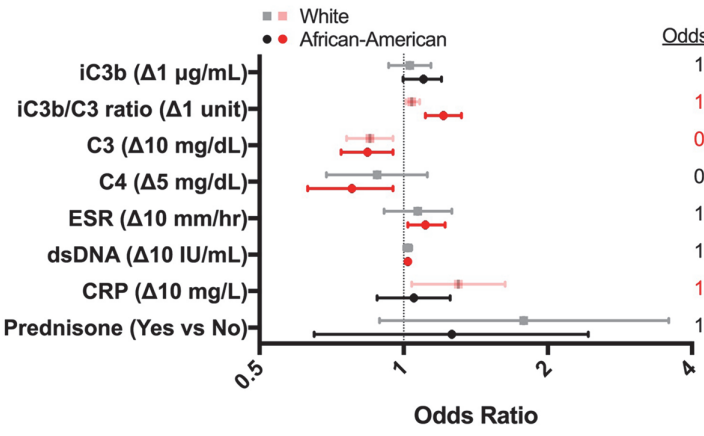
Background Complement activation is a hallmark of SLE pathophysiology. We previously found that iC3b/C3 ratios associated with active disease and clinically meaningful changes in SLE disease activity. Since SLE is more severe in nonwhite populations, we hypothesized that iC3b/C3 ratios would be a more sensitive marker of disease activity in nonwhite populations. Thus, we examined the relationship of iC3b/C3 ratios between African-American (AA) and White subjects with classified SLE seen at the Washington University.

Methods 159 adult SLE patients were enrolled in this observational study. 83 patients with 3–7 study visits were used for this longitudinal analysis. C3 and C4 were measured by nephelometry; iC3b by a lateral flow assay using an investigational medical device. SLE disease activity was measured using the SLEDAI 2K Responder Index-50 instrument. Statistical analyses were performed using SAS v9.4. Multilevel regression models examined associations for SLE disease activity. Ordinal logistic regression models with generalized estimating equation modeling (GEE) examined associations for clinically meaningful changes since the outcome variable is ordinal. Odds ratios and 95% confidence intervals were estimated using Proc GLIMMIX and Proc GENMOD.

Results iC3b/C3 ratios and C3 associated with active disease in AA and White SLE subjects, with the association of the iC3b/C3 ratio in AA was stronger (figure 1). In addition, AA with SLE associated C4, ESR, and dsDNA with active disease, while Whites associated with CRP. In multiple regression analysis, iC3b/C3 ratios independently associated with active disease in both groups, although the effect was more pronounced in AA (AA: OR=1.48, 95% CI=1.21–1.82;



	White			African-American		
	Odds Ratio	(95% CI)	p - value	Odds Ratio	(95% CI)	p - value
iC3b (Δ1 µg/mL)	1.03	(0.93-1.14)	0.61	1.10	(0.997-1.20)	0.06
iC3b/C3 ratio (Δ1 unit)	1.04	(1.01-1.08)	0.006	1.21	(1.11-1.32)	0.001
C3 (Δ10 mg/dL)	0.85	(0.76-0.95)	0.005	0.84	(0.74-0.95)	0.007
C4 (Δ5 mg/dL)	0.88	(0.69-1.12)	0.30	0.78	(0.63-0.95)	0.01
ESR (Δ10 mm/hr)	1.07	(0.91-1.26)	0.39	1.11	(1.02-1.26)	0.01
dsDNA (Δ10 IU/mL)	1.02	(1.00-1.04)	0.39	1.02	(1.01-1.03)	0.005
CRP (Δ10 mg/L)	1.30	(1.04-1.63)	0.02	1.05	(0.88-1.25)	0.56
Prednisone (Yes vs No)	1.78	(0.89-3.58)	0.10	1.26	(0.65-2.43)	0.49

Abstract LSO-018 Figure 1 Univariate regression analysis of the association of biochemical variables with active SLE. Red (AA) and pink (whites) whiskers represent statistically significant variables, while grey (white) and black (AA) represent non-significant variables

Whites: OR=1.17, 95% CI=1.02–1.34). Furthermore, in univariate regression analysis, only the iC3b/C3 ratio in AA associated with clinically meaningful changes in disease activity.
Conclusions iC3/C3 ratios better correlated with active disease in AA compared to Whites. Furthermore, iC3b/C3 ratios correlated with clinically meaningful changes in disease activity only in AA.

Short oral presentation session 4: SLE epidemiology and public health 1

LSO-019 EFFECT OF AIR POLLUTANT EXPOSURE ON DISEASE ACTIVITY OF SYSTEMIC LUPUS ERYTHEMATOUS: A PROSPECTIVE LONGITUDINAL STUDY FROM KOREA

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Background Exposure to air pollutants is associated with an increased risk of pulmonary and cardiovascular disease and death. Because few studies have investigated the effects of air pollution on systemic lupus erythematosus (SLE), we investigated the association between exposure to air pollutants, including particulate matter (PM), and disease activity over 1 year in a prospective, longitudinal cohort of Korean patients with SLE.
Methods The study enrolled 386 patients from three metropolitan regions in Korea. The daily average PM10, PM2.5, NO2, CO, SO2, and O3 concentrations were measured using portable air quality monitors and data from the National Ambient Air Monitoring System. Disease activity was evaluated using the SLE Disease Activity Index 2000 (SLEDAI-2K) and Physician Global Assessment (PGA), every 3 months for 1 year. Lupus flares, a damage index, and 36-Item Short Form Health Survey (SF-36) scores were also assessed. A generalized estimating equation was used to evaluate the impact of air pollutants on clinical outcomes, including disease activity.
Results Changes in PM10 and PM2.5 were significantly associated with changes in SLEDAI-2K scores of > 8 over 1 year in SLE patients (β = 0.097, 95% confidence interval [CI]: 0.048–0.146, $p < 0.001$; β = 0.100, 95% CI: 0.054–0.146, $p < 0.001$, respectively). Changes in PM10 and PM2.5 were also significantly associated with the development of lupus flares (β = 1.603, 95% CI: 1.067–2.408, $p = 0.023$; β = 1.777, 95% CI: 1.048–3.011, $p = 0.033$, respectively). However, there were no significant associations between the changes in NO2, CO, SO2, and O3 and lupus activity.
Conclusions In this study, PM10 and PM2.5 exposure increased disease activity and the risk of lupus flares in SLE patients living in metropolitan regions.

LSO-020 INTERVENTION TO IMPROVE MEDICATION ADHERENCE AMONG PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

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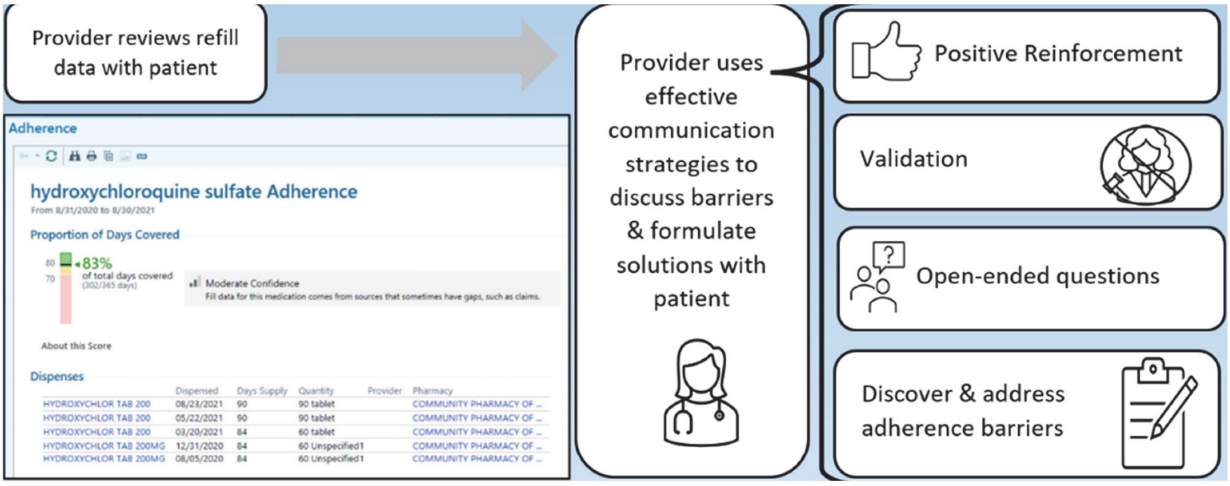
Background To optimize medication adherence and outcomes of patients with systemic lupus erythematosus (SLE), we developed an adherence intervention that encourages providers to review real-time pharmacy refill data and use effective communication techniques with patients to collaboratively overcome adherence barriers (figure 1). Prior pilot testing demonstrated intervention feasibility, acceptability, and preliminary effect on adherence. Here we examined areas for improvement to inform future implementation.
Methods We audio recorded clinic encounters between clinicians and patients seen at an academic lupus clinic and included patients with 90-day medication possession ratio (MPR) <80% for SLE-specific medications. We coded which intervention components clinicians performed, quality of patient-provider communication, and time spent discussing adherence. We assessed change in 90-day MPR after the



Abstract LSO-020 Figure 1 Adherence intervention workflow with screenshot of pharmacy refill