media thickness (cIMT) in patients with SLE in comparison with population controls is not clear.

Objectives: To examine in SLE and population controls (1) prevalence of risk factors overtime; (2) evolution of cIMT; (3) risk factors promoting cIMT evolution.

Methods: The study sample originated from the SLEVIC cohort (SLE vascular impact cohort study) which included consecutive patients with SLE and age and sex matched population controls. Seven years after inclusion all participants were asked to take part in the follow-up investigation. The standardized data collection and carotid ultrasound were performed at two assessments, 7 years apart. Effect of risk factors on cIMT overtime was examined with linear mixed models adjusted for age, sex and traditional CV risk factors.

Results: A total of 77 patients with SLE (68% of original cohort), 87% females, at inclusion mean age 47 years, disease duration 11.4 years, SLEDAI 3.0, SLICC/ACR 1.1, and 74 controls (61% of original cohort), 89% females, mean age 51 years, completed 7-years follow-up.

At inclusion, patients with SLE were younger and had lower levels of LDL than controls but were more likely to have hypertension and higher levels of triglycerides (TG). Between the assessments both groups were measured with an increase in blood pressure, levels of total cholesterol (TC), LDL, but at follow-up the patients still had lower TC, LDL and HDL levels and higher TG than controls. At both assessments, patients used more frequent antihypertensive and aspirin than controls, $p < 0.001$.

The mean cIMT increased statistically significant in patients and controls, average absolute progression of 0.009 mm/year in patients and 0.011 mm/year in controls, $p < 0.001$ for change in both groups, with no inter-group difference, $p = 0.867$ age- and sex-adjusted.

In multivariate analysis, the patients showed a statistically significant association between mean cIMT overtime and higher systolic blood pressure, lower levels of HDL, higher TC/HDL- and LDL/HDL-ratio, higher triglycerides, dyslipidemia and detection with (any) carotid plaque at inclusion. In the control group, lower levels of HDL, history of dyslipidemia and finding with bilateral plaque at inclusion were associated with cIMT overtime. At follow-up, hypertension and blood lipid measures in patients (with exception for TG) and HDL in controls were still significantly associated with cIMT overtime. Of all, the strongest association was shown for HDL in both patients and controls. Effect of other cardio-metabolic risk factors at inclusion and cumulative risks were not significant after adjustment for age and sex.

In the patients, history of nephritis at inclusion and follow-up, and a higher average dose of prednisone used since diagnosis, but not other treatments, were associated with cIMT overtime.

Conclusion: We observed similar progression of cIMT over 7 years in patients with long-standing mild well-controlled SLE disease and population controls. Our findings suggest importance of recognition with dyslipidemia and hypertension, and support recommendation to limit use of corticosteroids in patients with SLE as a part of CV risk management. The factors protecting or promoting atherosclerotic progression should be further explored.

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SAT0183

LUPUS NEPHRITIS: A RETROSPECTIVE LONGITUDINAL STUDY LOOKING FOR CHRONIC RENAL DISEASE ASSOCIATED FACTORS, FROM THREE SOUTH-EUROPEAN COHORTS OF PATIENTS IN FOLLOW-UP SINCE 2000

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Background: Renal involvement in systemic lupus erythematosus (SLE) is the most frequent severe manifestation and carries a bad prognosis.

Objectives: To analyze the outcome of lupus nephritis (LN) in terms of chronic kidney disease development (CKD).

Methods: Design: multicentre retrospective observational study. Patients: SLE patients (ACR97) with biopsy proven LN attending to three South

European Rheumatology departments. Variables: demographics, SLE related variables, including global activity (SLEDAI-2K), renal flares, therapies, ACR response criteria and CKD. Statistical analysis: descriptive bivariate and multivariate analysis exploring factors associated to CKD.

Results: Seventy-six patients with biopsy-proven LN were included, 90.7% female; mean age: 33 years; mean disease: duration 14 years; mean follow-up time (since LN diagnosis): 8.5 years. LN class III, IV and V were present in 22%, 75% and 3% of the cases, respectively. At LN diagnosis 68 (89%) patients had a severe renal flare. Forty-one (56.1%) and 49 (64.4%) had HTA and nephrotic syndrome, respectively. The mean 24h proteinuria levels at LN diagnosis was 4.6g. Mean SLEDAI-2K at the time of flare was 20.3, with 69 (65.7%) patients having an extrarenal flare.

The treatments used to induce remission were: glucocorticoids (100%): pulses M-prednisolone in 49 (64%) and oral prednisone (mean starting dose): 43 mg/day (± 20.6); intravenous cyclophosphamide in 42 (55%) patients; mycophenolate mofetil (MMF) in 21 (27%) patients; calcineurin inhibitors in 5 (11%) patients; rituximab in 4 (5.2%) patients; and oral cyclophosphamide in 4 (5.2%) patients. Forty-eight (63%) patients were receiving hydroxychloroquine. MMF was the immunosuppressant (IS) more frequently used (52%) as maintenance therapy.

At 3, 6 and 12th months, the mean proteinuria was 2.3g/24h, 1.53g/24h, 1.1g/24h, respectively ($p < 0.001$). Fifty-five (77.5%) of patients achieved complete response and 61 (84.7%) presented complete or partial response. Median time to renal remission: 12.5 months (6,17.5). In 32 patients (42%) it was possible to discontinue IS. Sixteen (21.9%) patients developed CKD, 4 (5.3%) needing dialysis and 1 (0.76%) renal transplantation. Serious infection was recorded in 23 (34.8%) patients. Five (6.6%) patients died (2 cardiovascular cause).

In the bivariate study, the following variables were significantly associated with CKD: male sex, hypertension, ACEI drugs, severe infection after LN, temporal dialysis, non ACR renal response, non use of hydroxychloroquine, time to achieve 10mg/day of prednisone, previous creatinine to LN, maximum creatinine at LN, hyperlipidemia at 3 months of LN, active urinary sediment at 12 months, creatinine at 6 and 12 months, proteinuria at 6 and 12 months.

In the logistic regression model, using genetic algorithms, we found that proteinuria at 6 months was significantly associated with CKD (OR:2.95; 95%CI 1.19,9.29, $p = 0.03$). Hypertension and male sex were marginally associated ($p = 0.06$, both).

Conclusion: A considerable percentage of LN patients developed renal chronic failure (21.9%). A high percentage of ACR response was achieved using medium dose (40mg) of glucocorticoids for induction. A significant reduction of proteinuria was achieved at 3 months, but proteinuria at 6 months was the only factor finally associated with CKD.

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SAT0184

ASSOCIATION OF SERUM AND URINE LEVELS OF TWEAK, MCP-1 AND NGAL WITH DISEASE ACTIVITY IN SYSTEMIC LUPUS ERYTHEMATOSUS

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Background: TWEAK, MCP-1 and NGAL, mediators in pathogenesis of systemic lupus erythematosus (SLE), are proinflammatory cytokines/chemokines that are thought as potential biomarkers reflecting disease activity (1).

Objectives: In this study, we aimed to investigate the association of serum (s) and urine (u) levels of TWEAK, MCP-1 and NGAL with disease activity in both renal and non-renal SLE.

Methods: Thirty active patients with SLE (15 renal and 15 non-renal) were recruited. Thirty-one inactive patients with SLE (16 renal and 15

non-renal), 14 patients with ANCA-associated vasculitis (AAV) all of whom had active renal involvement and 20 healthy volunteers were selected as control groups. Serum and urine levels of TWEAK, MCP-1 and NGAL were tested using ELISA.

Results: Sixty-one SLE patients, 51 (83.6%) of whom were female, with a median disease duration of 83 (23.5-135) months and a median age of 35 (27-47.5) were included in the study. Serum and urine levels of TWEAK and NGAL were significantly higher in the active SLE group compared with the inactive SLE (n=31) group (sTWEAK: $p=0.005$; uTWEAK: $p=0.026$; sNGAL: $p<0.001$; uNGAL: $p=0.002$); whilst no significant differences regarding serum and urine MCP-1 levels were observed ($p=0.189$ and $p=0.106$). uTWEAK ($p=0.237$), sMCP-1 ($p=0.141$), uMCP-1 ($p=0.206$), sNGAL ($p=0.419$) and uNGAL ($p=0.443$) levels did not differ between patients with active LN and non-renal active SLE; yet levels of sTWEAK were higher in patients with active LN ($p=0.006$). There were no differences between active LN and renal active AAV. Levels of all biomarkers were correlated with SLEDAI (sTWEAK: $p=0.001$; uTWEAK: $p=0.006$; sMCP-1: $p=0.049$; uMCP-1: $p=0.014$; sNGAL: $p<0.001$; uNGAL: $p=0.002$).

Conclusion: sTWEAK, uTWEAK, sNGAL and uNGAL are significant biomarkers showing disease activity in SLE. However, our results implicate that these biomarkers may not be specific for SLE, and can be elevated in patients with active renal involvement of AAV. sTWEAK may be of use for discriminating active nephritis from non-renal active disease in SLE. Further studies are awaited to confirm these results (This study was funded by Istanbul University with the project number TTU-2017-24738 and Turkish Society for Rheumatology).

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SAT0185 THE EFFECTS OF DISEASE ACTIVITY IN SYSTEMIC LUPUS ERYTHEMATOSUS ON COGNITIVE FUNCTION

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Background: Cognitive dysfunction (CD) affects up to 90% of systemic lupus erythematosus (SLE) patients and significantly impacts patient quality of life. The cause is multifaceted with many factors common across chronic diseases. It is thus difficult to ascertain the direct impact active disease in SLE has upon immediate cognitive function.

Objectives: The aim of this study was to investigate the effects of active disease in SLE on CD. We compared cognitive measures in SLE patients with stable disease activity (SLE-S) to those with active disease (SLE-F).

Methods: 34 SLE-S and 24 SLE-F were recruited, all meeting 1997 ACR criteria. Active disease was defined as BILAG A or B with a change in treatment. Stable disease was defined as SLEDAI-2K ≤ 4 . Overall 14/24 SLE-F patients were assessed again at 2nd visit (v1 vs v2) when their disease activity had reduced. CD was measured using tests from a computerized battery of tests (CANTAB[®]). fMRI was used to examine neuronal responses to a working memory and attention task (n-back) and a facial emotional processing task (FERT). Analysis compared the SLE-S and SLE-F groups as well as a within group comparison for v1 vs v2. fMRI data were analysed using SPM12. All other data were analysed using SPSS 22.

Results: There were no differences between the SLE-S and SLE-F groups or between v1 and v2 on demographic and clinical measures

except disease activity. The SLE-F group scored higher than the SLE-S group on the MADRS depression scale ($p=0.003$) but no other significant differences in psychiatric symptoms were observed. There were no significant differences on the CANTAB[®] for either comparison (table 1). The fMRI showed a SLE-S vs SLE-F difference in n-back related response in the medial prefrontal cortex ($p=0.012$; figure 1). No v1 vs v2 differences were found, nor for either comparison for the FERT.

Table 1. Baseline characteristics, SLE-S vs SLE-F

Variable	SLE-F (n=24)	SLE-S (n=34)	p-value
	Mean (S.D.), Median (I.Q., UQ) or n (%)		
Demographic and clinical			
Age (years)	36 (12)	39 (11)	0.330
Age at diagnosis (years)	26 (9)	28 (11)	0.537
BILAG total score*	12 (9, 16)	1 (0, 2)	<0.001
Oral corticosteroids (y/n)	15 (63)	12 (35)	0.061
Current immunosuppressant use	18 (75)	19 (58)	0.261
Current antimalarial use	4 (17)	3 (9)	0.432
Biologic medication	8 (4, 12)	4 (1, 8)	0.003
Depression & anxiety			
MADRS	6 (5, 10)	6 (3, 10)	0.713
CANTAB[®]			
HADS – A	28 (17, 75)	28 (19, 63)	0.897
Visual memory	18 (15, 22)	13 (12, 20)	0.063
Attention	62 (10)	62 (9)	0.727
Emotion processing	1.3 (1.3, 1.6)	1.4 (1.3, 1.7)	0.981
Executive function

Figure 1 Differences in BOLD response between the SLE-S and SLE-F groups during the n-back (working memory task), 2-0-back condition, negative main effect.

Conclusion: In a cohort well matched on confounding factors these results suggest that active disease does not impair cognitive function. However, the differences in the medial frontal cluster during the working memory task may indicate the use of compensatory mechanisms to maintain cognitive function as has been found elsewhere. Alternatively, as this is a default mode network region, often implicated in self-reflective processes it may be that CD is more directly associated with differences in mood. As such when treating SLE patients with self-reported CD it is important to consider factors other than disease activity.

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