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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.2856

AB0491 THE PERFORMANCE OF A RENAL ACTIVITY INDEX IN LUPUS NEPHRITIS IN INDUCTION THERAPY

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Background: Renal involvement in systemic lupus erythematosus (SLE) is associated with high morbidity and mortality¹. Current standard tools to monitor lupus nephritis (LN) are suboptimal compared to the invasive renal biopsy². The renal activity index in lupus (RAIL) was developed using 6 urinary biomarkers to reflect disease activity. In children this tool was 92% accurate in identifying active LN³.

Objectives: We aim to study the changes in this score in relation to induction treatment in LN.

Methods: Urine samples were collected from active LN patients prior to induction treatment for LN and serially afterwards, coinciding with clinical visits. Luminex Bead Multiplex Assay was used for the analyses of urine biomarkers included in the RAIL score (neutrophil gelatinase-associated lipocalin, ceruloplasmin, monocyte chemoattractant protein-1, adiponectin, hemopexin, kidney injury molecule-1). RAIL scores were calculated per the defined algorithm for each urine sample. Data collected include LN histologic classification (International Society of Nephrology (ISN)/Renal Pathology Society (RPS) classification system), renal SLE disease activity index (rSLEDAI) score and type of therapy.

Results: At the time of the analysis, data from 6 active LN patients were collected longitudinally. Patients were all females and all had class IV LN per the ISN/RPS. Renal SLEDAI scores were on the higher end ($M=11.3$, $SD=3.9$). All patients were started on intravenous (IV) methylprednisolone and cyclophosphamide (CYC) therapy. All but one patient completed 6 doses of monthly CYC before switching to oral mycophenolate mofetil therapy. The RAIL scores for the 6 patients ranged between -1.8 and 3.29. All patients had reductions in their RAIL score at 2-3 months period at an average of 322% decline from baseline (Figure 1). At the end of induction treatment or at the 5-6 months interval, 5/6 samples were available for analysis and showed that 4/5 patients maintained a decline of RAIL scores below the baseline. Of note the patient with higher RAIL score at the end of treatment had only 3 monthly doses of CYC. All rSLEDAI scores decreased between baseline and the 6 months interval. However, one patient with known medication non-adherence had a flare of LN at the 6 months point leading to increased rSLEDAI.

Conclusion: RAIL scores show overall improvement from baseline with LN induction therapy. Lack of improvement was associated with flare of disease. Additional data points and a larger study sample are required to study the ability of the RAIL score to reflect clinical improvement of LN.

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Disclosure of Interests: NAJLA ALJABERI: None declared, Theresa Hennard: None declared, Arjun Mathur: None declared, Hermine Brunner Grant/research support from: Bristol-Myers Squibb, Pfizer, Consultant for:

Pfizer, Bristol-Myers Squibb, Janssen, Novartis, Lilly, Roche, GlaxoSmithKline, Sanofi, Speakers bureau: Novartis, Roche

Appendix:

Changes in the RAIL Score with LN Induction Therapy

Figure 1. Changes in the RAIL score from baseline, at 2-3 months and at 5-6 months in 6 patients with LN. Baseline value is assigned 100%.

DOI: 10.1136/annrheumdis-2019-eular.2005

AB0492 PREVALENCE OF IGA ANTICARDIOLIPIN ANTIBODY AND ITS ASSOCIATION WITH PREGNANCY MORBIDITY IN ASIAN INDIAN PATIENTS WITH PRIMARY ANTIPHOSPHOLIPID ANTIBODY SYNDROME AND SYSTEMIC LUPUS ERYTHEMATOSUS – A CROSS SECTIONAL STUDY

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Background: There are many clinical and laboratory parameters which have been proven to be associated with increased risk of pregnancy morbidity in patients with SLE and APS. This study was undertaken as there is a lacuna in explaining all the pregnancy related morbidity in this group

Objectives: Primary: Correlation of IgA anticardiolipin antibody with the risk for pregnancy morbidity in patients with APS/SLE

Secondary: Association of IgA Anticardiolipin antibody with the risk of thromboembolic events

Methods: Patients diagnosed as SLE and/or Primary APS who are married and conceived atleast once were recruited and 3ml blood sample was obtained from them. Patients with history of recurrent infections, which could suggest probable IgA deficiency, were excluded. Demographic data including duration of illness, number of pregnancies, thromboembolic events, disease activity were noted. They were categorized into two different groups depending on whether they had a pregnancy morbidity or not. The blood samples were subjected to IgA Anticardiolipin assay by ELISA.

Results: A total number of 186 patients were recruited with mean age 34.54(+/-7.32)years, mean duration of illness of 5.52(+/-4.31) yrs with a diagnosis of 76.88% SLE, 7.53% primary APS and 15.59% SLE with secondary APS. On assessment of disease activity, mean SLEDAI score was found to be 4.46+/-6.32. Out of the total, 14.71% patients had conceived once, 14.56% twice, 16.72% patients thrice and 18.41% had conceived more than three times. 36.56% patients had pregnancy morbidity (majority being pregnancy induced hypertension 14.52%, prematurity 11.29%, IUGR 10.22%, pre-eclampsia in 3.76%, eclampsia 1.08%), 19.35% patients had history of thromboembolic events (6.45% pulmonary embolism, 5.38% deep vein thrombosis, 3.76% visceral vessel thrombosis, 0.54% cortical vein thrombosis, 6.99% other vessel thrombosis). 33.87% patients had positivity for antiphospholipid antibodies with 27.82% lupus anticoagulant positive, 20.97% IgG Anticardiolipin positive and 17.35% anti-beta2 glycoprotein positive. IgA Anticardiolipin was found to be positive in 4.84%(n=9) out of which, 10.29% were in the group with pregnancy morbidity as against 1.69% without pregnancy morbidity. Out of the total positives titre in 37.5% were indeterminate, 25% low positive and 37.5% high positive. All patients who had high titre positivity had pregnancy morbidity. The positivity of IgA Anticardiolipin in the patient group with thromboembolic events was 5.56%.

IgA Anticardiolipin	Pregnancy morbidity	No pregnancy morbidity
Positive	7(10.29%)	2(1.69%)
Negative	69(89.71%)	116(98.31%)

Conclusion: Among patients with SLE, APS or SLE and APS, the overall prevalence of IgA anticardiolipin antibody was found to be about 4.84%, which is much less as compared to the percentages reported by other groups^[1] IgA Anticardiolipin antibody positivity was more in patients with pregnancy morbidity compared to patients without a pregnancy morbidity. In this study however, statistical significance was not reached. Similar studies with larger number of patients are required. We also need to prospectively follow up such patients with IgA ACLA and evaluate for morbidity during pregnancy

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.7181

AB0493

IMMUNOGLOBULINS AFTER ACUTE PHYSICAL EXERCISE IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

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Background: Moderate exercise improves the functions of the immune system. The results of serum immunoglobulins in response to acute physical exercise are conflicting, but in general, there is an increase in serum immunoglobulins in athletes and non-athletes after maximal and submaximal exercise. The effects of acute physical exercise on serum immunoglobulin in patients with systemic lupus erythematosus are unknown.

Objectives: To determine the serum levels of IgG, IgM and IgA immunoglobulins in patients with systemic lupus erythematosus after a single session of acute aerobic exercise.

Methods: Thirty-one women with SLE (ACR1997 and/or SLICC 2012 criteria), 11 with active lupus and 20 with inactive lupus, and 24 healthy women, who were matched by gender, age, and body mass index, participated in this study. All subjects underwent a maximal exercise test on motorized treadmill, with increases in velocity every minute until exhaustion, to evaluate the speed (km/h), heart rate, Borg scale (6-20), and the reason for stopping the test (fatigue and/or dyspnea). Samples of blood were collected in the morning, after an 8-hour fast and immediately after acute physical activity, and stored in a freezer at -80°C until the tests were performed. Immunoglobulin IgG, IgM and IgA assay was performed by turbidimetry according to the manufacturer (Turbiquet, Labtest Diagnostic S.A).

Results: There was an increase in both IgG and IgA serum levels after physical activity in SLE patients ($p = 0.004$ for IgG and $p = 0.002$ for IgA) and healthy controls ($p < 0.001$ for IgG and $p < 0.001$ for IgA) (Figure 1). Inactive SLE patients showed higher levels of IgG and IgA after exercise ($p = 0.006$ and $p = 0.010$, respectively) (Figure 2), in comparison with the active SLE patients. There was no difference in IgM serum levels before and after the exercise test in both groups.

Figure 1. Comparison of IgG, IgM and IgA immunoglobulins intra and inter-group lupus and control ▲ = Average

Figure 2. Comparison of IgG, IgM and IgA immunoglobulins intra- and inter-group of active and inactive lupus. ▲ = Average

Conclusion: Patients with SLE, mainly with inactive disease, responded to acute physical exercise with increased IgG and IgA serum levels, similarly to healthy controls.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.2282

AB0494

ACTIVITY OF PURINE AND PYRIMIDINE METABOLISM ENZYMES IN SYSTEMIC LUPUS ERYTHEMATOSUS: ENZYMATIC PATTERNS OF BLOOD PLASMA AND LYSED LYMPHOCYTES

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Background: Cytotoxic immunosuppressants are widely used nowadays for outcome improvement and better quality of life in severe systemic lupus erythematosus (SLE). As purine and pyrimidine metabolism suggest to be the major targets of most cytotoxic immunosuppressants, enzyme profiling of these metabolic pathways is recognized as an important step for a better balance between efficiency and safety in clinical practice.

Objectives: To characterize enzymatic patterns of the major enzymes of purine and pyrimidine metabolic pathways in systemic lupus erythematosus.

Methods: The research was carried out in agreement with the WMA Declaration of Helsinki principles. 50 adult SLE patients from the rheumatology unit of Volgograd Clinical Emergency Hospital #25 and 30 healthy controls were included in the study. Diagnosis of SLE had been established using ACR criteria (1997), and activity was assessed by means of ECLAM scale. Activities of 10 major enzymes involved in purine and pyrimidine metabolic pathways: adenosine deaminase (ADA; E.C. 3.5.4.4), adenosine kinase (AK; E.C. 2.7.1.20), guanylate kinase (GK; E.C. 2.7.4.8), dihydroorotate dehydrogenase (DODG; E.C. 1.3.5.2), IMP dehydrogenase (IMPDG; E.C. 1.1.1.205), purine nucleoside phosphorylase (PNP; E.C. 2.4.2.1), thymidine kinase (TK; E.C. 2.7.1.21), thymidine phosphorylase (TP; E.C. 2.4.2.4), uracil/thymidine dehydrogenase (UDG; E.C. 1.17.99.4), cytidine deaminase (CDA; E.C. 3.5.4.5) were measured in blood plasma and lysed lymphocytes. Results are expressed as mean ± standard error. Statistical comparison tests are selected in line with common guidelines, differences were considered significant when $p < 0.05$.

Results: Enzymatic profiles in plasma of SLE patients are characterized by increased PNP, AK, UDG, IMPDG, CDA, TK, and DODG activities; ADA and GK were found to decrease. Lysed lymphocytes are revealed however to increased AK, IMPDG, TK, as well as decreased PNP, ADA, GK, CDA, and TP activities. We have also found that most enzyme activities significantly correlate with ECLAM score in accordance with our previous results [1]. Plasma PNP, AK, UDG, IMPDG, CD, TK and DODG activities positively correlated with ECLAM score, as well as lymphocyte AK, IMPDG, and TK activities did. Negative correlations with ECLAM score were revealed for plasma ADA and TP, and also for lymphocyte PNP, ADA, GK, UDG, CD, TP, and DODG. Plasma PNP, AK, IMPDG, and lymphocyte PNP, ADA, AK activities had the closest relations with minimal SLE activity, being a candidate markers of it.

Conclusion: The enzymatic patterns studied can be used as auxiliary markers of SLE activity, with special emphasis on minimal disease activity.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.4622