## PO.5.116 LUPUS NEPHRITIS RESPONSE IN TERMS OF KIDNEY FUNCTION, URINE SEDIMENT AND SEROLOGICAL ACTIVITY AFTER BELIMUMAB TREATMENT

M De La Rubia Navarro*, E Grau Garcia, C Pavez Perales, S Leal Rodriguez., C Riesco Barcena, AV Huaylla Quispe, JR Ivorra Cortes, L Gonzalez Puig, R Negueroles Albuixech, I Martinez Cordellat, C Najera Herranz, J Fragio Gil, R Gonzalez Mazario, I Canovas Olmos, E Vicens Bernabeu, J Oller Rodriguez, L Mas Sanchez, P Muñoz Martinez, JA Roman Ivorra. *Hospital Universitario y Politécnico La Fe ~ Valencia ~ Spain*

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**Background** Systemic lupus erythematosus (SLE) is a heterogeneous autoimmune disease characterized by an immune dysregulation and autoantibodies production. Kidney affection appears in around 40% of patients and eventually condition the prognosis, morbidity and mortality. Lupus nephritis (LN) is classified into 6 types, being the worst prognosis types III and IV.

Belimumab is a monoclonal antibody targeting BLyS approved for SLE, but currently it had no lupus nephritis (NL) indication. In 2020, promising results from a controlled Belimumab trial in LN were published.

**Objective** To analyze effectiveness of subcutaneous or intravenous Belimumab in LN patients under follow-up by the rheumatology department of a tertiary hospital.

**Methods** Observational, retrospective, and cross-sectional study including SLE patients according to SLICC/ACR 2012 criteria treated with Belimumab subcutaneous or intravenous. Patients had kidney affection based on pathological findings (kidney biopsy) or urine sediment alterations. A clinical history review was made and serological data, kidney function and urine sediment were collected.

**Results** From a total of 29 patients treated with belimumab, 9 presented kidney affection. In this group, 8 patients had lupus nephritis demonstrated by kidney biopsy and one patient had an active urine sediment. For them, median age was 37.56 (7.03) years, with 15.13 (8.71) years since SLE diagnosis was made and 4.61 (2.64) years since onset of belimumab. Regarding to type of nephritis, most prevalent type was III (33.3%), followed by type IV (22.22%). Two patients presented combination of both types III and IV and only one patient had type V.

The results obtained were included in the table.

**Abstract PO.5.116 Table 1**

| | | Basal | | | | | Follow-up | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Patient | NL Type | Proteinuria (g/24h) | Creatinine (mg/dL) | Glomerular filtration (ml/min) | Anti-DNA | C3, C4 | Proteinuria (g/24h) | Creatinine (mg/dL) | Glomerular filtration (ml/min) | Anti-DNA | C3, C4 |
| 1 | III | 1 | 0.81 | 90 | 50 | 80. 8 | 0.4 | 0.73 | 89 | 24 | 80. 20 |
| 2 | V | 0.75 | 0.40 | 130 | 24 | normal | 0 | 0.49 | 130 | 43 | normal |
| 3 | III | 0.75 | 0.73 | 101 | 164 | normal | 0 | 0.80 | 82.9 | 78 | normal |
| 4 | IV | 0.6 | 1.26 | 55 | 21 | normal | 0.70 | 1.29 | 71 | 2.2 | normal |
| 5 | IV | 0.95 | 1.29 | 71 | 15 | 101. 10 | 0.17 | 0.88 | 84 | 85 | 89. 23 |
| 6 | - | 0.24 | 0.87 | 96 | 22 | 76. 11 | 0.17 | 0.82 | 85 | 14 | 63. 10 |
| 7 | III-V | 1 | 0.67 | 113 | 108 | 57. 8 | 0.10 | 0.75 | 101 | 57 | 50. 15 |
| 8 | III-V | 0.86 | 0.70 | 129 | 7.6 | 51. 18 | 1.27 | 0.86 | 118 | 11 | 59. 17 |
| 9 | III | 1.18 | 0.68 | 119 | 378 | 67. 11 | 0.17 | 0.69 | 117 | 83 | 96. 23 |

**Conclusions** In clinical practice, belimumab can improve LN in terms of serological activity, kidney function and urine sediment. It could be a promising option associated to standard therapy for SLE patients with kidney affection. As a future aim, we propose to homogenize therapeutic efficacy definition in order to compare studies and to obtain common conclusions.

## PO.5.117 SERUM ATHEROGENICITY IN WOMEN WITH UNTREATEDLUPUSNEPHRITIS

[1]EV Gerasimova, [1]TV Popkova*, [2]TV Kirichenko, [3]DA Gerasimova. *[1]V.A. Nasonova Research Institute of Rheumatology, Moscow, Russian Federation; [2]A.P. Avtsyn Research Institute of Human Morphology, Laboratory of Cellular and Molecular Pathology of Cardiovascular System, Moscow, Russian Federation; [3]I.M. Sechenov First Moscow State Medical University (Sechenov University), Moscow, Russian Federation*

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**Background** Systemic lupus erythematosus(SLE) is associated with an unexplained increase cardiovascular risk.The nature of the factors that contribute to progression of atherosclerosis-were identified using the method for determining the atherogenicity of blood serum in cell culturein cell culture (in vitro). The term 'atherogenicity' is meant as the ability of the serum and/or its components to induce intracellular accumulation of cholesterol in cultured cells.

**Objective** To determine atherogenicity of blood serum in womenwith untreatedlupus nephritis(LN),and to compare it withuntreatedSLE women without LN, andin healthy women.

**Methods** Fifteenwomen(median age 29 [22;39] years) with active untreated LN (mediandisease duration 15 [3;45]months; were enrolled in group 1 the study. Twenty two SLE women without LN(median age 31[21;41] years, median disease duration 10[5;38] months;were included in group2.SLADAI 2Kwas higher in patients of group 1 (21 [12;39]) compared to patients of group 2 (12[6;18], p<0,05). The control group consisted of 30women, median age 31 [25;39] years. Atherogenicity of blood serum was determined in the culture of murine macrophages.Peritoneal macrophages were isolated from the ascitic fluid of the line mice according to the generally accepted methodJ. Goldstein et al (1979y). Serum atherogenicity was determined by the accumulation of intracellular cholesterol induced by 10% of the blood serum of the patients, and expressed as a percentage of the content of cholesterol in the control cells.

**Results** The ability to stimulate the accumulation of cholesterol esters in murine macrophageswas the highest in women of group 1 compared to group 2 (305±141% vs 180±52%, p<0,05) and control group (305±141% vs 127±42%, p<0,001). The blood serum of group 1 and group 2 caused a 6–7-and 3–4-fold accumulation of intracellular cholesterol, respectively, which significantly differed from healthy women; andwas not associated with age, duration of the disease, lipid spectrum.

**Conclusion** The highest atherogenicity was found in blood serum of LN women. Serums of women with untreated SLE without LN too maystimulate the accumulation of cholesterol in mouse macrophages unlikeofhealthy women.

## PO.5.118 FUNCTIONAL MULTIPARAMETRIC MRI TO ASSESS RENAL INVOLVEMENT IN SLE

[1]I Haase*, [1]A Kernder, [2]A Ljimani, [1]G Chehab, [1]J Mucke, [1]C Düsing, [1]R Fischer-Betz, [1]P Sewerin, [1]O Sander, [2]G Antoch, [1]M Schneider. *[1]Department for Rheumatology and Hiller-Research Unit, Heinrich-Heine-University Duesseldorf, Medical Faculty ~ Duesseldorf ~ Germany; [2]Institute for Diagnostic and Interventional Radiology, Heinrich-Heine-University Duesseldorf, Medical Faculty ~ Duesseldorf ~ Germany*

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**Introduction and Purpose** Renal involvement impairs the outcome of systemic lupus erythematosus (SLE). Renal biopsy is

the gold standard of confirming the diagnosis of lupus nephritis but the assessment of reversibility and follow-up remain a challenge. In particular there is a need for non-invasive methods in situations of an unfavourable benefit/risk ratio (e.g., risk of bleeding, suspected minor changes). Non-contrast functional multiparametric MRI (mpMRI) can provide information on morphology, perfusion, and microstructure. Initial studies show changes in renal pathologies.[1] Renal T1 mapping shows changes in acute kidney injury, but it also correlates with fibrosis and loss of function in chronic kidney disease.[2, 3] The aim of this pilot study was to investigate the feasibility of mpMRI including T1 mapping, the latter not yet described in lupus nephritis.

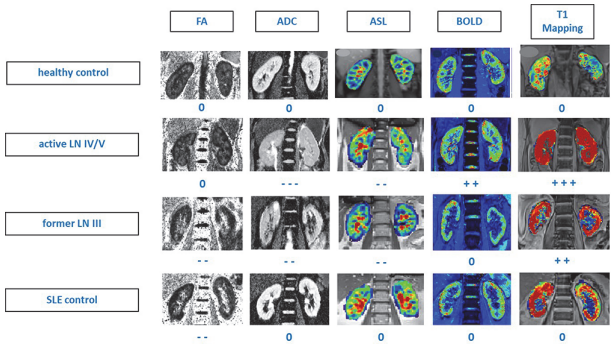
**Methods** The renal mpMRI protocol applied in this study includes techniques for non-contrast assessment of tissue perfusion (Arterial Spin Labeling; ASL), tissue oxygenation (Blood Oxygenation Level Dependent; BOLD) and tissue integrity and structure assessment techniques such as T1 mapping, the apparent diffusion coefficient (ADC) and fractional anisotropy (FA). We compared the renal mpMRI in three affected SLE patients with different states of renal involvement (active vs. former vs. no renal involvement): 1. Active LN IV/V (Creatinine 0.69 mg/dl, Proteinuria 3.2 g/g Creatinine, Erythrocyturia 201/µl, 70% dysmorphic erythrocytes). 2. Former LN III (2011) (2021: Creatinine 1.44 mg/dl, Proteinuria 0.26 g/g Creatinine, Erythrocyturia 26/µl). 3. SLE without evidence of renal involvement (Creatinine 0.77 mg/dl, Proteinuria <0.15 g/g Creatinine, Erythrocyturia 25/µl).

**Results** Case 1 (active LN IV/V) shows a decrease in ADC as a possible sign of edema and a reduction in renal blood flow. Tissue oxygenation, as a possible correlate of active inflammation, is clearly increased. Cortical T1 times are strongly increased, which might be caused by edema.

Case 2 (former LN III) shows reduced medullary FA as an indication of (chronic) tubular damage. Renal oxygenation is normal. Renal blood flow and ADC are slightly decreased, while T1 times are slightly increased, which might be expression of a fibrotic process.

Case 3 (control) also shows reduced medullary FA, while other parameters are normal (figure 1).

**Conclusions** Multiparametric renal MRI of patients with LN shows differences in renal involvement and between acute and chronic manifestation. First examples of T1 mapping suggest applicability to this condition. Further studies are planned to establish this promising method in diagnosis, prognosis assessment and therapy control of renal involvement in SLE.




**Abstract PO.5.118 Figure 1** mpMRI images of a healthy control, a patient with active LN III and a patient with SLE without evidence of renal involvement. *FA (fractional anisotrophy), ADC (apparent diffusion coefficient), ALS (arterial spin labelling), BOLD (blood oxygen level dependent)*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# Friday 07 October 2022 from 13:00 to 14:10

## Po.6 E- poster session 6: management and recommendations, old and new therapies/ biologics

### PO.6.119 LOW-DOSE BELIMUMAB AND ANTIMALARIAL AGENTS PREVENT RENAL FLARES IN SYSTEMIC LUPUS ERYTHEMATOSUS: RESULTS FROM FOUR RANDOMISED CLINICAL TRIALS


[1]A Gomez*, [1]S Jägerback, [2]C Sjöwall, [1]I Parodis. *[1]Division of Rheumatology, Department of Medicine Solna, Karolinska Institutet and Karolinska University Hospital ~ Stockholm ~ Sweden; [2]Department of Biomedical and Clinical Sciences, Division of Inflammation and Infection ~ Linköping ~ Sweden*


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**Purpose** Renal flares contribute substantially to morbidity, renal survival and death in systemic lupus erythematosus (SLE). Identification of pharmacological strategies for the prevention of renal flares is a key unmet need in SLE treatment. In the present study, we tested the hypothesis that the use of belimumab and antimalarial agents (AMA) protects against the development of renal flares.

**Methods** We pooled data from the BLISS-52, BLISS-76, BLISS-SC and BLISS-Northeast Asia (NEA) randomised clinical trials of belimumab (N=3225). Serologically active SLE patients with active disease were recruited and followed for 52 weeks in BLISS-52, BLISS-SC and BLISS-NEA and for 76 weeks in BLISS-76; patients with active severe lupus nephritis (LN) were excluded. Patients were allocated to receive intravenous (IV) belimumab 1 mg/kg (N=559), IV belimumab 10 mg/kg (N=1033), SC belimumab 200 mg (N=556) or placebo (N=1077) in addition to standard therapy. The outcome of the present post-hoc analysis was development of renal flares, defined as a reproducible (i) increase in proteinuria to >1 g/day if the baseline value was <0.2 g/d; >2 g/day if the baseline value was 0.2–1.0 g/d; or >2 times the baseline value if this was >1g/d, (ii) increase in serum creatinine ≥20% or 0.3 mg/dL, accompanied by proteinuria, haematuria or red blood cell (RBC) casts, or (iii) new haematuria of glomerular origin, accompanied by proteinuria or RBC casts. The hazard of renal flare was assessed with Cox proportional hazards regression models. Analyses were adjusted for age, sex, ethnicity, previous renal involvement, baseline proteinuria and glomerular filtration rate, and use of glucocorticoids and immunosuppressants.

**Results** Demographic and clinical characteristics are shown in Table 1. The proportion of patients presenting a renal BILAG A-D at baseline was 54.6%. In the pooled population, 192 patients developed a renal flare after a median of 141 days. In multivariable Cox regression analysis, use of AMA was associated with a lower risk of renal flares (hazard ratio [HR]: 0.66; 95% confidence interval [CI]: 0.49–0.88; p=0.005). Compared with placebo, the risk of renal flares was lower