Figure 1. Comparative efficacy of etanercept and adalimumab in children with JPsA, according to the ACRpedi criteria at months 6, 12, and 18 after treatment initiation. No statistically significant difference in the efficacy of etanercept and adalimumab in patients with juvenile psoriatic arthritis was obtained, according to the ACRpedi criteria. The efficacy of biologic treatment on skin manifestations of JPsA was also evaluated (Figure 2).

Figure 2. Comparative efficacy of etanercept and adalimumab in children with JPsA by PASI score at months 6, 12, and 18 after treatment initiation. Both TNF- α blockers (etanercept, adalimumab) showed similar efficacy for psoriasis in patients with JPsA, though response rate for psoriasis in adalimumab group was higher than in etanercept group.

Conclusion: Both TNF- α inhibitors (etanercept and adalimumab) proved to be effective in the treatment of arthritis and psoriasis in JPsA. There was no statistically significant difference in the effectiveness of etanercept and adalimumab in the treatment of JPsA in our cohort. Both biological agents can be successfully used to treat JPsA.

REFERENCES:

- Beukelman T., et al. The new Childhood Arthritis and Rheumatology Research Alliance (CARRA) registry: design, rationale, and characteristics of patients enrolled in the first 12 months. *Pediatr Rheumatol Online J.* 2017;15(1):30
- Ruyssen-Witrand A., et al. Efficacy and safety of biologics in psoriatic arthritis: a systematic literature review and network meta-analysis. *RMD Open.* 2020;6(1):e001117

Disclosure of Interests: Karina Aleksanyan: None declared, Svetlana Chebysheva: None declared, Olga Sukhovyova: None declared, Elena Zholobova: Speakers bureau: Pfizer, AbbVie, Novartis, Roche.

DOI: 10.1136/annrheumdis-2021-eular.2827

Pharmacology and Microbiota

OP0307

GUT MICROBIOTA AND ITS RELEVANCE TO PERIPHERAL LYMPHOCYTE SUBPOPULATION IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

T. Cheng¹, X. Wang¹, S.X. Zhang¹, J. Yang², C. Zhao³, Y. Wang¹, J. An¹, J. Chen¹. ¹The Second Hospital of Shanxi Medical University / Shanxi Medical University, Department of Rheumatology, Taiyuan, China; ²The Central Hospital

of Xinghualing District, Department of Rheumatology, Taiyuan, China; ³Xi'an International Medical Center Hospital, Department of Rheumatology, Taiyuan, China

Background: Systemic lupus erythematosus (SLE) is an autoimmune disease with disturbance of lymphocyte subpopulations¹. Growing experimental and clinical evidence suggests that chronic inflammatory response induced by gut microbiome critically contribute to the development of SLE^{2,3}.

Objectives: To investigate the characteristics of gut microbiome and the associations between flora and peripheral lymphocyte subpopulations in SLE patients.

Methods: A total of 19 SLE patients who fulfilled the 2019 American college of Rheumatology (ACR) and European League Against Rheumatism (EULAR) classification criteria and 16 age- and sex- matched healthy controls (HC) were enrolled in this study. The peripheral T lymphocyte subsets of these participants were assessed by flow cytometry and the gut microbiota were investigated via 16s rRNA. Indicators of disease activity such as erythrocyte sedimentation rate (ESR), complement C3 and C4 were recorded at the same time. Mann-Whitney U test was applied to compare T lymphocyte subsets between SLE patients and HC. Spearman analysis was used for calculating correlation between T subsets and highly expressed differential flora as well as their correlation with disease activity indicators. All P-values reported herein were two-tailed and P-value<0.05 was taken as statistically significant.

Results: SLE patients had higher proportions of Th17 cells (P=0.020) and $\gamma\delta$ T cells (P=0.018) but lower levels of Treg cells (P=0.001), Tfh cells (P=0.018) and Naïve CD4⁺T cells (P=0.004) (Figure 1a-e). The diversity and relative abundance of intestinal flora in patients with SLE were significantly different from those in HCs. Detailedly, the α -diversity was decreased in SLE (P<0.05) (Figure 2a-c). Compared with HC, 11 species of flora were discovered to be distinctly different (P<0.05) (Figure 2d-e). Moreover, there was a significant positive correlation between Treg levels and *Ruminococcus2* (P=0.042), Th17 and *Megamonas* (P=0.009), $\gamma\delta$ T and *Streptococcus* (P=0.004) as well as *Megamonas* (P=0.003), Tfh and *Bacteroides* (P=0.040). Whereas Th1 levels and *Bifidobacterium* were negatively correlated in these participants (P=0.005). As for clinical disease measures, there were negative correlations not only between ESR and Treg

Figure 1(a-e) Comparison of T lymphocyte subsets in peripheral blood between healthy controls and SLE patients.

Figure 2(a-e) Variation of gut microbiota in SLE patients compared with HC and the LDA score of highly expressed differential flora. *P < 0.05, **P < 0.01, ***P < 0.001.

cells ($P=0.031$) but also C4 and the amount of *Unclassified Ruminococcaceae* ($P=0.032$).

Conclusion: Abnormality of T cell subsets, especially the level of Naïve CD4⁺T, $\gamma\delta$ T, Tfh, Treg, and Th17 cells contributes to the occurrence and progression of SLE, which may be related to the disturbance of gut microbiota. Therefore it is necessary to attach importance to the alteration of gut microbiota to prevent the outbreak of inflammation and maybe they can be identified as biomarkers predicting disease activity.

REFERENCES:

- [1] Katsuyama T, Tsokos GC, Moulton VR. Aberrant T Cell Signaling and Subsets in Systemic Lupus Erythematosus. *Front Immunol* 2018;9:1088. doi: 10.3389/fimmu.2018.01088 [published Online First: 2018/06/06]
- [2] López P, de Paz B, Rodríguez-Carrio J, et al. Th17 responses and natural IgM antibodies are related to gut microbiota composition in systemic lupus erythematosus patients. *Sci Rep* 2016;6:24072. doi: 10.1038/srep24072 [published Online First: 2016/04/06]
- [3] Esmaeili SA, Mahmoudi M, Momtazi AA, et al. Tolerogenic probiotics: potential immunoregulators in Systemic Lupus Erythematosus. *J Cell Physiol* 2017;232(8):1994-2007. doi: 10.1002/jcp.25748 [published Online First: 2016/12/21]

Acknowledgements: This project was supported by National Science Foundation of China (82001740), Open Fund from the Key Laboratory of Cellular Physiology (Shanxi Medical University) (KLCP2019) and Innovation Plan for Postgraduate Education in Shanxi Province (2020BY078).

Disclosure of Interests: None declared.

DOI: 10.1136/annrheumdis-2021-eular.3021

What can we learn from the tissue

OP0308

SENESCENT PROGENITOR CELLS IN THE SKIN OF LUPUS PATIENTS

X. Wang¹, G. Diercks², W. Lambers¹, J. Westra¹, H. Bootsma¹, F. G. M. Kroese¹, K. De Leeuw¹, S. A. Pringle¹. ¹UMCG, Rheumatology and Clinical Immunology, Groningen, Netherlands; ²UMCG, Department of Pathology, Groningen, Netherlands

Background: Systemic lupus erythematosus (SLE) is an autoimmune disease, which is characterized by skin lesions, amongst other symptoms. These lesions (chronic discoid lupus erythematosus (CDLE) and subacute cutaneous lupus erythematosus (SCLE)) feature lymphocytic infiltration close to basal layer of the epidermis (i.e. the location of the epidermal progenitor cells), namely the epidermal dermal junction (EDJ) area. Epidermal progenitor cells maintain the homeostasis of the skin through their proliferation and differentiation into keratinocytes. In fast turnover tissues, like the skin, a population of 'transient amplifying cells' (TA cells), additionally facilitates generation of enough daughter cells to maintain skin homeostasis. These cells are located in an upper layer (suprabasal layer) of the epidermis, next to the basal layer. Senescence is an irreversible and locally spreading phenomenon that induces permanent cell cycle arrest.

Objectives: To evaluate expression of senescence markers p16 and p21 in the epidermal progenitor and TA niches in patients with SCLE and CDLE. This was compared to a panel of other dermatological conditions with and without infiltration close to EDJ, as disease controls, and to control skin tissue.

Methods: Age-matched skin lesions from patients with SCLE (n=12), CDLE (n=8), other conditions with EDJ infiltration (e.g. lichen planus, n=22), and dermatoses without EDJ infiltration (e.g. eczema, n=27), and non-lesion control biopsies (n=3) from SLE patients were employed. p16 and p21 expression in the progenitor niche (basal layer) and TA cell niche (suprabasal layer), and the whole epidermis of skin lesions biopsies were examined by immunohistochemistry.

Results: In healthy skin biopsies, 0 ± 0 SEM p16⁺ cells/mm² in the progenitor niche and 5 ± 4 SEM p21⁺ cells/mm² in TA niche were observed. In skin lesions from patients with CDLE and SCLE, significantly more p16⁺ cells in the progenitor cell niche (45 ± 14 SEM/mm²) and p21⁺ cells (182 ± 38 SEM/mm²) in TA niches were detected, compared to control biopsies ($p < 0.05$), and compared to those dermatoses without EDJ infiltration (p16⁺ 11 ± 3 SEM/mm², p21⁺ 86 ± 28 SEM/mm², $p < 0.05$, Figure 1). p16 and p21 expression in CDLE and SCLE lesions did not significantly differ from other dermatoses with EDJ infiltration ($p > 0.05$). Across all dermatoses analyzed, the number of p16⁺ cells was significantly correlated with the number of p21⁺ cells, both in the progenitor niche ($r=0.45$, $p < 0.0001$) and TA niche ($r=0.47$, $p < 0.0001$). p16⁺ cells however were more frequently found in the progenitor cell niche, and p21⁺ cells conversely in the TA cell niche ($p < 0.0001$).

Figure 1. Increased p16⁺ and p21⁺ cells in the progenitor and TA niches in dermatoses with EDJ infiltration. A. Graphic illustration for the progenitor cell niche (the basal layer), the transient amplifying (TA, the supra-basal layer) cell niche, and the further differentiated area. B-D. Representative staining of p16 (blue) and epidermal growth factor receptor (EGFR, brown, an epithelial cell marker) in dermatoses with (CDLE) and without (PMLE) epidermal-dermal junction (EDJ) infiltration groups. Black arrowheads point to p16⁺ progenitor epidermal cells. E-G. Representative staining of p21 (blue) and EGFR (brown) in dermatoses with (CDLE) and without (PMLE) EDJ infiltration groups. Hollow arrowheads point to p21⁺ TA epidermal cells. The dashed line indicates the EDJ. CDLE: chronic discoid lupus erythematosus, PMLE: polymorphous light eruption.

Conclusion: In CDLE and SCLE, cutaneous manifestations of SLE, more progenitor and TA cells expressing markers of senescence were detected. This was in common with other dermatological conditions where lymphocytic infiltration is in close proximity to the progenitor and TA cell niche, namely in the EDJ. Increased senescence might infer the collapse of homeostasis in target (local) epidermis, which may influence tissue repair in the lesion. Elimination of senescent cells may therefore represent a viable therapeutic option to encourage timely and complete wound healing, in skin lesions of CDLE and SCLE patients.

Acknowledgements: This research was funded by a China Scholarship Council grant (201606220074), Dutch Arthritis Foundation Translational Research Grant (T015-052) and a Dutch Arthritis Foundation Long Term Project Grant (LLP-29).

Disclosure of Interests: None declared.

DOI: 10.1136/annrheumdis-2021-eular.1105

EULAR Projects in musculoskeletal imaging

OP0309

THE ROLE OF IMAGING TO GUIDE INTERVENTIONAL PROCEDURES IN RHEUMATIC AND MUSCULOSKELETAL DISEASES: A SYSTEMATIC LITERATURE REVIEW TO INFORM EULAR RECOMMENDATIONS

P. Bosch¹, F. Carubbi², C. A. Scirè³, X. Baraliakos⁴, L. Falzon⁵, C. Dejaco^{1,6}, P. M. Machado⁷. ¹Medical University of Graz, Rheumatology and Immunology, Graz, Austria; ²University of L'Aquila, Medicine, Aquila, Italy; ³University of Ferrara, Rheumatology, Ferrara, Italy; ⁴Ruhr University Bochum, Rheumatology, Bochum, Germany; ⁵Northwell Health, Medical Research, New York, United States of America; ⁶Hospital of Bruneck, Rheumatology Service, Bruneck, Italy; ⁷Centre for Rheumatology, University College London, Neuromuscular Diseases, London, United Kingdom

Background: Imaging guidance gives the opportunity to visualize a needle or other instrument when performing interventions on musculoskeletal sites in patients with rheumatic and musculoskeletal diseases (RMDs). Studies assessing the role of imaging guided procedures have been performed, however, no consensus has been made yet about when and which imaging techniques to use for these interventions.