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

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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

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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.

Objectives: To inform a EULAR taskforce on the current literature on different imaging techniques, procedures and materials to guide interventions on musculoskeletal sites in RMD patients.

Methods: Prospective and retrospective studies published in English and comparing either palpation or imaging guided interventions in patients with RMDs were included. MEDLINE, EMBASE, the Cochrane Library and Epistemonikos were searched through October 2021. Risk of bias (RoB) was assessed using the Cochrane RoB tool for randomized trials version 2 (ROB2), the RoB tool for Non-Randomized Studies of Interventions (ROBINS-I) and the appraisal tool for cross-sectional studies (AXIS).

Results: Sixty-six studies, with moderate to high RoB, consisting of 49 randomized controlled trials, three prospective cohort studies and 14 retrospective studies were included.

Fifty-one studies compared one imaging technique against either another imaging technique, or palpation-guided interventions. Most of the studies were on peripheral joints (47/51), while data on joints of the axial skeleton were scarce and heterogeneous (4/51). For peripheral joints, ultrasound (US) was the most studied imaging technique (49/51), followed by fluoroscopy (10/51). Results revealed a higher accuracy and safety (including procedural pain) of US or fluoroscopy compared to palpation-guided interventions. Data on other imaging techniques was scarce (computed tomography: n=3, arthroscopy: n=1) and the results heterogeneous. Results of studies comparing different imaging techniques (12/51) did not favor one imaging method over another.

Three studies comparing different materials used for imaging guided interventions were found (e.g. automatic vs manual syringes), showing little evidence for one material being superior to another one.

Fifteen studies were found comparing different imaging guided procedures (e.g. intraarticular vs periarticular injections). Overall, studies indicated an advantage of targeted vs. not targeted interventions (intraarticular vs periarticular or intraepineurial vs extraepineurial injections) concerning pain levels, while the comparison of different puncture sites to inject (e.g. ulnar vs midline carpal tunnel injection) was inconclusive.

Conclusion: Imaging guidance, especially US, performs favorably for interventions at the peripheral joints compared to palpation-guided interventions, concerning accuracy and safety. Data for the axial skeleton are scarce. Imaging guided targeted interventions may lead to better outcomes than non-targeted interventions.

Disclosure of Interests: None declared.

DOI: 10.1136/annrheumdis-2021-eular.3801

What's new: Latest advances in treatment and care in vasculitis and fibromyalgia

OP0310

GENDER AND FIBROMYALGIA SEVERITY: REAL LIFE DATA FROM THE ITALIAN REGISTRY

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Background: Fibromyalgia (FM) patients report chronic widespread pain, fatigue, cognitive difficulties and sleep disturbances, often associated with anxiety and/or depression (1). FM syndrome more frequently affects women and many papers describe gender-related differences in the perception, description and expression of pain (2), but up to now, the impact of gender on the clinical severity of FM is still a controversial topic.

Objectives: The aim of this study was to analyse the data from a web-based registry of FM patients in order to detect a relationship between gender and disease severity.

Methods: Adult patients with FM, diagnosed on the basis of the 2010/2011 American College of Rheumatology (ACR) diagnostic criteria (3), were recruited at 19 Italian rheumatology centres between November 2018 and April 2019. Those affected by other conditions that could interfere with the assessment of FM, e.g. psychiatric disorders, were excluded from the study. The severity of the disease was evaluated by validated FM-specific questionnaires: the revised Fibromyalgia Impact Questionnaire (FIQR) (4), the modified Fibromyalgia Assessment Status (ModFAS) questionnaire (5), and the Polysymptomatic Distress Scale (PDS) (6). The data obtained were collected in the Italian Fibromyalgia Registry, an online registry created with the support of the Italian Society of Rheumatology (SIR).

Results: We analyse data from 2.381 patients affected by FM, 2.184 females (91.7%) and 197 males. No significant differences in mean age, disease duration, or BMI between the two genders were reported. The women expressed greater disease burden as indicated by higher scores for each completed test: higher mean ModFAS score (25.23 ± 8.83 Vs 23.37 ± 9.22; p = 0.005), mean FIQR score (58.62 ± 23.22 Vs 51.68 ± 23.06; p < 0.001), and mean PDS score (18.77 ± 7.34 Vs 17.19 ± 7.25; p = 0.004). Figure 1 shows the mean scores of each item of the FIQR divided by gender. Women reported significantly higher values on all the items of FIQR except three (feeling overwhelmed, FIQR-11; depression, FIQR-16; and anxiety, FIQR-18). It is interesting to note that men self-reported higher levels of depression (FIQR-16).

Figure 1. Mean scores for each FIQR item by gender.

Conclusion: Our findings demonstrate that women with FM are globally more impaired than men (even if some psychological aspects of the disease are comparable), thus reinforcing the idea that gender plays a role in symptoms and functional impairments associated with the disease.