92nm) in SSc compared to OA ($p < 0.05$) and in the range of MV (230-510 nm) (figure below). Finally, we observed a positive association between HLA-G+ with Erythrocyte Sedimentation Rate (ESR) ($\beta = 0.34$; $p < 0.01$).

Abstract THU0344 – Figure 1

Conclusion: In our study, limited cutaneous SSc showed different EVs concentrations from controls: SSc tends to have less exosomes and more MV than OA. Moreover, environmental stimuli (e.g. PM exposure) are confirmed to be able to influence HERV-w+ MV release both in SSc and controls. Finally, in SSc patients PM exposure could significantly alter the release of HLA-G+ MV that has been correlated to the process of self-tolerance maintenance. Further studies are required to fully unlock the role of PM and EVs in SSc.

Disclosure of Interests: None declared

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THU0345 TEXTURE-BASED RADIOMICS FEATURES DISCRIMINATE DIFFERENT STAGES OF EXPERIMENTAL INTERSTITIAL LUNG DISEASE

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Background: Interstitial lung disease (ILD) is a life-threatening complication of systemic sclerosis (SSc). There is an unmet need for validated, routinely available biomarkers for disease staging and individualized patient stratification. In that respect, high-resolution computed tomography (HRCT), routinely performed in the work-up of SSc-ILD patients, has great potential as a source for non-invasive imaging biomarkers. Recently, radiomics, the quantitative extraction of hundreds of radiologic image features, has emerged as a powerful tool for biomarker research and precision medicine approaches; however, so far, it has been applied predominantly in oncology.

Objectives: To evaluate the performance of CT-based radiomics for disease detection, staging and as surrogate marker for tissue pathophysiology in the model of bleomycin (BLM)-induced lung fibrosis.

Methods: To mimic different stages of SSc-ILD, small-animal CT imaging was performed at days 3, 7, and 14 after instillation of BLM or saline solution, respectively (n=5-6 mice/group). Trained observers manually segmented the left and right mouse lungs in the CT images, and 154 radiomics features were extracted including 17 histogram- and 137 texture-based features using the in-house developed software Z-Rad (Python 2.7). To link the radiomics features with the underlying pathophysiology, Pearson correlation analysis between radiomics and histological features (Ashcroft score, Sirius red and CD45 staining positivity) was performed.

Results: CT imaging visualized morphological changes of the lung architecture in BLM-treated mice, as evidenced by a time-dependent increase of grey areas on chest CT images and a gradual increase in tissue density on density-masked lungs. Accordingly, 6 out of 17 classical histogram

features (e.g. mean CT density, skewness and kurtosis) precisely distinguished diseased from healthy mice with area under the curve values (AUCs) of >0.87 ($p < 0.05$) and thus detected lung remodelling. However, histogram-based features failed to differentiate between the different time points and thus stages of experimental lung fibrosis as investigated by receiver operating characteristic curve analysis and by hierarchical clustering. In contrast, 59 out of 137 texture-based radiomics features, including features describing image homogeneity or contrast detected ILD and distinguished the different stages with excellent accuracy (AUCs >0.84 ; $p < 0.05$) thus outperforming the classical histogram features.

In addition, texture-based, but not histogram-based features were associated ($R^2 > 0.5$, $p < 0.05$) with histological parameters, thereby possibly reflecting changes in lung (micro-)architecture, which may result from both inflammatory and/or fibrotic changes.

Conclusion: If confirmed in human SSc-ILD, texture-based radiomics features have great potential to provide biological and stage-specific quantitative information on lung (micro-)architecture and thus could serve as quantitative imaging biomarkers for guided decision making in SSc-ILD.

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THU0346 EVALUATION OF A NOVEL PARTICLE-BASED ASSAY FOR DETECTION OF MYOSITIS SPECIFIC ANTIBODIES

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Background: Myositis specific antibodies (MSA) represent important diagnostic tools and also help stratify idiopathic inflammatory myositis (IIM) patients with particular clinical features, treatment responses, and disease outcomes. Standardization of MSA detection is of high importance because these antibodies also have the potential to be used in classification criteria.

Objectives: The objective of this study was to evaluate the clinical performance of a novel particle based multi-analyte technology (PMAT) for the detection of MSA as an aid in the diagnosis and also in the differentiation of IIM subtypes.

Methods: The study included 464 patient samples collected at Hospital Vall d'Hebron, Autonomous University of Barcelona, most of whom had a diagnosis of IIM (n=264). As controls, samples from patients with myositis like conditions (ML, n=20), rheumatoid arthritis (RA, n=33), systemic lupus erythematosus (SLE, n=40), Sjögren's syndrome (SjS, n=25), infectious diseases (ID, n=40) and healthy individuals (HI, n=42) were included. All samples were tested using a novel fully automated particle-based multi-analyte technology (PMAT, Inova Diagnostics, research use only; Jo-1, PL-7, PL-12, EJ, Mi-2b, NXP2, SAE, TIF1y, MDA5, HMGCR, SRP) which utilizes paramagnetic particles with unique signatures and a digital interpretation system.