and 105 men, who were suspected of having osteoporosis and who underwent VFA in the supine position and radiography of the spine were evaluated. VFA was analyzed by using a six-marker point method to describe the shape and deformity of each vertebra. Visual radiography of the lateral spine was performed by an experienced radiologist. The agreement between VFA and visual radiography, was assessed by using weighted statistics.

Results: Visual radiography helped identify 51 (24.6%) patients with at least one vertebral fracture versus 49 (23.67%) with VFA. Most fractures were present in T7, T12, and L1. Excellent agreement was found between VFA and visual radiography, with 97.3% concordance and 0.89. Sensitivity, specificity, and positive and negative predictive values calculated by lesion level for VFA compared with visual assessment were 90.2%, 98.08%, 93.88%, and 96.84%, respectively.

Conclusion: VFA performed with patients with type 2 diabetes, in the supine position, is an accurate method to help detect vertebral fractures when compared with conventional spine radiography. VFA permits combination of fracture assessment with bone mineral density measurement in a single session

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AB1148

THE RELATION ANALYSIS OF BONE MICROARCHITECTURE EVALUATED BY HR-pQCT, AND SYNOVITIS, BONE DESTRUCTION, SYSTEMIC OSTEOPOROSIS IN RHEUMATOID ARTHRITIS

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Background: Periarticular osteoporosis is one of hallmark of rheumatoid arthritis (RA). However, until now the periarticular bone structure including bone mineral density have not been fully elucidated. High-resolution peripheral quantitative computed tomography (HR-pQCT) is a new technique with high spatial resolution that enables us to assess microarchitecture of cancellous and cortical bones that cannot be assessed by conventional X-ray examinations. Recently, few studies using HR-pQCT revealed that bone microarchitecture such as trabecular volumetric densities (Tb.vBMD) were different between RA and non-RA¹, but these study had not compared findings of HR-pQCT with synovitis assessed by ultrasonography (US) or systemic osteoporosis.

Objectives: To investigate bone microarchitecture evaluated by HR-pQCT in RA.

Methods: This study included 21 RA patient. HR-pQCT imaging analyses quantified bone microarchitecture in 2,3 Metacarpal Head. We measured the bone mineral density (BMD) of lumbar spine and femoral neck using Dual-Energy X-ray Absorptiometry (DXA). Synovitis and bone destruction were assessed by US and X-ray, respectively.

Results: Disease duration, age and disease activity were not correlated with bone microarchitecture. BMD of femoral neck was correlated with Tb.vBMD ($r=0.84, p<0.01$). The joints with US-proven active synovitis [power doppler score (PD) ≥ 2] showed less Tb.vBMD, trabecular number (Tb.N) and trabecular thickness (Tb.Th) as compared with the patients with US-PD<2 synovitis (Tb.vBMD: 121.5 mg/cm³ vs 145.3 mg/cm³, Figure 1). These tendencies were also shown in deferent Metacarpal Heads in the same patient (the mean difference of Tb.vBMD, PD ≥ 2 – PD<2: -11.9

mg/cm³). Moreover, the joints with progressive joint destruction as classified by more than steinbrocker stage 3 showed less Tb.vBMD (122.1 mg/cm³ vs 150.0 mg/cm³). The longitudinal analysis of 10 patients revealed that Tb.vBMD and Tb.N were improved along with improvement of disease activity (DAS -2.80: from baseline to 12 months after new treatment initiated, but Tb.Th was not improved).

Conclusion: This study revealed that bone destruction and synovitis were associated with bone microarchitecture and, the difference of treatment response by parameter of bone microarchitecture. However, this study was mainly transverse analysis and small samples, we need longitudinal analysis using larger samples.

Abstract AB1148 Figure 1

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AB1149

CHARACTERIZATION OF SALIVARY PROTEINS IDENTIFIED AS POTENTIAL BIOMARKERS FOR SYSTEMIC LUPUS ERYTHEMATOSUS THROUGH PROTEOMIC ANALYSIS

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Background: Systemic lupus erythematosus (SLE) is a heterogeneous autoimmune disease characterized by pathogenic autoantibodies and uncontrolled inflammatory response. There are few reliable biomarkers available for diagnosis and monitoring the disease.

Objectives: We tried to find and characterize specific protein components in saliva of patients with SLE for their use as biomarkers in future.

Methods: Salivary proteins were prepared from 11 samples from patients with SLE and healthy controls (HC), and were subjected to 2-dimensional gel electrophoresis (2-DE). The spots with greater than 2 fold change in intensity were identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometer (MS) analysis. The relative and absolute amounts of the several candidate proteins in saliva of patients with SLE and rheumatoid arthritis (RA), and HC were analyzed using western blotting, and enzyme-linked immunosorbent assay.

Results: Proteomic analysis using 2-DE and MS identified 20 differentially expressed protein spots in the saliva of SLE patients compared in that of HC. Among them, proteins with more than two-fold differences in expression were found as immunoglobulin gamma-3 chain C (IGHG3), immunoglobulin alpha-1 chain C region, protein S100, lactotransferrin, leukemia-associated protein 7, and 8-oxoguanine DNA glycosylase (OGG1). salivary IGHG3 levels were increased in SLE (3.9 ± 2.2 pg/mL) compared to those in RA (1.8 ± 1.0 pg/mL, $p < 0.001$) or HC (2.1 ± 1.6 pg/mL, $p < 0.001$), and salivary lactotransferrin levels were increased in SLE (5.0 ± 1.7 pg/mL) compared to those in RA (3.1 ± 1.6 pg/mL, $p < 0.001$) or HC (2.3 ± 1.7 pg/mL, $p < 0.001$). The patients with nephritis had higher salivary IGHG3 (4.7 ± 1.9 pg/mL) than those not (3.6 ± 2.2

pg/mL, $p = 0.007$). The follow up study, the patient with increased salivary IGHG3 had significantly different in changes of hemoglobin (-0.85 ± 0.87 vs $0.42 \pm 0.99/\mu\text{L}$, $p = 0.02$), and changes of complement 3 (-7.67 ± 14.15 vs $+7.0 \pm 9.34$, $p = 0.02$) compared to those not. In addition, the patients with increased salivary lactotransferrin had significantly different in changes of ESR (-2.0 ± 4.6 vs 8.4 ± 9.56 , $p = 0.02$) compared to those not, and salivary lactotransferrin levels negatively correlated with complement 3 levels ($r = -0.5$, $p = 0.02$).

Conclusion: Salivary IGHG3 and lactotransferrin levels were significantly increased in patients with SLE compared to those in patients with RA or HC, and could be used as potential biomarkers of SLE.

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AB1150 IMPLICATIONS OF CORONARY ARTERY CALCIUM AND ITS PROGRESSION AS MARKERS OF PLAQUE VULNERABILITY AND PATIENT RISK IN RHEUMATOID ARTHRITIS

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Background: Atherosclerotic plaque calcification represents a stabilizing physiologic process; calcified coronary plaques (CP) are less prone to rupture and yield lower risk of cardiovascular events (CVE) compared to non-calcified (NCP) or mixed- partially calcified- plaques (MP). Interestingly, higher coronary artery calcium score (CACS) and its progression associate with higher event risk in general patients. We, likewise, reported that CACS predicted cardiac events in rheumatoid arthritis (RA) patients independently of risk factors or cardiac risk scores.

Objectives: To address this paradox, we evaluated the contribution of vulnerable MP burden to CACS as well the influence of change in MP burden on CACS progression in RA patients who underwent coronary anatomy evaluation with computed tomography angiography (CCTA).

Methods: One hundred-one patients underwent a repeat CCTA within 83 $\pm$ 3.6 months from baseline. Total number of segments with plaque (segment involvement score-SIS) and cumulative stenosis severity rendered by plaque over all evaluable segments (segment stenosis score-SSS) were computed for all participants. Coronary lesions were defined as non-calcified (NCP), mixed (MP) or calcified (CP). Generalized Linear Models predicted the contribution of MP and CP plaque burden to the baseline and follow-up CACS as well as the influence of change in the burden of the respective lesions on CACS progression.

Results: Mixed and CP burden (SSS-MP and SSS-CP respectively) strongly correlated with CACS at both baseline ($r_{mp} = 0.75$ and $r_{cp} = 0.77$, $p < 0.001$) and follow-up ($r_{mp} = 0.57$ and $r_{cp} = 0.68$, $p < 0.0001$), whereas non-calcified plaque did not ($r_{ncp} = -0.03$, $p = 0.85$ and -0.16 , $p = 0.30$ respectively). Both MP and CP burden comparably and significantly contributed to CACS magnitude at both times (table 1); MP accounted for 36.5% and 38.5% of explainable variance in CACS while CP accounted for 63.5% and 61.5% of it at baseline and follow-up respectively (all $p < 0.001$). Likewise, change in MP and CP burden from baseline to follow-up significantly contributed to and justified 27% and 73% of explainable CACS change variance.

Conclusion: The vulnerable MP and the more stable CP burden and their change significantly and collectively contributed to CACS at any time as well as its progression respectively in RA. Therefore, the MP burden and its change embody the vulnerability components within the higher baseline and progressing CACS scores explaining the higher CVE risk observed.

Abstract AB1150 Table 1. Impact of MP and CP burden and their change on CACS and its progression in RA

CCTA	Model	predictor	Beta	p-value	Raw RW (95% CI)	Rescaled RW
Baseline	Model 1	SSS-MP	.564	.000	0.258 (0.085-0.472)	36.5%
		SSS-CP	.532	.000	0.450 (0.232-0.662)	63.5%
	Model 2	SSS-MP	.548	.000		
		SSS-CP	.518	.000		
		Age	.062	.092		
Gender			-.007	.83		
Follow-up	Model 1	SSS-MP	.416	.000	0.250 (0.112-0.399)	38.5%
		SSS-CP	.634	.000	0.399 (0.235-0.554)	61.5%
	Model 2	SSS-MP	.399	.000		
		SSS-CP	.610	.000		
		Age	.086	.070		
		Gender	-.030	.48		
	Model 1	SSS-MP	.388	.003	0.106 (0.017-0.251)	27%
		SSS-CP	.585	.000	0.288 (0.115-0.483)	73%
		SSS-MP	.314	.010		
		SSS-CP	.538	.000		
Change (follow-up - baseline)	Model 2	Age	.341	.005		
		Gender	-.063	.58		

Model 1: unadjusted, Model 2: age and gender adjusted, RW: Relative Weight

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AB1151 APPLICATION OF ULTRASOUND TO DISTINGUISHING PMR FROM POLYARTHRALGIA

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Background: Japan is the world's most aged country. The number of patients with polymyalgia rheumatica (PMR) is expected to increase more. Classification criteria including ultrasound findings were published in 2012, but the ability to differentiate PMR from rheumatoid arthritis (RA) was not significant. We will clarify whether recently reported ultrasound findings (1, 2) which could be characteristic in PMR are helpful for distinguishing from other diseases and treatment outcome in suspected PMR patients.

Objectives: Patients who were clinically suspected of PMR and underwent ultrasound examination from March 2015 to July 2018.

Methods: Recorded ultrasound images were retrospectively interpreted by the ultrasound expert, who was blind for clinical information. They were classified into three groups of PMR, RA, others/no inflammation. Initial dose of glucocorticoid (GC), therapeutic response, presence or absence of relapse, and concomitant medications were collected and compared among the 3 groups. Cases in which steroids had already been used before ultrasound examination were excluded from the analysis.

Results: The number of subjects was 81, and the number of ultrasound examination was 88. The ultrasound expert classified 29 PMR, 20 RA, 3 other/no inflammation. 18.5% (15/81) of the subjects were improved with no GC and relapse. The average prednisolone (PSL) dose was 15.3 mg in the PMR group, and 9.7 mg in the RA group. Concomitant medications were introduced in 31% (9/29) of PMR group, in 65% (13/20) of RA group.

Conclusion: Ultrasound is useful for distinguishing PMR from seronegative RA and other arthralgia. These findings showed that ultrasound is useful for the proper use of GC and concomitant medications.