between anti-CarPA and ΔDAS28 showed association only with ΔDAS28 from baseline to M6 (p=0.005). In this period, the positive patients showed less decrease of DAS28 than the negative patients. This was independent of all the variables mentioned above and of the initial DAS28. As a result of this association, 20.5% of the anti-CarPA positive patients reached remission at M6, in comparison with 34.6% of the negative patients. In contrast, ΔDAS28 from M6 to M12 and from M12 to M24 were small and not associated with anti-CarPA.

Conclusions: Anti-CarPA were associated with high disease activity at presentation and with less improvement in the first 6 months of follow-up in EA patients. These results reinforce the possibility that anti-CarPA could be useful in the clinic as prognostic biomarkers.

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SAT0085 RELATIONSHIP BETWEEN SERUM CALPROTECTIN, DISEASE ACTIVITY PARAMETERS AND THE 7-JOINT ULTRASOUND SCORE IN RHEUMATOID ARTHRITIS

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Background: Calprotectin may be a sensitive biomarker of rheumatoid arthritis (RA) disease activity.

Objectives: In this study we aimed to investigate whether calprotectin is a better biomarker than known inflammation markers for predicting clinical activity and ultrasound parameters in patients with RA.

Methods: A total of 80 RA patients were underwent to clinical (swollen joint count, tender jointcount, disease activity score-DAS28, simplified disease activity index-SDAI and clinical disease activity index-CDAI) and ultrasound (German US7) examination. Correlation of clinical, laboratory and ultrasound measures were analyzed using Spearman's correlation coefficient. The RA patients were divided into two subgroups according to their DAS28-ESR (erythrocyte sedimentation rate) score; group 1 (DAS-28 ≤3.2 remission and low activity), group 2 (DAS28 >3.2 moderate and high activity), respectively. Thirty healthy controls were simultaneously studied.

Results: The serum calprotectin levels of the RA patients were significantly higher than those of healthy controls (96.3±45.9, 54.7±50.0, respectively; p<0.001). Distribution of age (years; 57.2±9.6, 53.9±10.5, respectively; p=0.115) and sex (female; 78.8%, 70%, respectively, p=0.336) between these groups were similar. The clinical, laboratory and ultrasound characteristics of the patients are shown in table 1. The calprotectin levels were 74.8±45.5 in group 1 (n=37) and 114.7±37.9 in group 2 (n=43) (p<0.001). The association between calprotectin and scores of DAS28-ESR are shown in figure 1A. Serum calprotectin was significantly associated with DAS28-ESR, DAS28-CRP (C-reactive protein), SDAI, CDAI, ESR, CRP and US7 parameters. We also found a moderate to strong correlation of US7 score with DAS28-ESR, DAS28-CRP, SDAI, CDAI, CRP and ESR (table 2). The correlation between calprotectin and US7 is shown in figure 1B.

Abstract SAT0085 – Table 1. Baseline characteristics of patients with RA

	Group 1 (n=37)	Group 2 (n=43)	p
Female Sex, n (%)	30 (81.1)	33 (76.7)	0.64
Age, years	55.4±9.4	58.8±9.6	0.12
Disease duration, years	13.2±9.1	12.2±7.6	0.61
Seropositivity, n (%)	24 (64.9)	28 (65.1)	0.98
ESR, mm/hour	14.2±7.2	42±18.5	<0.001
CRP, mg/dl	8.2±11.8	23±25.7	0.002
CDAI	4.3±2.1	11.4±6.9	<0.001
SDAI	12.4±11.9	34.4±29.4	<0.001
US7 total score	4.9±4.8	8.1±6.9	0.021
Calprotectin, ng/ml	74.8±45.5	114.7±37.9	<0.001

Table.2 Spearman's rank correlation coefficients between calprotectin, US7 scores and other variables:

	ESR	CRP	DAS28-ESR	DAS28-CRP	CDAI	SDAI	US7
Calprotectin	0.361***	0.306**	0.488***	0.495***	0.482***	0.429***	0.444***
ESR		0.494***	0.816***	0.561***	0.467***	0.554***	0.247*
CRP			0.512***	0.780***	0.408***	0.923***	0.309**
DAS28-ESR				0.828***	0.846***	0.695***	0.441***
DAS28-CRP					0.856***	0.924***	0.501***

CDAI 0.670*** 0.509***
SDAI 0.418***
***p<0.001, **p<0.01, *p<0.05

Abstract SAT0085 – Figure 1. A Box plots between calprotectin and DAS28-ESR. B. Correlation graph between calprotectin and US7 score

Conclusions: The results of our study support an additional role of calprotectin in assessing inflammatory activity in patients with RA. Therefore, the combination of serum calprotectin levels and the US7 score could be a simple and practical assessment approach for detection of RA disease activity.

Disclosure of Interest: None declared

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SAT0086 EVALUATION OF DIAGNOSTIC PERFORMANCE OF MAGNETIC RESONANCE IMAGING (MRI) AND ULTRASOUND (US) TOWARD EARLY RHEUMATOID ARTHRITIS FROM NAGASAKI EARLY ARTHRITIS COHORT

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Background: We previously reported that the presence of autoantibodies, magnetic resonance imaging (MRI) bone oedema, ultrasound (US) power Doppler (PD) ≥ grade 2 articular synovitis are indispensable markers to predict the development of RA from undifferentiated arthritis whereas combination analysis used by the above variables, focusing on very early phase of arthritis, remains to be done in our cohort.

Objectives: To investigate and re-confirm the diagnostic performance of autoantibodies, MRI findings and US findings toward early RA from NAGASAKI EARLY ARTHRITIS COHORT.

Methods: One hundred and three patients, suffering arthralgia less than 6 months and examined by both MRI and US of wrist and finger joints, were selected from NAGASAKI EARLY ARTHRITIS COHORT dating from September 2009 to August 2017. US were evaluated by synovitis score of semi-quantitative manner by gray-scale (GS) and power Doppler (PD) proposed from EULAR. In MRI, synovitis, bone oedema and bone erosion were assessed by the Rheumatoid Arthritis Magnetic Resonance Imaging Scoring system (RAMRIS). After univariate analysis, multivariate analysis was employed to clarify the diagnostic predictors of early RA.

	odds ratio	95% confidence interval	p-value
ACPA titer	1.05	1.01-1.08	0.0069
PD ≥ grade 2	17.43	5.15-59.06	0.00025

Results: Median of age was 60 years and that of symptomatic duration was 2 months. Female was 68.9%, positive rate of RF was 64.7% and that of ACPA was 47.1%. Total GS score was 4.0, total PD score 2.0, MRI synovitis score 3.0, MRI bone oedema score 0, MRI bone erosion score 0. Seventy patients were diagnosed as early RA during follow-up periods. A univariate analysis showed ACPA, CRP, MMP-3, fulfilment of 2010 ACR/EULAR criteria, MRI synovitis score, MRI bone oedema score, total GS score, total PD score and PD ≥ grade 2 articular synovitis were associated with early RA. Multivariate analysis revealed ACPA and PD ≥ grade 2 articular synovitis at any joints were independent predictors toward diagnosis of early RA.

Conclusions: Our present study re-confirms the importance of ACPA, PD $\geq$ grade 2 articular synovitis and MRI bone oedema, especially the former two, to predict the development of early RA from undifferentiated arthritis patients.

Disclosure of Interest: None declared

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SAT0089

INITIATING TOFACITINIB IN A TREAT TO TARGET STRATEGY FOR RHEUMATOID ARTHRITIS LEADS TO BLUNTED MULTI-BIOMARKER DISEASE ACTIVITY SCORES AS COMPARED TO ANTI-TUMOUR NECROSIS FACTOR AGENTS

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Background: The use of a treat-to-target (T2T) strategy for the management of rheumatoid arthritis (RA) leads to better outcomes¹ but requires the regular use of disease activity measures (DAMs) to make clinical decisions. The optimal DAMs that should be used for this purpose have yet to be determined.

Objectives: To assess the utility of various DAMs for clinical decision making at a rheumatology clinic implementing a T2T strategy, following the initiation of Tofacitinib (tofc) and anti-tumour necrosis factor (ant-TNFs) agents.

Methods: Patients at a community based rheumatology clinic (authors) undergo DAM assessments on a routine basis as part of the implementation of a T2T strategy. These assessments include conventional clinical assessments, DAS28CRP, and the CDAI, as well as the ultrasound power Doppler joint count (UPDJC)² and multi-biomarker disease activity score (MBDA). Patients undergo regular assessments, and if found to be under inadequate control, changes are made in their clinical regimen, and then the patients are reassessed three to six months later. Clinical significance was determined by Paired-samples T tests.

Results:

		Before		After			
	N	DAS28CRP	Avg $\pm$ SD	DAS28CRP	Avg $\pm$ SD	% Change	Prob
Tofacitinib	39	4.90	$\pm$ 1.00	3.78	$\pm$ 1.20	23%	p<0.001
Anti-TNFs	40	5.07	$\pm$ 1.08	4.09	$\pm$ 1.01	19%	p<0.001
		CDAI		CDAI			
Tofacitinib	37	29.7	$\pm$ 11.1	17.6	$\pm$ 12.1	41%	p<0.001
Anti-TNFs	40	29.9	$\pm$ 11.8	21.4	$\pm$ 12.4	28%	p=0.001
		UPDJC		UPDJC			
Tofacitinib	37	8.9	$\pm$ 4.0	7.0	$\pm$ 3.9	21%	p=0.002
Anti-TNFs	38	9.3	$\pm$ 4.5	7.3	$\pm$ 3.1	22%	p=0.03
		MBDA		MBDA			
Tofacitinib	37	48.1	$\pm$ 12.2	44.3	$\pm$ 10.4	7%	NCS
Anti-TNFs	38	50.0	$\pm$ 11.0	39.3	$\pm$ 10.9	21%	p<0.001

Over the past four years, Thirty nine patients at this clinic were determined to be under inadequate control and were started on tofc. Also, the last forty patients started on anti-TNFs at the clinic were assessed for comparison. The two groups of patients had similar demographics with a combined average duration of clinical disease found to be >10 years. Sixty eight% of these patients were female, and 85% of patients were rheumatoid factor positive.

Table I shows that all of the DAMs listed resulted in significant clinical responses with the exception that following the institution of tofc, the MBDA did not result in clinically significant improvement. When individual biomarkers from the MBDA were analysed, anti-TNFs therapy lead to significant reduction in six of twelve biomarkers (IL-6, TNF-R1, TNF-R2, MMP-2, SSA and CRP) whereas treatment with tofc lead to significant reduction of two (VCAM and Resisten) and borderline reduction in two (IL-6 and TNF-R1) and a significant increase in one (Leptin).

Conclusions: Several DAMs performed well with the exception of the MBDA after tofc therapy. The MBDA showed a blunted response when compared to other DAMs in the tofc treated group, as well as when compared to patients treated with anti-TNFs. This finding is most likely due to tofc's unique mode of action, as reflected in the relatively small number of biomarkers that decreased following treatment, and the fact that leptin significantly increased.

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SAT0090

EVALUATION OF THE USE OF ULTRASOUND TO MANAGE PATIENTS WITH RHEUMATOID ARTHRITIS OVER TIME: RESULTS FROM THE CORRONA REGISTRY

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Background: Musculoskeletal ultrasound (MSUS) imaging in patients with rheumatoid arthritis (RA) can detect synovial inflammation with higher sensitivity compared to physical examination alone.¹ Not all rheumatologists have adopted the use of MSUS in their daily practice.

Objectives: To compare clinical outcomes in patients whose physicians use MSUS to assess joint inflammation vs those who do not.

Methods: Data from patients $\geq$ 18 years old with a confirmed diagnosis of RA who had an index visit in the Corrona RA Registry from 01/01/2012 to 12/31/2015 with $\geq$ 12 months of follow-up were stratified into 2 groups: patients whose physicians use MSUS frequently—ie, in >50% of their patient encounters—(MSUS group) and patients whose physicians do not use MSUS at all (No-MSUS group). Frequency of MSUS can be recorded and updated by the rheumatologist in the registry questionnaires at every Corrona visit. The index visit was the first visit in which the physician reported the frequency of MSUS use. Outcomes included mean Clinical Disease Activity Index (CDAI) and the proportion of patients in low disease activity (LDA)/remission (CDAI $\leq$ 10) at each time point and were evaluated at index and 1, 2, and 3 years post-index. Comparisons between groups were made using 2-sample t-tests for mean CDAI and Chi-square tests for achievement of LDA/remission.

Results: 21 physicians reported using MSUS frequently compared with 111 who did not use MSUS at all. 5446 of their patients met the criteria for analysis; 1018 (18.7%) were in the MSUS group and 4428 (81.3%) were in the No-MSUS group. At the index visit, the MSUS group was younger (mean age 57.7 years vs 59.8 years, p<0.01) and had shorter disease duration (mean 8.7 years vs 11.0 years, p<0.01) compared with the No-MSUS group. At the index visit, the MSUS group had lower mean CDAI (9.7 vs 12.6, p<0.01) and a greater proportion of patients in LDA/remission (64.9% vs 56.8%, p<0.01) compared with the No-MSUS group; these differences were also present at 1, 2, and 3 years post-index (figure 1).

Conclusions: A greater percentage of patients whose physicians use MSUS were in LDA/remission over time. Average disease activity of these patients was lower compared with patients whose physicians did not use MSUS. This pattern was observed at 4 different time points over a 3 year period.

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