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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SAT0091

CLINICAL REMISSION PREDICTION USING BASELINE GENE EXPRESSION IN THE PERIPHERAL BLOOD OF DMARD-NAÏVE RHEUMATOID ARTHRITIS PATIENTS TREATED WITH METHOTREXATE

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Background: Rheumatoid arthritis (RA) is an autoimmune disease of unknown etiology, which is characterised by erosive arthritis (synovitis) and systemic inflammation. Methotrexate (MTX) is a basic drug for RA treatment. However, presently it is not possible to predict MTX efficacy in every patient while some patients are non-responsive to MTX or the drug may induce adverse effects. Therefore, identification of patients sensitive to MTX before treatment could significantly improve therapy outcome.

Objectives: To investigate the importance of baseline expression of genes involved in the metabolic and energy generation pathways in RA patients, which could serve prognostic biomarkers of treatment response to methotrexate.

Methods: Peripheral blood of 40 DMARD-naïve RA patients aged 47.5±15.5 years old, disease duration 7.9±6.0 weeks treated with MTX (15 mg/week) during two years and 26 healthy age-matched control subjects were examined. Clinical response was assessed by disease activity score (DAS) 28, serum levels of ACPA antibodies, C-reactive protein (CRP), and rheumatoid factor (RF). Clinical remission was assessed according to ACR criteria and DAS28 (DAS28 <2.6). Bone erosion and joint space narrowing (JSN) scores were monitored by X-ray analysis. Protein concentrations were measured using ELISAs. Total RNA was isolated and used in gene expression studies performed with quantitative real-time RT-PCR.

Results: MTX treatment significantly decreased the disease activity according to DAS28. At the end of the study the majority of patients demonstrated moderate disease activity (DAS28 >3.2 <5.1), four patients retained high disease activity while 12, attained remission (DAS28 <2.6). Gene expression analysis has revealed that RA patients, which attained clinical remission after MTX treatment demonstrated significantly higher baseline expression of genes associated with glycolysis (Glut1, PKM), hypoxia (HIF1α), and cell cycle related cyclin D1 compared to other examined RA patients and healthy subjects. RA patients, which retained high disease activity after treatment had baseline expression of genes related to apoptosis (p21, caspase 3), tissue regeneration (TGFβ1, RUNX2) and cyclin D1, significantly lower than that in the controls and other examined RA patients.

Conclusions: Clinical remission attainment in DMARD-naïve RA patients treated with methotrexate is associated with high baseline expression of genes associated with glycolysis, hypoxia and cyclin D1 compared to other examined patients. Non-responsiveness to MTX is accompanied by lower baseline expression of genes related to apoptosis, tissue regeneration, and cyclin D1 compared to controls. Increased baseline expression of cyclin D1 gene compared to healthy subjects could serve a positive prognostic marker of sensitivity to methotrexate therapy.

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SAT0092

PALINDROMIC RHEUMATISM (PR): EXPERIENCE IN A REAL WORLD SETTING – THE NOTTINGHAM CASEMIX REGISTER (NCR)

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Background: PR is an unusual arthritis characterised by brief, self-limiting attacks of synovitis usually affecting one joint at a time with outcomes including transformation to persistent inflammatory rheumatic disease, usually rheumatoid arthritis (RA), continuation of PR and spontaneous remission. Seropositivity for rheumatoid factor (RF) or ACPA may predict transformation to RA. We examined the experience of PR in a large UK teaching hospital rheumatology department using data collected routinely at outpatient encounters. The NCR records a primary rheumatology diagnosis, demographic data, administrative details (type of consultation, grade of clinician and outcome) for every rheumatology consultation. Between March 2016 and February 2017 19 832 clinical encounters were logged forming the basis of this study.

Objectives: To identify the burden of PR in a large UK teaching hospital and its management in a real world setting.

Methods: PR patients were extracted from the NCR and their electronic record (Bloods/Radiology/Clinic letters) analysed for any change in diagnosis (prior to or following PR diagnosis), treatments prescribed, serological status and radiological findings. In the subgroup whose diagnosis changed, a separate analysis to look at predictive factors was carried out.

Results: 101 patients (149 attendances) were analysed (24 new patient appointments, 125 follow ups). The female:male ratio was 2.16, mean age 53.5. Over half were between 40–59. 31 new diagnoses of PR were made in the study period. The NCR prevalence of PR was 1%. Duration of PR in previously diagnosed patients was a mean of 4 years. The diagnosis was changed in 13 PR patients (to RA in 9). Serological status is shown below:

Status	RhF	ACPA	Dual Rhf/ACPA
Positive	53	48	43
Borderline	7	3	NA
Negative	37	39	27
Not known	4	11	13

Plain radiographs were available for 88 patients (hands- 69, feet- 54). Erosions were noted once (RA was then diagnosed). Synovitis was detected in 10 of 25 patients who underwent ultrasound and in 2 of 18 patients who underwent small joint MRI. 63 patients were on DMARDs, most often HCQ.⁴³ 9 received dual DMARD therapy. DMARD therapy was more frequent in sero-positive patients. PR patients later diagnosed as RA were older (64.9 vs 53.5 years) and more commonly seropositive (6 being dual antibody positive) with similar gender ratio (2:1 F:M). The duration of PR diagnosis ranged from 6 months to 10 years (average 4.2).

Duration of PR prior to new Diagnosis	Change to RA	Change to other diagnosis
Less than 1 year	1	2
1–2 years	2	1
2–5 years	3	1
>5 years	3	0

Abstract SAT0092 – Figure 1. PR patients by age

Conclusions: PR accounted for 1% of all patients on the NCR with 10% of patient's having their diagnosis changed in the study period. RA patients on the NCR numbered 2292, making the RA:PR ratio 22.7:1. Approximately half of PR patients were RF/ACPA positive or both with over half the PR population on DMARD treatment, most often HCQ. PR patients developing RA were older and ACPA/RF positivity was more common. Although a third PR patients who later developed RA did so within 2 years, the majority took longer with some diagnosed as RA over 5 years later suggesting PR patients, especially if seropositive, should be followed long term. Two year follow up will be available from March 2018.

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SAT0093

MALE SEX PREDICTS A FAVOURABLE OUTCOME IN SERONEGATIVE EARLY RHEUMATOID ARTHRITIS

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Background: Rheumatoid factor (RF) and anti-citrullinated peptides antibodies (anti-CCP) are universally recognised negative prognostic factors in rheumatoid arthritis (RA). The majority of studies of early RA have focused on RF and anti-