have the significant upregulation of TLR3, TLR7, MDA5, RIG-1 sensors as well as IRF7, STAT1, MxA, ISG15 genes. And skin biopsies from anti-MDA5 DM patients were characterised by strong expression of STAT1, MxA, ISG15 proteins. Furthermore, overexpression of plasma BAFF was observed in anti-MDA5 DM patients. BAFF level was showed to be positively correlated with IFN- α level. Additionally, BAFF level, synergizing with IFN- α , was of great relevance to KL-6 in anti-MDA5 DM patients with higher plasma IFN α concentration.

Conclusions: Our data suggest that aberrant activation of the type I IFN system associated with BAFF may be implicated in the pathogenesis of ILD in anti-MDA5 DM. The discovery may drive the development of new therapeutic strategies for the type of DM patients.

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OP0148

A VALIDATION OF THE 2017 EULAR/ACR IDIOPATHIC INFLAMMATORY MYOPATHIES CLASSIFICATION CRITERIA IN AN EXPERT-DEFINED SINGLE-CENTRE TEN YEAR INCIDENT COHORT

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Background: The recently published 2017 European League Against Rheumatism (EULAR) and American College of Rheumatology (ACR) classification criteria for adult and juvenile idiopathic inflammatory myopathies (IIM) and their major subgroups reflect a long-appreciated need for more accurate case definition in

ongoing research in these complex and heterogenous diseases.¹ However a number of issues remain unresolved. There was a high frequency of missing data in both the derivation and validation samples, only one of the now numerous myositis specific autoantibodies is included, and certain well recognised IIM subtypes are not specifically classified despite their well phenotyped and differing natural histories, clinical features and treatment modalities.^{2,3}

Objectives: To perform an external validation of the EULAR/ACR classification criteria in an incident IIM cohort and examine how classification criteria-assigned IIM subtype correlates with expert opinion.

Methods: Adults with newly diagnosed IIM attending Salford Royal NHS Foundation Trust Neuromuscular services were identified. A retrospective review of all putative cases was performed, and cases fulfilling a consensus expert-opinion diagnosis of definite IIM included. A broad range of clinical, serological and histological data were collected and each case assigned a single IIM subtype by expert opinion. The EULAR/ACR classification criteria were applied and sensitivity, specificity, positive and negative predictive value calculated, presented with 95% confidence intervals (CI).

Results: A total of 922 cases were screened with 255 expert opinion definite IIM identified. The sensitivity to diagnose an IIM was 99.6% (97.2–100) and 80.9% (76.0–85.8) for the classification criteria cut-points of 'probable' and 'definite' respectively. The sensitivity for 'definite' IIM improved to 90.2% (86.5–93.8) when biopsy data for 24/34 initially missed cases were excluded. In 94/255 cases the IIM subtype differed between expert opinion and classification criteria, most strikingly in the group subtyped 'polymyositis' using the EULAR/ACR criteria, where there was discrepancy in the majority (87/161).

Abstract OP0148 – Table 1. PM, polymyositis; DM, dermatomyositis; IBM, inclusion body myositis; ADM, amyopathic dermatomyositis; IMNM, immune-mediated necrotizing myopathy; ASS, anti-synthetase syndrome; OM, overlap myositis.

Classification Tree-assigned IIM Subtype

	PM	DM	IBM	ADM	Totals
PM	37	0	0	0	37
DM	3	54	0	0	57
IBM	0	0	56	0	56
Expert-assigned IIM Subtype					
ADM	0	0	0	14	14
ASS	29	5	0	0	34
IMNM	25	0	0	0	25
OM	30	2	0	0	32
Total	124	61	56	14	255

Conclusions: The criteria performed with high sensitivity in identifying IIM in an external cohort of IIM patients. However, substantial disagreement exists in subtype assignment, especially resulting in a larger proportion of cases of 'polymyositis' with heterogeneous features, important to consider in the application of these criteria to subsequent research.

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THURSDAY, 14 JUNE 2018

Can imaging improve diagnosis and outcome in rheumatic diseases

OP0149

AN MRI GUIDED TREAT-TO-TARGET STRATEGY IN RHEUMATOID ARTHRITIS PATIENTS IN CLINICAL REMISSION IMPROVED MRI INFLAMMATION BUT NOT DAMAGE PROGRESSION – RESULTS FROM THE IMAGINE-RA RANDOMISED CONTROLLED TRIAL

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Background: Magnetic Resonance Imaging (MRI) bone marrow oedema (BME)/osteitis and MRI synovitis have been identified as predictors of structural damage progression in rheumatoid arthritis RA.^{1,2} Targeting MRI remission may reduce inflammation and halt damage progression.

Objectives: To investigate whether a 2 year treat-to-target (T2T) strategy targeting MRI remission (defined as absence of BME) suppresses MRI-determined measures of disease activity and structural joint damage in RA patients in clinical remission.

Methods: In the two year investigator initiated, randomised, open label multi-centre IMAGINE-RA study, 200 RA patients in clinical remission (defined as DAS28-CRP<3.2 and no swollen joints) receiving conventional synthetic disease-modifying antirheumatic drugs (csDMARDs) were randomised 1:1 to a conventional DAS28-CRP guided T2T treatment strategy targeting DAS28 <3.2 and no swollen joints or an MRI guided T2T treatment strategy applying the same clinical T2T strategy and in addition targeting absence of MRI BME. Patients were followed every 4 months over a 2 year follow-up period. In all patients contrast-enhanced MRIs of the 2nd–5th metacarpophalangeal (MCP) joints and wrist of the dominant hand were performed at baseline, 12 and 24 months. In the MRI T2T arm MRI was performed every 4 months ahead of the clinical visit and assessed for presence/absence of BME by one blinded evaluator so the result was available for the investigator at the visit. In the conventional T2T arm MRI findings were blinded to the investigator. If treatment target was not met treatment was escalated according to a predefined treatment algorithm starting with increment in csDMARD and then adding biologic DMARDs. MRIs (0, 12 and 24 months) were evaluated according to the RAMRIS scoring system, with known chronology by one blinded experienced reader. Pearson's chi-square statistics and repeated-measures logistic regression models were used to assess outcomes.

Results: MRI outcomes of inflammation and damage at 24 months are presented in the table 1. The MRI T2T arm showed statistically significant reductions at 24 months in all inflammatory endpoints (osteitis, tenosynovitis and total inflammation score, $p<0.018$), except synovitis, ($p=0.074$), compared to the conventional T2T arm. No differences between treatment strategies were seen in damage progression.

Abstract OP0149 – Table 1 MRI outcomes at 24 months

MRI outcomes at 24 months				
	MRI T2T	Conventional T2T	Difference between groups (95% CI)	P value*
MRI				
Inflammation				
Change in osteitis (RAMRIS) score	-1.8 (0.6)	-0.1 (0.5)	-1.8 (-3.2 to -0.3)	0.018
Change in synovitis (RAMRIS) score	-0.5 (0.3)	0.3 (0.3)	-0.8 (-1.8 to 0.1)	0.074
Change in tenosynovitis (RAMRIS) score	-0.9 (0.3)	0.3 (0.3)	-1.2 (-2.1 to -0.3)	0.007
Change in total inflammation (RAMRIS) score	-2.9 (1.0)	0.7 (1.0)	-3.6 (-6.4 to -0.8)	0.013
Damage				
Change in erosion (RAMRIS) score	0.5 (0.2)	0.6 (0.2)	-0.1 (-0.6 to 0.4)	0.663
Change in JSN (RAMRIS) score	0.1 (0.2)	0.4 (0.1)	-0.3 (-0.7 to 0.2)	0.236
Change in total damage (RAMRIS) score	0.6 (0.3)	1.0 (0.3)	-0.3 (-1.2 to 0.5)	0.395
No progression in erosion (RAMRIS), n (%)	59 (79.7%)	70 (75.3%)	OR, 1.06 (0.02 to 66.59)	0.976

95% CI, 95% confidence interval; JSN=joint space narrowing; MRI=Magnetic Resonance Imaging; RAMRIS=RA magnetic resonance imaging scoring system; T2T=treat-to-target; total damage score=sum score of MRI erosion and JSN; total inflammation score=sum score of MRI synovitis, osteitis and tenosynovitis. Data are presented as least square means (SE) unless otherwise stated. Analyses are based on full analysis set (patients having a baseline visit and at least one follow-up visit) with no data imputation to replace missing data. *P values are based on repeated-measures logistic regression models. For some of the variables, fewer patients were included in the analyses due to missing data, with the minimum being 85 (range 85-89) in the MRI T2T arm and 90 (range 90-95) in the conventional T2T arm.

Conclusions: An MRI T2T strategy, aiming to eliminate MRI BME, was more effective than a conventional T2T strategy in reducing MRI inflammation but not MRI damage progression. The reduced inflammatory load caused by the MRI T2T strategy may reduce long-term structural joint damage and improve patient-

reported outcomes, but more than two years follow-up data are needed to clarify this.

Clinicaltrials.gov Identifier: NCT01656278

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OP0150

ULTRASOUND POWER DOPPLER ACTIVITY PREDICTS CLINICAL JOINT SWELLING IN EARLY RHEUMATOID ARTHRITIS PATIENTS: SECONDARY ANALYSES FROM THE ARCTIC TRIAL

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Background: Ultrasound is increasingly applied in the management of rheumatoid arthritis (RA). It is important to detect synovitis early to prevent future joint damage and disability. It is not known whether subclinical ultrasound inflammation in a joint precedes clinical joint swelling.

Objectives: We aimed to investigate whether ultrasound power Doppler (PD) activity in a joint is associated with subsequent clinical joint swelling in early RA patients.

Methods: In the treat-to-target ARCTIC trial, DMARD naïve early RA patients were randomised to follow-up with or without ultrasound, with the same treatment algorithm applied in both arms. Patients were assessed by 44 swollen joint count at all visits (13 visits over two years). Ultrasound examinations were performed using a validated 0–3 semi-quantitative scoring system.¹ with assessments at all visits in the ultrasound arm and at baseline, 12 and 24 months in the conventional arm. We calculated the risk of next-visit clinical joint swelling according to ultrasound inflammation status in clinically non-swollen joints at the preceding visit. We estimated the odds ratio of a joint being swollen at next visit in joints with different PD activity (PD score: 1, 2 or 3), compared to non-swollen joints with no PD activity (PD score=0). These calculations were performed in a logistic mixed-effects model with random intercepts for patient and joint in order to account for within-patient and -joint dependencies, and were adjusted for age, gender, ACPA status, DMARD treatment and strategy arm. Joints injected with corticosteroids were excluded. Data from the two strategy arms were pooled and analysed together, as clinical and radiographic outcomes were similar in the two arms after two years.²

Results: 230 patients were included (118 in the ultrasound strategy arm, 112 in the conventional strategy arm). Mean (SD) age was 51.4 (13.7) years, 61% were female and mean baseline DAS was 3.46 (1.17). The risk of clinical joint swelling at the next visit increased with grade of PD activity (table 1).

Abstract OP0150 – Table 1. Risk of swollen joint at the next visit in joints with subclinical synovitis

Ultrasound assessment	Joint swelling at the next visit n (%)	OR	p-value
PD 0	706/42819 (1.7%)	Reference:	
PD 1	37/469 (7.9%)	3.6 [2.3–5.5]	<0.001
PD 2	33/189 (17.5%)	11.8 [6.9–20.1]	<0.001
PD 3	7/45 (15.6%)	12.1 [4.1–35.7]	<0.001

PD=Power Doppler. Odds ratios are adjusted for within-patient and within-joint dependencies, gender, age, DMARD treatment, ACPA status and strategy arm.

Conclusions: We found PD activity in non-swollen joints to be strongly associated with development of clinical joint swelling at the next visit, and the risk increased with higher power Doppler activity. This study supports the use of ultrasound as a tool to detect joints at risk for developing clinical synovitis.

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