Results: In total, 97 patients with RA were included in the study. The mean baseline DAS28 was 1.96 ± 0.56 . The median cumulative MTX dose was 11.7g; the median duration of exposure to MTX was 19 years. Following MTX discontinuation, flare occurred in 43 (44.3%) patients; the mean time to flare was 98 ± 37.7 days. According to univariable logistic regression analysis, C-reactive protein, erythrocyte sedimentation rate (ESR) at discontinuation, the average ESR in the 6 months before discontinuation of MTX, a weekly dose of MTX before discontinuation, and use of other conventional synthetic DMARDs were associated with a higher risk of disease flare. In multivariable analysis, a weekly dose of MTX before discontinuation (OR, 1.014; 95% CI, 1.014–1.342; $p = 0.031$) was significantly associated with flare risk.

Conclusion: Among patients with RA who achieved low disease activity with long-term treatment with MTX, more than half of the patients remained flare free after MTX discontinuation. A higher MTX dose before discontinuation was associated with a high flare risk.

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AB0213

THE USE OF MUSCULOSKELETAL ULTRASOUND AND PATIENT REPORTED OUTCOMES TO IDENTIFY THE FACTOR TO GIVE RESIDUAL SYMPTOMS AMONG PATIENTS WITH RHEUMATOID ARTHRITIS IN SDAI-REMISSION OR LOW DISEASE ACTIVITY.

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Background: The goal of treatment in rheumatoid arthritis (RA) is to achieve remission. There is the patient with residual symptoms in the Japanese RA patient who achieved clinical remission. There are not many studies to examine the relation between everyday life, social activity and evaluation of disease activities using musculoskeletal ultrasound (MSKUS).

Objectives: To identify the factor to give residual symptoms of RA patients in SDAI-remission (REM) or low disease activity (LDA), using MSKUS.

Methods: 300 patients were enrolled. The synovitis evaluated gray scale (GS) and power doppler (PD) with 22 both hands joints by MSKUS. We evaluated age, sex, the number of tender joint (TJ) and swelling joint (SJ), the serologic characteristics (CRP, ESR, CCP, RF, MMP-3), Patient Reported Outcomes (PROs) (morning stiffness (MS), pain-VAS, fatigue-VAS), HAQ and EQ5D-5L.

Results: (1). Stratified analysis was performed between HAD/MDA group (N=106) and LDA/REM group (N=194). As a result of single variable analysis, many factors were extracted with significant difference. As a result of the multivariate analysis, MTX dose, number of TJ and SJ, MS, fatigue-VAS, HAQ, EQ5D-5L, and GS ≥ 2 were extracted with a dominant difference. (2). For the stratified analysis in GS ≥ 2 , the ratio was low, and the disease duration was short significantly in the LDA/REM group. (3). Next, stratified analysis was performed between Low group (N=95) and REM group (N=99). As a result of single variable analysis, number of TJ and SJ, MTX dose, HAQ, EQ5D-5L, MS, pain-VAS, fatigue-VAS, EGA, GS ≥ 1 , GS ≥ 2 , GS total score, PD ≥ 1 and PD total score were extracted with significant difference. As a result of the multivariate analysis, number of TJ and fatigue-VAS were extracted with a dominant difference.

Conclusion: (1). It became clear that the factor which participated in the achievement with SDAI-remission or low disease activity was enough quantity of MTX dose, use of b/t DMARD, US-GS level, residual symptoms (lassitude - pain joint) to be caused by RA. Particularly, the ratio of GS ≥ 2 was low, and the disease was short. (2). In the LDA patients (who do not achieve clinical remission), they had residual symptoms (fatigue and TJ). (3). In the REM patients, remaining inflammation was not seen in MSKUS. The conclusion is that the induction of remission is important from the viewpoint of not only the prevention of joint destruction but also improvement and maintenance of long-term QoL.

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AB0214

4-YEAR EXPERIENCE OF AN OUTPATIENT CLINIC OF PATIENTS WITH CLINICALLY SUSPECTED ARTHRALGIAS OF EVOLVING TO ARTHRITIS

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Background: Although genetic and serological risk factors have been extensively studied in rheumatoid arthritis (RA), the phase of symptoms without clinical arthritis is poorly characterized.

Objectives: To identify baseline clinical and immunological markers in patients with clinically suspicious arthralgia (CSA) progressing to chronic arthritis.

Methods: Prospective longitudinal study of a cohort of patients with CSA. Patients are followed up for at least 2 years, with clinical and analytical data collection by means of standardized protocols every 6 months. Inclusion criteria were an onset of symptoms ≤ 12 months, inflammatory arthralgias involving small joints of hands or feet (predominantly in nights or mornings, improving throughout the day or with movement, and morning stiffness ≥ 30 min). Patients with clinical synovitis, diagnosis of fibromyalgia or osteoarthritis at baseline visit were excluded from the study.

Results: 45 patients were recruited from November 2015 in our CSA clinics. The majority were women (42 patients), with a mean age at entry of 44 ± 13 years, a mean duration of symptoms before entry of 32.3 ± 15.1 weeks, and a mean follow-up time of follow-up of 17.2 ± 13.3 months. A third (30%) of patients had a family history of autoimmune diseases, 18.6% were seropositive, an average body mass index (BMI) of 27.6 ± 6.6 , and 14 (31.3%) were smokers or ex-smokers. Most patients reported a progression of arthralgia over time (53%) and a joint swelling (57%). Out of 45 patients, 18 (40%) developed clinical arthritis or autoimmune disease (11 RA, 2 undifferentiated arthritis, 3 spondyloarthritis, 2 undifferentiated connective diseases), after 7 ± 8.6 months of follow-up. Among patients with ≥ 6 months follow-up, 47.1% progressed to a clinical arthritis (CA). CA patients had a longer follow-up time (22.4 ± 13.9 vs. 16.8 ± 13 months; $p = 0.015$), and a higher frequency of smoking (60 vs. 21.7%; $p = 0.037$). Likewise, CA patients presented a higher age at baseline, family history of autoimmune disease and higher baseline scores of HAQ, PGA and VAS pain, although without statistical significance (Table 1). In the subset of patients with a final diagnosis of RA, patients presented a significantly longer follow-up, and higher scores of baseline VAS pain compared to non-progressors (Table 2).

Table 1. Baseline characteristics of patients

	Arthritis (N=18)	No arthritis (N=27)	p
Age at onset (years)	48.5 $\pm$ 12.1	41.2 $\pm$ 12.5	0.06
Time of follow-up (months $\pm$ SD)	22.4 $\pm$ 13.9	16.8 $\pm$ 13.0	0.02
FR and / or ACPA (+)	5 (31.3%)	7 (31.8%)	0.70
Smokers / former smokers	9 (60%)	5 (21.7%)	0.04
Familial history of autoimmune disease	5 (27.8%)	4 (15.4%)	0.65
HAQ	6.5 $\pm$ 7.0	3.6 $\pm$ 4.5	0.20
VAS pain	46.6 $\pm$ 35	33.4 $\pm$ 18.5	0.17
PGA	40.2 $\pm$ 30.5	29.6 $\pm$ 23.2	0.28
BMI	24.3 $\pm$ 4.2	27.1 $\pm$ 7.4	0.18
Increased levels of acute phase reactants	31.3%	31.8%	1.00

VAS: visual analogue scale; PGA: patient global assessment; BMI: body mass index

Table 2. Baseline characteristics of patients with RA vs. no arthritis

	RA (N=11)	No arthritis (N=27)	p
Age at onset (years)	48.9 $\pm$ 11.4	41.2 $\pm$ 12.5	0.09
Time of follow-up (months $\pm$ SD)	25.5 $\pm$ 15.6	12.8 $\pm$ 10.9	0.01
FR and / or ACPA (+)	36.4%	16.7%	0.23
Smokers / former smokers	44.4%	21.7%	0.23
Familial history of autoimmune disease	22.2%	17.4%	1.00
HAQ	8.5 $\pm$ 8.1	3.8 $\pm$ 4.5	0.08
VAS pain	58.2 $\pm$ 31.9	33.4 $\pm$ 18.5	0.02
PGA	49.7 $\pm$ 23.7	29.6 $\pm$ 23.2	0.08
BMI	24 $\pm$ 4.9	27.1 $\pm$ 7.4	0.25
Increased levels of acute phase reactants	36.4%	16.7%	0.23

VAS: visual analogue scale; PGA: patient global assessment; BMI: body mass index

Conclusion: In our CSA clinic, 40% of the patients progressed to clinical arthritis, while almost half of those who were followed for more than 6 months progressed.

PROs are important to consider as markers of future development of RA. It is necessary to expand the number of patients recruited to obtain more robust conclusions.

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AB0215

EARLY IMPROVEMENT OF THE POWER DOPPLER SIGNAL CAN PREDICT TO CONTINUE THE BIOLOGICAL DMARDS AFTER 1 YEAR.

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Background: In rheumatoid arthritis (RA), biologics treatment is one of the effective treatment options. On the other hand, the effects of biologics cannot be obtained satisfactorily in all patients, and there are some cases in which treatment is interrupted due to ineffective or adverse events. However, the useful predictive markers of the biologics have not been found in the early phase of treatment in RA. Recently, ultrasound (US) has played a role of sensitive imaging modality in the diagnosis and follow-up of patients with RA.

Objectives: In this study, we investigated whether continuation of biologics treatment can be predicted by ultrasonographic findings in the early phase.

Methods: Fifty-four RA patients who started the first biologics from September 2016 to December 2018 were included. All the patients were performed clinical examination, blood tests and US examination of hand and foot at baseline, 4, 12, 24, 36 and 52 weeks. US examination was performed on MCP joints, PIP joints, wrist and MTP joints.

Results: Among 54 cases, 42 cases were able to continue treatment until one year later, and the continuation rate was 80.8%. Of the 12 patients who discontinued first biologics treatment, 5 were changes to other biologics due to inadequate response, 4 were their wishes, and 3 were adverse events. Multiple regression analysis was performed with treatment continuation as the dependent variable and improvement of CRP, MMP-3, DAS28-CRP, grayscale score and power Doppler score in 4 weeks as explanatory variables. Only improvement of power Doppler score was extracted as a significant predictor ($p = 0.045$). In the continuation group, the improvement of the power Doppler signal at week 4 was 36% compared with the baseline, compared with 10% in the discontinuation group.

Conclusion: The early improvement of power Doppler signal in 4 weeks could be a predictive factor for the continuation of 1-year biological treatment.

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Table 1. Multivariate regression analysis of predictive factors for continuation of biologics treatment in 1-year.

Improvement ratio of 0 to 4 weeks	beta	P value
CRP	-0.122	0.465
MMP-3	0.228	0.103
DAS28 CRP	0.280	0.103
Ultrasound grey scale score	-0.342	0.119
Ultrasound power Doppler score	0.442	0.045

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AB0216

POWER DOPPLER SCORE IS USEFUL TO PREDICT JOINT DESTRUCTION OF HAND AND WRIST JOINT IN RHEUMATOID ARTHRITIS PATIENTS.

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Background: Several studies demonstrated that total power Doppler (PD) signal can predict radiographic progression as a change in total van der Heijde-modified total Sharp score (mTSS) in rheumatoid arthritis (RA) patients. However, in some studies, radiographic progression was observed in a different joint compared with the site of a positive PD signal at baseline in many cases.

Objectives: The aim of this study was to identify the clinical factor of RA patients in association with radiographic progression of hands and wrists and to investigate which joint showed radiographic progression in RA patients. We focused on the correlation of the site of a positive PD signal and the site of radiographic progression.

Methods: We examined retrospectively of 70 RA patients (67 women, three men) who underwent ultrasonography (US) examination at 32 regions on bilateral hands and wrists from 2014 to 2016. Radiographs of the hands were taken at baseline and at least one year after US (mean, 19.9 months), and radiographic progression was assessed using mTSS system. We performed multivariate logistic regression analysis to investigate the association between baseline factors and radiographic progression. The relationships between radiographic progression of the individual joint and total/each joint PD score were assessed by ROC analysis and Fisher's exact test.

Results: Nineteen patients (37.3%) experienced progression of mTSS of hands and wrists. DAS28-CRP ($P=0.02$) and total PD score ($P=0.01$) were associated with radiographic progression, and total PD score was significantly associated with radiographic progression (OR 1.22; 95% CI 1.04-1.36; $P=0.006$) by multivariate logistic regression analysis (Table 1).

Table 1. Association between the demographic and clinical findings at baseline and radiographic progression over 12 months

a.univariate analysis	No radiographic progression (n = 51)	Radiographic progression (n = 19)	P-value
Age, years	63.4 ± 12.7	58.1 ± 10.6	0.61
Duration of RA, years	24.4 ± 13.6	20.0 ± 5.0	0.28
Usage of Bio, %	42.2	40.4	0.57
Amount of MTX, mg/week	4.8 ± 3.3	4.5 ± 4.3	0.77
Amount of PSL, mg	1.5 ± 2.1	1.8 ± 2.2	0.73
DAS28-CRP	2.5 ± 0.7	2.9 ± 0.6	0.02*
CRP, mg/dl	0.4 ± 0.5	0.7 ± 0.7	0.10
Total PD score	2.4 ± 3.3	6.6 ± 6.1	0.01*
b.multivariate analysis	odds ratio	95% CI	P-value
DAS28-CRP	1.63	0.72 - 3.71	0.238
Total PD score	1.19	1.04 - 1.36	0.010*

Predictive performance of total PD score was good for radiographic progression of MCP joint (AUC-ROC 0.91) and wrist joint (AUC-ROC 0.85), although poor for PIP joint (AUC-ROC 0.57).

PD score of wrist joint, MCP joint, and PIP joint were significantly associated with radiographic progression of each joint ($P<0.01$). The sensitivity, specificity, positive predictive value, and negative predictive value of wrist joint PD score were 100%, 57.0%, 8.0%, and 100%, MCP joint PD score were 85.7%, 90.5%, 8.0%, 99.8%, and 8.3%, and PIP joint PD score were 30.0%, 97.2%, 13.6%, and 99.0%, respectively.

Conclusion: Total PD score of hands and wrists was a strong predictor of radiographic progression, especially in MCP and wrist joint. Evaluation of PD signal in individual joint is a clinically useful method to predict radiographic progression of the same joint, however there are some differences in sensitivity and specificity.