Fig1. Change of Mean Values and P-value during bDMARDs Treatment in RA Patients

	Baseline	1 month	3 months	6 months	12 months	24 months
SDAI	19.0 (Cont.)	9.8 (<0.01)	6.7 (<0.01)	6.3 (<0.01)	5.5 (<0.01)	4.7 (<0.01)
CRP (mg/dl)	2.1 (Cont.)	0.7 (<0.01)	0.8 (<0.01)	0.7 (<0.01)	0.4 (<0.01)	0.1 (<0.01)
Grasping Power (kg)	11.9 (Cont.)	13.2 (0.08)	14.4 (<0.01)	15.4 (<0.01)	16.6 (<0.01)	18.3 (<0.01)
KEP (N/kg)	3.0 (Cont.)	3.1 (0.11)	3.3 (0.08)	3.5 (<0.01)	3.7 (<0.01)	3.9 (<0.01)
TUG (second)	9.1 (Cont.)	8.2 (0.055)	8.2 (<0.05)	7.4 (<0.01)	7.6 (<0.05)	7.5 (<0.01)
10mW (second)	8.0 (Cont.)	7.5 (0.0503)	7.4 (0.26)	6.8 (<0.01)	6.8 (<0.01)	6.9 (<0.01)
mHAQ	0.48 (Cont.)	0.40 (0.12)	0.24 (<0.01)	0.26 (<0.01)	0.20 (<0.01)	0.22 (<0.05)
Locomo25	29.1 (Cont.)	21.1 (0.02)	18.4 (<0.01)	18.9 (<0.01)	16.0 (<0.01)	15.0 (<0.01)
Fall risk index	8.5 (Cont.)	8.4 (0.61)	7.8 (0.13)	8.0 (0.25)	7.1 (<0.01)	7.2 (<0.05)

Data is expressed as mean (p-value). P-value was calculated using Wilcoxon signed-rank test between baseline and each month.

SDAI: simplified disease activity index, KEP: knee extension power, TUG: timed up and go test, 10mW: 10m walking time, mHAQ: modified health assessment questionnaire

Conclusion: Although there was a rapid improvement in the signs and symptoms of RA after the initiation of bDMARD treatment, improvement in PF was slightly delayed. Significant improvement of muscle power and agility was achieved after 3–6 months onward. Inhibition of fall risk was achieved at and after 12 months after the initiation of bDMARD treatment. These results suggest that physiotherapy plays a vital role in RA patients who undergo treatment with bDMARDs to gain more rapid improvement of PF.

References:

- [1] Smolen JS et al. *Ann Rheum Dis*, 2016.
- [2] Hirano Y et al. *Ann Rheum Dis*, suppl. 2, 2019.
- [3] Toba K et al. *Jpn J Geriatr*, 2005.
- [4] Seichi A et al. *J Orthop Sci*, 2012.

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FRI0098

ASSOCIATION BETWEEN THE SEROLOGIC STATUS OF ISOTYPE-SPECIFIC AUTOANTIBODIES AND THERAPEUTIC EFFICACY IN RHEUMATOID ARTHRITIS PATIENTS TREATED WITH ABATACEPT: A PROSPECTIVE ULTRASOUND COHORT STUDY IN JAPAN

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Background: The presence of anti-cyclic citrullinated protein antibodies (ACPA) and anti-carbamylated protein (anti-CarP) antibody is specific for rheumatoid arthritis (RA). Recently, it was reported that the serological status of ACPA is associated with the therapeutic response of the T-cell co-stimulation blocker abatacept (1, 2). However, it is currently unclear whether the serological status of each isotype levels of these autoantibodies before treatment introduction or the changes during treatment are associated with the therapeutic response of abatacept.

Objectives: To evaluate longitudinal changes in the isotypes of ACPA and anti-CarP in RA patients treated with abatacept, and associations between the baseline serological status/ these changes and clinical response/ ultrasonographic response.

Methods: This study is part of an ongoing non-randomized multicenter prospective cohort study of patients with active RA who received biological or targeted DMARD therapy at 13 participating rheumatology centers from the Kyushu region of Japan since June 2013 (3). As of the present report, we enrolled 43 consecutive Japanese patients with active RA who have introduced treatment with abatacept and had finished the first 12-month observation period. We evaluated disease activity by clinical composite measure and ultrasound score at baseline, 3, 6, 9 and 12 months. In ultrasound of bilateral hands from 22 sites, the findings obtained by gray-scale (GS) and power Doppler (PD) assessments were graded on a semi-quantitative scale from 0 to 3

and the sum of GS or PD scores was used as the total GS or PD score. The serum levels of IgG/IgM/IgA-type of ACPA and anti-CarP were measured by the ELISA method in Leiden University Medical Center. We evaluated the association between serologic status of autoantibodies and clinical /ultrasonographic therapeutic efficacy.

Results: The median age was 72 years, and the disease duration was 54 months. Methotrexate was concomitant in 22 (51%). Sixteen (37%) patients had a history of previous use of biological DMARDs. Nineteen (44%) and 23 (54%) patients achieved SDAI remission and PD remission (total PD score =0) at 12 months, respectively. The serum levels of all isotypes of ACPA/anti-CarP significantly decreased at 12 months from baseline. The reduction of IgM-ACPA level significantly correlated with the reduction of SDAI ($r_s=0.33$, $p=0.031$) and total PD score ($r_s=0.49$, $p=0.0007$). Both clinical and ultrasonographic therapeutic responses were better in patients with the detectable IgM-ACPA at baseline than in patients without that (Figure): the reduction of SDAI ($p=0.0078$) and that of total PD score ($p=0.0079$) were significantly larger in the former than in the latter. All isotype of anti-CarP did not associate with therapeutic response.

Conclusion: Treatment of abatacept induced to the reduction of the autoantibody levels. The IgM-ACPA level at baseline and the change in IgM-ACPA associated with both clinical and ultrasonographic therapeutic response in patients treated with abatacept. IgM-ACPA, compared with usual IgG-ACPA, better reflects the treatment response of abatacept in patients with RA

References:

- [1] *Ann Rheum Dis*. 2016;75:709, 2) *RMD Open*. 2018;4:e000564, 3) *Arthritis Care Res (Hoboken)*. 2018;70:1719.

Figure 1. Clinical and ultrasonographic response in patients with the detectable IgM-ACPA at baseline (A) than in patients without that (B).

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FRI0099

THE IMPACT OF BIOLOGICAL DISEASE-MODIFYING ANTI-RHEUMATIC DRUGS ON THE COURSE OF RHEUMATOID ARTHRITIS-ASSOCIATED LUNG DISEASE

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Background: Pulmonary involvement is one of the frequent extra-articular manifestations of rheumatoid arthritis (RA) (1). Biological disease-modifying anti-rheumatic drugs (bDMARDs) are effectively used in the treatment of musculoskeletal findings of RA but their effect on RA-associated lung disease is unclear.

Objectives: The aim of this retrospective study is to evaluate and compare different bDMARD treatments used in RA patients with RA-associated lung disease.

Methods: All RA patients who received bDMARDs between 2008 and 2018 in a single rheumatology centre and had thorax high-resolution computed tomography (HRCT) were reviewed for the findings of lung involvement. Patients with positive finding were included in the study. Following the biologic treatment, whether there was a progression/regression in lung involvement was evaluated by comparing the baseline and the latest thorax HRCT findings. Clinical and laboratory data were collected from medical records.

Results: A total of 40 patients (mean age:62.4 years; 72.5% women) were included in the study. Clinical and demographic characteristics of patients are summarized in Table 1. During the mean 107.43 ± 65 months follow-up period, HRCT findings remained stable in 31 patients (76%) and improved in one (2.5%), while 7 patients (17.5%) had progress in their lung involvement. When patients with and without progress were compared, lung involvement at the diagnosis of RA and the presence of respiratory symptoms at bDMARDs initiation was found to be more frequent in the first group ($p=0.023$ and $p=0.020$, respectively). Mean ESH values at bDMARDs initiation were also higher in patients who had progress ($p=0.006$). There was no significant difference between the groups in the age, sex, type of bDMARDs used or other baseline laboratory data. Logistic regression analysis showed that lung involvement at the diagnosis of RA was a significant independent risk factor for the progress (OR: 11.0, 95% CI=1.48-81.60). There was no statistically difference on progression of HRCT findings between patients received TNFi ($n=22$) and non-TNFi biologics ($n=18$), ($p=1.00$). The mean drug survival of first bDMARD also was not statistically different between groups (40.83 ± 21.6 months in non-TNFi group and 42.23 ± 40.50 months in TNFi group ($p=0.90$)). 5/18 (27.8%) patients in the non-TNFi group and 1/22 (4.5%) in TNFi group had died during the follow-up ($p=0.14$).

Table 1. Demographic and clinic characteristics of the patients at the Initiation of bDMARDs.

Characteristics	N=40
Male/Female, n	11/29
Age at bDMARDs initiation, years (mean±SD)	56.51±10.53
Age at the diagnosis, years (mean±SD)	49.38±11.7
Disease duration at bDMARDs initiation, years (mean±SD)	7.15±5.53
Past or current smoker, n (%)	21/40 (52.5)
RF positivity, n (%)	29/40 (72.5)
ACPA positivity, n (%)	35/39 (89.7)
Anti-SSA positivity n (%)	3/9 (33.3)
Patients with Sjögren's syndrome, n (%)	5/10 (50)
ESR at bDMARDs initiation, (mm/h)	38.37 ± 22.2
CRP at bDMARDs initiation, (mg/l)	16.08 ± 14.54
DAS28 at bDMARDs initiation	3.68 ± 1.1
Respiratory symptom at bDMARDs initiation, n(%)	12/40 (30)
Lung involvement at the diagnosis, n (%)	8/25 (24.2)
Concomitant steroid, n (%)	37/40 (92.5)
Concomitant MTX, n (%)	16/40 (40)
Concomitant other csDMARDs, n (%)	31/40 (77.5)
Initiated bDMARDs, TNFi/nonTNFi, n	22/18
RA-lung involvement type based on HRCT findings, n (%)	
-Rheumatoid nodulosis	17 (42.5)
-ILD-ground-glass opacity	12 (30)
-ILD-honeycombing	11 (27.5)

Conclusion: This study showed that the impact of TNFi and non-TNFi biologic treatments on the course of RA-associated lung involvement is similar. It also suggested that lung involvement at the diagnosis of RA was a significant risk factor for the progress of the pulmonary disease.

References:

- Tureson C, O'Fallon WM, Crowson CS, Gabriel SE, Matteson EL. Extra-articular disease manifestations in rheumatoid arthritis: incidence trends and risk factors over 46 years. *Ann Rheum Dis*. 2003;62(8):722-7

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FRI0100

COMPARISON OF PATIENTS (PTS) WITH RHEUMATOID ARTHRITIS (RA) AMONG DISEASE ACTIVITY CATEGORIES AFTER 6 MONTHS OF TREATMENT WITH A TUMOUR NECROSIS FACTOR INHIBITOR (TNFI): RESULTS FROM THE CORRONA® RA REGISTRY

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Background: Targeting remission (REM) or low disease activity (LDA) is a widely accepted treatment strategy for RA. However, there are limited data on the proportion of pts who achieve these targets, or remain in moderate (MDA) or high disease activity (HDA) following advanced therapy.

Objectives: To estimate the proportion of RA pts in disease activity states (REM, LDA, MDA, and HDA) who were biologic-naïve at initiation and had continuous treatment with a TNFi for 6–12 months in the Corrona RA registry.

Methods: Eligible pts were aged ≥18 years, biologic-naïve, initiated TNFi treatment between January 1, 2010 and July 31, 2019, and had continuous use of a TNFi for 6–12 months. Disease activity was defined based on Clinical Disease Activity Index (CDAI) at the visit closest to 6-month follow-up: REM, ≤2.8; LDA, >2.8–10; MDA, >10–22; and HDA, >22. Disease characteristics, disease activity measures, and pt-reported outcomes (PROs) were reported at TNFi initiation and at the 6-month follow-up visit.

Results: 2586 biologic-naïve pts who initiated a TNFi and had continuous use for 6–12 months were included. At TNFi initiation, 167 (6%) were in REM, 479 (19%) had LDA, 907 (35%) had MDA, and 1033 (40%) had HDA. After 6–12 months of treatment, 563 (21.8%) were in REM, 923 (35.7%) had LDA, 674 (26.1%) had MDA, and 426 (16.5%) had HDA. Pts with HDA/MDA at 6–12 months were more likely to have a history of hypertension (32.7% HDA; 34.0% MDA; vs 23.6% REM) and had higher mean body mass index (BMI) (30.9 HDA; 31.1 MDA; vs 29.0 REM) at baseline compared with pts in REM. Disease activity measures and PROs were worse in pts with MDA and HDA vs LDA and REM after 6–12 months (Table). Pt Global Assessment was higher than Physician Global Assessment across all groups.

Conclusion: While 57.4% of pts who initiated a TNFi experienced a favorable outcome, >40% required additional or alternative intervention to achieve REM/LDA. Pts who remained in MDA/HDA continued to have an inadequate response to TNFi (as measured by disease activity measures and PROs) after 6–12 months of treatment compared with those who achieved REM/LDA.

Table. Summary of disease activity measures and PROs in previously biologic-naïve pts at the 6–12-month follow-up visit, stratified by disease activity category at the 6–12-month follow-up visit

Characteristics at 6–12 months, mean (standard deviation)	Disease activity category at 6–12 months			
	REM (n=563)	LDA (n=923)	MDA (n=674)	HDA (n=426)
CDAI	1.2 (0.8)	6.2 (2.1)	15.4 (3.4)	32.7 (9.2)
Tender joint count (28)	0.1 (0.3)	1.0 (1.3)	4.3 (3.3)	13.4 (7.0)
Swollen joint count (28)	0.1 (0.3)	1.1 (1.6)	4.0 (3.6)	9.1 (5.9)
C-reactive protein	6.4 (22.7)	7.0 (10.6)	11.1 (19.9)	12.6 (22.1)
Modified health assessment questionnaire	0.1 (0.2)	0.3 (0.4)	0.5 (0.5)	0.8 (0.5)
Pt global assessment	6.6 (6.8)	28.6 (20.9)	43.7 (25.7)	58.0 (22.7)
Physician global assessment	3.6 (4.3)	12.1 (10.4)	27.4 (15.9)	44.9 (19.8)
Pt pain assessment	8.7 (11.0)	30.3 (23.5)	46.1 (27.0)	59.9 (24.4)
Pt fatigue assessment	15.7 (19.2)	34.5 (26.6)	48.3 (28.0)	59.4 (27.5)
Morning stiffness (min)	16.5 (36.5)	55.4 (146.3)	96.9 (197.5)	143.6 (260.0)

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