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Table 1. Demographic characteristics.

	RA (n=92)	Control (n=92)	p
Women, n (%)	85 (92.4)	85 (92.4)	NS
Age, years $\pm$ SD	58.0 (55.0-63.0)	56.5 (54.0-61.0)	NS
T2DM, n (%)	17 (18.5)	15 (16.3)	NS
Hypertension, n (%)	33 (35.9)	33 (35.9)	NS
Dyslipidemia, n (%)	30 (32.6)	29 (31.5)	NS
Obesity, n (%)	30 (32.6)	31 (33.7)	NS
Active smoking, n (%)	11 (12.0)	20 (21.7)	NS
	RA patients with CP (n=39)	RA patients without CP (n=53)	p
Women, n (%)	36 (92.3)	49 (92.5)	NS
Age, years $\pm$ SD	60.13 $\pm$ 5.98	58.08 $\pm$ 7.00	NS
T2DM, n (%)	9 (23.1)	8 (15.1)	NS
Hypertension, n (%)	16 (41.0)	17 (32.1)	NS
Dyslipidemia, n (%)	13 (33.3)	17 (32.1)	NS
Obesity, n (%)	15 (38.5)	15 (28.3)	NS
Active smoking, n (%)	6 (15.4)	5 (9.4)	NS
Disease duration, years (p25-p75)	8.44 (3.00-15.50)	12.86 (4.66-19.66)	NS

NS, no significant; T2DM, type 2 diabetes mellitus; CP, carotid plaque.

Figure 1. Comparison of pulse pressure between RA and controls and, RA with and without carotid plaque

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POS0563

THE NATURAL COURSE OF RHEUMATOID ARTHRITIS-ASSOCIATED INTERSTITIAL LUNG DISEASE FOCUSING ON LUNG PHYSIOLOGY AND DISEASE ACTIVITY: A PROSPECTIVE COHORT STUDY (PART 2)

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Background: Interstitial lung disease (ILD) is a severe extra-articular manifestation of rheumatoid arthritis (RA). However, the effect of RA disease activity on the course of ILD is not yet known.

Objectives: To assess the natural course of lung physiology of RA-ILD and the relation between arthritis activity and pulmonary physiology in patients with RA-ILD.

Methods: The Korean Rheumatoid Arthritis ILD (KORAIL) cohort is the prospective observational cohort and aims to investigate the natural course of RAILD. Based on either 1987 or 2020 ACR criteria, patients diagnosed with RA and ILD based on CT scan were recruited from six tertiary medical hospitals in Korea since January 2015. RA disease activity was assessed using disease activity (DAS)28-ESR and CRP, annually. Pulmonary function tests (PFT), including FVC and DLCO were conducted annually. According to the transition of DAS28-ESR status, we classified patients into four groups: Group A. persistent remission or low disease activity, Group B. improvement, Group C. worsening, Group D. persistent moderate to high disease activity.

Results: We analyzed 143 patients who completed a 2-year follow-up (visit 2) or had died with available PFT results at least twice. Mean duration since RA diagnosis and since ILD diagnosis was 7.6 $\pm$ 8.0 and 2.7 $\pm$ 3.1 years, respectively. Twenty-four patients were Group A, 33 Group B, 10 Group C and 30 Group D. The mean of FVC (mL) and % of the predicted value in FVC was significantly lower in Group D than in other groups (Table 1). The annual rate of decline in FVC was -42 (95% CI -93~-10) mL $\cdot$ year⁻¹ in Group B while -113 (95% CI -206~-21) mL $\cdot$ year⁻¹ in Group C (Figure 1A). The annual decline rate in Group C was further exaggerated in patients with $\geq$ 80% of FVC predicted (-141, 95% CI -251~-32 mL $\cdot$ year⁻¹). During two years of follow-up, patients ever experienced a relative decline of $\geq$ 10% from the enrollment in FVC predicted was 27.3% (n=9/33) in Group B whereas 30.0% (3/10) in Group C. The annual rate of decline in % of DLCO predicted value was also the largest in Group C (-4.6 % $\cdot$ year⁻¹, 95%CI -8.5~-0.7), which further exaggerated in patients with $\geq$ 80% of FVC predicted (-4.9% $\cdot$ year⁻¹, 95 %CI -8.3~-1.5, Figure 1B). Of note, about half of patients with maintained not only low disease activity (Group A) but also moderate to severe disease activity (Group D) improved in DLCO at least 10% or more from the enrollment of DLCO predicted value (Group A: 54.2%, n=13/24, Group D: 46.7%, n=14/30).

Conclusion: RA disease activity is associated with the change of lung physiology in patients with RA-ILD; worsening disease activity associated with a further decrease of annual change in FVC and maintaining low disease activity associated with a further increase of annual change in % of DLCO predicted value.

Table 1. The analysis of forced vital capacity (FVC) according to disease activity transition group.

	Group A	Group B	Group C	Group D
FVC (mL), mean $\pm$ SD	2810.0 $\pm$ 771.1	2528.8 $\pm$ 735.3	2801.0 $\pm$ 952.7	2048.3 $\pm$ 575.7
FVC % of predicted, mean $\pm$ SD	87.5 $\pm$ 14.5	86.5 $\pm$ 16.6	93.0 $\pm$ 15.6	77.2 $\pm$ 17.3
Rate of FVC decline, mL $\cdot$ year ⁻¹ (95% CI)	-52 (-112, 7)	-42 (-93, 10)	-113 (-206, -21)	1 (-52, 54)
A 10-point decline from V1 in predicted FVC value, n (%)	29 (20.3)	6 (25.0)	6 (18.2)	3 (30.0)
Relative decline of 10% from the enrollment in predicted FVC value, n (%)	35 (24.5)	5 (20.8)	9 (27.3)	3 (30.0)

Figure 1. The annual change of pulmonary physiology according to disease activity transition group.

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POS0564

THE EFFECT OF ARTHRITIS TREATMENT ON THE COURSE OF RHEUMATOID ARTHRITIS-ASSOCIATED INTERSTITIAL LUNG DISEASE FOCUSING ON BIOLOGIC DMARDS: FROM A PROSPECTIVE COHORT STUDY (PART 5)

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Background: Interstitial lung disease (ILD) is a severe extra-articular manifestation of rheumatoid arthritis (RA). However, the effect of RA treatment on the course of ILD is not yet known.

Objectives: To assess the effect of RA treatment on the course of lung physiology of RA-focusing on biologic DMARDs treatment.

Methods: The Korean Rheumatoid Arthritis ILD (KORAIL) cohort is the prospective observational cohort and aims to investigate the natural course of RAILD. Based on either 1987 or 2020 ACR criteria, patients diagnosed with RA and ILD based on CT scan were recruited from six tertiary medical hospitals in Korea since January 2015. RA disease activity was assessed using disease activity (DAS)28-ESR and CRP, annually. Pulmonary function tests (PFT), including FVC and DLCO were conducted annually. In the current study, we analyzed patients who completed a 2-years follow-up or had died during those terms till October 2020. They classified patients into three groups: patients treated with abatacept ≥ 24 weeks ever (Group 1), those with other bDMARDs ≥ 24 weeks ever (Group 2), and those without any bDMARDs or with bDMARDs < 24 weeks (Group 3).

Results: Of a total of 125 patients who completed 2-year follow-up, 21 patients were classified as Group 1, 26 for Group 2, and 78 for Group 3. The mean age or the number of patients with ≥ 65 -year-old was comparable between groups (Table 1). The mean duration since RA diagnosis was shorter in Group 3, but that since ILD diagnosis was comparable. DAS28-ESR score was comparable between Group 1 and 2 at enrollment, so was in 1-year-follow-up ($p=0.75$) and 2-year-follow-up ($p=1.00$). FVC and % of the predicted value in FVC, FEV1, and DLco were also comparable among the three groups at enrollment. The numbers of patients with ≥ 10 -point decline in % of FVC predicted was 2 (10.0%) for Group 1, 1 (3.8%) for Group 2, 3 (3.9%) for Group3 during the first 1-year follow-up, and 3 (15.8%), 3 (11.5%), 10 (14.1%) during the last 1-year follow up. The percent of FVC predicted was 81.6 ± 17.5 %, 87.4 ± 17.9 %, 85.2 ± 17.7 % for Group 1, 2 and 3, respectively, at 1-year-follow-up, and 79.5 ± 18.8 %, 89.0 ± 16.8 %, 83.5 ± 17.3 % at 2-year-follow-up. (Figure 1A). The percent of DLco predicted was 75.5 ± 23.4 %, 66.7 ± 18.1 %, 67.5 ± 16.7 % for Group 1, 2 and 3, respectively, at 1-year-follow-up, and 74.0 ± 23.7 %, 69.1 ± 18.9 %, 67.0 ± 18.5 % at 2-year-follow-up (Figure 1B).

Conclusion: Treatment of bDMARDs did not exacerbate FVC than without bDMARDs treatment and mitigated the decline of DLCO compared to without bDMARDs treatment during 2-year-follow-up.

Table 1. Clinical characteristics at enrollment (V1)

	Total	Group 1.	Group 2.	Group 3.	P
N	125	21	26	78	
Age at enrollment	65.9 $\pm$ 8.2	66.0 $\pm$ 8.8	63.9 $\pm$ 8.0	66.6 $\pm$ 8.1	0.34
65, n (%)	72 (57.6)	13 (61.9)	11 (42.3)	48 (61.5)	0.21
Female, n (%)	89 (71.2)	16 (76.2)	17 (65.4)	56 (71.8)	0.71
RA duration, years	8.0 $\pm$ 8.4	9.6 $\pm$ 6.6	9.2 $\pm$ 9.0	7.2 $\pm$ 8.6	0.05
ILD duration, years	3.0 $\pm$ 3.3	3.8 $\pm$ 3.7	3.8 $\pm$ 3.5	2.5 $\pm$ 3.1	0.10
BMI, kg/m ²	24.1 $\pm$ 3.1	23.8 $\pm$ 3.7	24.8 $\pm$ 2.9	23.9 $\pm$ 3.0	0.39
Ever-smoker	18	5	5	18	0.57
RF positive, n (%)	111 (88.8)	19 (90.5)	22 (84.6)	70 (89.7)	0.72
Anti-CCP positive, n (%)	119 (95.2)	20 (95.2)	25 (96.2)	74 (94.9)	1.00
Arthritis activity					
DAS28-ESR	4.0 $\pm$ 1.4	4.1 $\pm$ 1.1	4.3 $\pm$ 1.8	3.8 $\pm$ 1.4	0.60
DAS28-CRP	3.1 $\pm$ 1.4	3.2 $\pm$ 1.2	3.4 $\pm$ 1.6	3.0 $\pm$ 1.4	0.76
HAQ-DI	0.70 $\pm$ 0.76	0.64 $\pm$ 0.49	0.82 $\pm$ 0.82	0.67 $\pm$ 0.80	0.28
Pulmonary function test					
FVC, ml	2522.5 $\pm$ 765.4	2406.2 $\pm$ 772.6	2617.3 $\pm$ 965.2	2522.2 $\pm$ 692.3	0.65
FVC, % of pred.	84.6 $\pm$ 16.9	80.9 $\pm$ 17.7	86.12 $\pm$ 17.82	85.08 $\pm$ 16.5	0.53
FEV1, % of pred.	92.4 $\pm$ 21.4	92.0 $\pm$ 24.8	90.6 $\pm$ 22.1	93.0 $\pm$ 20.4	0.88
DLco, % of pred.	71.5 $\pm$ 19.7	72.3 $\pm$ 26.7	69.1 $\pm$ 16.4	72.0 $\pm$ 18.7	0.80

Figure 1.

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POS0565

IS ACTIVE SYNOVITIS OF METACARPOPHALANGEAL JOINTS A NEUROPATHIC CONDITION IN RHEUMATOID ARTHRITIS PATIENTS? RESULTS FROM A ULTRASOUND STUDY AT LEVEL OF THE PALMAR DIGITAL NERVES

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Background: Rheumatoid arthritis (RA) is a chronic inflammatory arthritis that primarily affects the joints of hands, wrists, and feet. Anatomical damage (at bone, cartilage and tendon level) occurs as a consequence of a persistent synovial inflammation (1). In RA, periarticular soft tissues, including nerves, may also be involved. In particular, there is a high prevalence of neuropathic conditions such as carpal tunnel syndrome (CTS) in RA patients. In fact, the presence of inflammatory changes can frequently be documented by ultrasound (US) at the level of median nerve (2). Currently available very-high frequency US transducers allow high spatial resolution of small anatomical structures, including the palmar digital nerves.

Objectives: The objectives of this study were: to document the presence of dimensional alterations of the palmar digital nerves, particularly in terms of increased cross-sectional area (CSA), and to determine the variables associated with increased CSA, in RA patients.

Methods: From September 2020 to December 2020, adult RA patients from a tertiary outpatient clinic were consecutively included regardless of disease activity status. Patients underwent a clinical assessment to determine disease activity using the Clinical Disease Activity Index (CDAI), functional capacity using the QuickDASH, and the presence of neuropathic pain features using the PainDetect Questionnaire (PDQ). In the same visit, patients underwent a US examination of the 2nd to 5th metacarpophalangeal joints (MCPj) of the clinically more involved hand by an operator blinded to the clinical assessment. The presence/absence and US grading of synovitis was recorded for each joint. A third operator, blinded to the clinical and joint US assessment, measured the CSA of each pair of palmar digital nerves from 2nd to 5th finger scanned for assessment joint involvement. The CSA of the palmar digital nerves was measured at the MCPj. The US examinations were conducted with a MyLab Class C (Esaote, Genoa, Italy), with a 6-18 MHz probe for the articular examination, and with an 10-22 MHz probe for the examination of the palmar digital nerves. The serological status, respectively rheumatoid factor (RF) and anti-citrullinated peptide antibodies (ACPA), and the presence of radiographic erosive disease were also recorded for each patient. Statistical analysis was conducted by considering the sum of the CSA for each nerve pair of each finger. CSA was compared with respect to body mass index (BMI), disease duration, disease activity, US synovitis grading, functional capacity, neuropathic pain features, serological characteristics, and erosive status.

Results: Sixty-three patients with RA were included, 48 women, 15 men, with a mean age of 62.2 (11.8, standard deviation [SD]) years, a mean disease duration of 10.9 (8.2) years, for a total of 252 MCPj and 504 palmar digital nerves. The CSA of the palmar digital nerves taken individually was 2.3 (0.9) mm², ranging from 1 mm² to 8 mm², and 4.2 (1.5) mm² as a pair for finger. There was a statistically significant association with disease activity as assessed by the CDAI ($p < 0.001$), and with the grading of US synovitis ($p < 0.001$), while there were no significant associations with any of the other variables.