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FACTORS RELATED TO RADIOGRAPHIC PROGRESSION IN PATIENTS WITH RHEUMATOID ARTHRITIS-RELATED INTERSTITIAL LUNG DISEASE

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Background: Interstitial lung disease is an important cause of mortality and morbidity for RA. Lung computerized tomography (CT) is a valid method for the detection of interstitial lung disease (ILD) in rheumatoid arthritis (RA) patients. Besides, CT may have a role in the detection of progression in RA-ILD.

Objectives: To compare the clinical and radiological features of RA-ILD patients with and without radiographic progression according to lung CT.

Methods: From the hospital database, all patients recorded as having RA according to ICD-10 code and had a lung CT examination were recruited. RA was confirmed in 822 of 2305 (35.6%) records. Three radiologists re-evaluated lung CTs and 156/822 (18.9%) patients with had RA-ILD. Of these 156 patients, 101 (64.7%) had at least 1 follow-up long CT and these patients were included to analysis. Demographic and clinical data of the patients were recorded. ILD was divided into 3 main groups by radiologists: Usual interstitial pneumonia (UIP), non-specific interstitial pneumonia (NSIP) and airway disease (AD) (bronchiectasis and/or bronchiolitis without parenchymal involvement). Avila et al reported a grading system to assess the severity of ILD using HRCT (1). In our study we utilized a similar method using interlobular septal thickening, ground glass opacities, reticulations, traction bronchiectasis and honeycomb appearance as elementary findings to evaluate the RA associated ILD. Septal thickening, reticulations and ground glass opacities were considered as relatively mild features whereas traction bronchiectasis and honeycomb appearance were considered as severe findings as those frequently result from advanced fibrosis. The lungs were divided into upper, middle and lower zones each with equal number of slices. Progression was defined as involvement of more zones in vertical extent by the same elementary findings or emergence of more severe findings (i.e traction bronchiectasis or honeycomb appearance) in the same zones compared to previous exam. For the multivariate analysis, the possible factors identified with univariate analyses were further entered into the logistic regression analysis to determine independent predictors of radiographic progression.

Table. Comparison of demographic, clinical and radiographic characteristics of patients with and without radiographic progression

	Radiographic Progression (+)	Radiographic Progression (-)	p
n (%)	42 (41.5)	59 (59.5)	
Male n (%)	19 (45.2)	15 (25.4)	0.038
Age at RA diagnosis [year] (SD)	57.0 (11.0)	54.5 (11.2)	0.25
Age at ILD diagnosis [year] (SD)	62.3 (8.0)	61 (9.0)	0.63
Elapsed time between RA and ILD [year] (SD)	4.3 (6.9)	6.1 (7.2)	0.22
RA disease duration [year] (SD)	10.4 (7.5)	11.8 (7.8)	0.77
ILD disease duration [year] (SD)	5.7 (3.5)	5.4 (3.8)	0.67
Smoking (current or ever) n (%)	21/36 (58.3)	27/52 (51.9)	0.55
Rheumatoid factor (+) n (%)	37/40 (92.5)	55/58 (94.8)	0.64
Anti-CCP (+) n (%)	14/22 (63.6)	28/37 (75.7)	0.32
Dyspnea n (%)	21 (53.8)	22 (41.5)	0.24
ILD pattern			
- UIP	30/42	30/59	0.12
- NSIP	9/42	22/59	
- AD	3/42	7/59	
ILD at lung X-Ray n (%)	36/40 (90.0)	33/49 (67.3)	0.011
Rheumatoid Lung Nodule n (%)	20 (47.6)	26 (44.8)	0.78
CT findings			
- Ground Glass Opacities, n (%)	40 (95.2)	44 (74.6)	0.006
- Bronchiectasis, n (%)	29 (69.0)	40 (67.8)	0.89
- Reticular densities, n (%)	37 (88.1)	46 (78.0)	0.19
- Interseptal thickening, n (%)	18 (43.9)	20 (33.9)	0.31
- Honeycombing, n (%)	26 (62.0)	24 (46.1)	0.03
Treatment			
- Methotrexate (ever), n (%)	25 (59.5)	49 (83.1)	0.008
- Leflunomide (ever), n (%)	29 (69.0)	49 (83.1)	0.10
- Biologic DMARD (ever) n (%)	18 (43.0)	25 (42.4)	0.98
- Anti TNF (ever) n (%)	11 (26.2)	13 (22.0)	0.62
- Rituximab (ever) n (%)	13 (31.0)	12 (20.3)	0.22
Death n (%)	15 (35.7)	12 (20.3)	0.085

Results: In this study, 101 patients with 215 lung CT were included to analysis. 67 (66.3%) patients had 3 CTs, 30 (29.9%) patients 4 CTs and 17 (16.9%) patients had 5 CTs. Mean duration between first and last CT was 47.7±38.8 months. Of 101 patients, radiographic progression was seen in 42

(41.6%) patients. Univariate comparison of demographic, clinical and radiographic features of patients with or without radiographic progression were given in Table. In multivariate analysis (adjusted for ILD disease duration) having ground-glass opacity (aOR 8.6; CI: 1.65-44.9; p=0.011), male gender (aOR 2.9; CI: 1.13-7.4; p=0.026) were found as independent risk factors radiographic progression, while taking methotrexate (ever) (aOR 0.21; CI: 0.07-0.6; p=0.04) was found as an independent protector factor for radiographic progression.

Conclusion: The prediction of ILD progression in RA patients were a challenge for clinicians. According to lung CT, baseline ground-glass opacities looks like prominent factor for ILD progression, particularly at male RA patients. Using methotrexate in ILD patients is a dilemma in routine practice, our results demonstrate that methotrexate (not other cs or bDMARDs) is protective drugs for ILD progression, however these results should be confirmed in the further studies.

References:

[1] Avila NA. AJR Am J Roentgenol. 2002;179(4): 887-892

Disclosure of Interests: Umut Kalyoncu Consultant of: Abbvie, Amgen, Janssen, Lilly, Novartis, UCB, Mustafa Ekici: None declared, Emre Bilgin: None declared, Alper Sari: None declared, Yusuf Baytar: None declared, Ertugrul Cagri Bolek: None declared, Berkan Armagan: None declared, Bayram Farisoğulları: None declared, Omer Karadag: None declared, Ali Ihsan Ertenli: None declared, Sedat Kiraz: None declared, Levent Kılıç: None declared, Şule Apraş Bilgen: None declared, Gamze Durhan: None declared, Ali Akdoğan: None declared, Macit Anyürek: None declared

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THE ASSOCIATION BETWEEN OSTEOPOROSIS AND FUNCTIONAL IMPAIRMENT EVALUATED BY THE LOCOMO25 IN RHEUMATOID ARTHRITIS

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Background: Locomotive syndrome is a condition in which activities of daily living are affected by impairment of the motor organs, most often due to rheumatoid arthritis (RA). Locomo25 is a new index developed for the early detection of locomotive syndrome. It consists of 25 items associated with pain, physical activity, and subjective state of health, with a score of 7 points or higher classed as Grade 1 locomotive syndrome and a score of 16 points or higher as Grade 2. In RA, joint impairment causes the appearance of problems affecting motor organs as a whole, as well as progressive functional impairment. As functional impairment progresses, it causes increasing immobility, which raises the risk of osteoporosis.

Objectives: Locomo25 was used to investigate functional impairment and its association with RA disease activity and osteoporosis indicators.

Methods: The subjects were 105 patients with RA (24 men and 81 women) with a mean age of 68.7 (28–91) years. In terms of staging, 25 were Stage I, 22 Stage II, 17 Stage III, and 41 Stage IV, and their motor disability was Steinbrocker Class 1 in 68 cases, Class 2 in 27, Class 3 in 9, and Class 4 in 1. Disease activity according to the Disease Activity Score 28 with erythrocyte sedimentation rate (DAS28 ESR) was assessed as remission in 44 cases, low disease activity in 24, moderate in 33, and high in 4. The associations between the Locomo25 score and disease activity indices, bone mineral density (BMD), and bone turnover markers (TRACP-5b, NTX, urinary DPD, BAP, total P1NP, and 25(OH)D) were investigated.

Results: Locomo25 grade was 0 in 37 cases (35.2%), 1 in 24 (22.9%), and 2 in 44 (41.9%). Locomo25 grade was significantly associated with Steinbrocker class ($r = 0.4299$, Spearman's rank correlation coefficient, $p < 0.0001$). DAS28 ESR and Health Assessment Questionnaire scores increased as locomotive syndrome progressed. There was no significant difference in eGFR between groups, but bone resorption markers (TRACP-5b, NTX, and urinary DPD) and a bone quality marker (pentosidine) decreased significantly as locomotive syndrome progressed. There were no significant differences in BMD or other bone turnover markers.

Conclusion: The Locomo25 score was useful for evaluating functional impairment in RA. The prevalence of Grade 2 locomotive syndrome in the general population is reported to be around 25%, and many patients with RA had advanced locomotive syndrome. Although there was no significant difference in BMD, elevated bone resorption and deteriorating bone quality were associated with progressive functional impairment, suggesting that RA patients with advanced locomotive syndrome may be at risk of increasingly severe osteoporosis as a result of immobility.