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POS0487

ASSOCIATION OF RHEUMATOID ARTHRITIS WITH MORTALITY IN A COHORT OF CHRONIC KIDNEY DISEASE PATIENTS

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Background: Rheumatoid Arthritis (RA) is associated with an increased risk of cardiovascular disease. RA is also associated with increased risk of chronic kidney disease (CKD) (1, 2), which is a known cardiovascular risk factor (3). We hypothesized that RA (compared with no RA) would be associated with increased risk of mortality among a cohort of patients with CKD.

Objectives: To determine the risk of mortality in RA patients with CKD.

Methods: This study was conducted using participants from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) prospective Chronic Renal Insufficiency Cohort (CRIC) study. Approximately 3600 participants were enrolled from seven US clinical centers. Patients aged 21 – 74 years with mild to moderate CKD were eligible for enrollment. The primary outcome of interest was all-cause mortality. Secondary outcomes of interest included: kidney event defined as end stage renal disease (ESRD) or 50% decline in estimated glomerular filtration rate (eGFR), myocardial infarction (MI), cerebrovascular accident (CVA), heart failure and a composite cardiovascular endpoint. The association of RA mortality over time was examined using Cox multivariate proportional hazards regression, adjusting for potential covariates (age, sex, race/ethnicity, BMI, current smoker, education).

Results: The study cohort included 492 participants with self-reported RA with a mean follow up of 9.5 years. Compared to the non-RA group, RA patients tended to be older, female, Black. Hypertension, diabetes, use of prednisone was more prevalent among the RA cohort. The unadjusted hazards ratio (HR) for mortality based on RA status was 1.45 (1.26, 1.67) but this association was attenuated after adjusting for the confounding factors [aHR 1.09 (0.94, 1.27)] (Table 1). Participants with RA had a significantly higher risk for heart failure than those without RA [aHR 1.17 (1.02, 1.34)]. We did not observe a statistically significant association between RA status and other secondary outcomes.

Table 1. Estimated hazard ratios (HR) for various outcomes from Cox proportional hazards regression for RA status

	Unadjusted	Model 1	Model 2
	HR (95% CI)	HR (95% CI)	HR (95% CI)
Death	1.45 (1.26, 1.67)	1.09 (0.94, 1.27)	1.13 (0.97, 1.32)
MI or death	1.43 (1.25, 1.63)	1.09 (0.95, 1.26)	1.15 (0.99, 1.33)
CVA or death	1.42 (1.24, 1.63)	1.07 (0.92, 1.24)	1.11 (0.95, 1.29)
CHF or death	1.54 (1.35, 1.75)	1.17 (1.02, 1.34)	1.22 (1.06, 1.40)
Composite	1.49 (1.31, 1.69)	1.13 (0.99, 1.30)	1.18 (1.03, 1.35)
Kidney event	1.09 (0.94, 1.27)	0.91 (0.78, 1.07)	1.01 (0.85, 1.20)

Model 1 adjusted for: age, sex, race/ethnicity, BMI, current smoker, education Model 2 adjusted for: model 1 + cardiovascular risk factors (urine albumin creatinine ratio, systolic blood pressure, estimated glomerular filtration rate)

Conclusion: RA was not associated with higher mortality among participants with CKD. However, RA was associated with higher rates of heart failure. Further studies evaluating the mechanisms behind this association are needed.

REFERENCES:

- Kochi M, Kohagura K, Shiohira Y, Iseki K, Ohya Y. Chronic kidney disease, inflammation, and cardiovascular disease risk in rheumatoid arthritis. *J Cardiol.* 2018;71(3):277-83.
- Sumida K, Molnar MZ, Potukuchi PK, Hassan F, Thomas F, Yamagata K, et al. Treatment of rheumatoid arthritis with biologic agents lowers the risk of incident chronic kidney disease. *Kidney Int.* 2018;93(5):1207-16.

- Chiu HY, Huang HL, Li CH, Chen HA, Yeh CL, Chiu SH, et al. Increased Risk of Chronic Kidney Disease in Rheumatoid Arthritis Associated with Cardiovascular Complications - A National Population-Based Cohort Study. *PLoS One.* 2015;10(9):e0136508.
- Muthukumar P, Dhanapriya J, Gopalakrishnan N, Dineshkumar T, Sakthirajan R, Balasubramanian T. Evaluation of renal lesions and clinico-pathologic correlation in rheumatoid arthritis. *Saudi J Kidney Dis Transpl.* 2017;28(1):44-50.

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THE IMPACT OF ANTINUCLEAR ANTIBODIES INDUCED BY ANTI-TUMOUR NECROSIS FACTOR ALPHA AGENTS ON THE LONG-TERM TREATMENT OUTCOMES IN RHEUMATOID ARTHRITIS PATIENTS

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Background: The seroconversion of antinuclear antibodies (ANA) induced by anti-tumour necrosis factor alpha (anti-TNF- α) therapy remains a matter of concern in various inflammatory conditions namely rheumatoid arthritis. However, evidence is still scarce regarding the impact of these autoantibodies on the clinical response to treatment in these patients.

Objectives: This study aimed to explore the impact of ANA induced by anti-TNF- α therapy on the outcomes of treatment in patients with rheumatoid arthritis over two years of follow-up.

Methods: An observational retrospective cohort study was conducted with two years of follow-up. Patients diagnosed with rheumatoid arthritis, according to the American College of Rheumatology (ACR) criteria, and registered on the Rheumatic Diseases Portuguese Register (Reuma.pt) who started their first anti-TNF α agent as first biologic between 2003 and 2018 were included. Patients with positive ANA (titer ≥ 100) and/or positive anti-double stranded DNA (anti-dsDNA) antibodies and/or with a diagnosis of SLE at their first visit were excluded. Demographic, clinical and laboratory data were obtained by consulting Reuma.pt. Disease Activity Score for 28 joints (DAS28), DAS28 delta, Health Assessment Questionnaire (HAQ), HAQ delta were assessed at baseline, 6, 12, 18 and 24 months. Clinical response was evaluated by EULAR criteria and three response categories were defined: good, mild and no response. The rate of switch of biological treatment was assessed over 24 months. To examine the differences between groups with and without ANA seroconversion independent samples t test for normally distributed continuous data, Mann-Whitney U-tests for non-normally distributed continuous data and Chi-square tests for categorical data were used. Logistic regression models were used to assess the effects of ANA seroconversion on clinical response to treatment

over 6, 12, 18 and 24 months.

Results: A total of 185 patients (mean age of 49.3 $\pm$ 10.9 years old; 85.4% female) with a median follow-up of 7 [4-14] years were included. We found an ANA seroconversion rate (titer ≥ 100) of 77.3% (n=143) with median time of 36 [15-72.3] months. There were no differences among groups regarding age, gender, disease duration, be seropositivity or not (for rheumatoid factor and/or anti-citrullinated protein antibodies) and have an erosive disease or not. DAS28 delta was significantly different (p=0.035) between group with positive ANA (2.01 $\pm$ 1.29) and negative ANA (1.15 $\pm$ 1.51) at 6 months. DAS28 was significantly different (p=0.014) between group with positive ANA (5.06 $\pm$ 3.39) and negative ANA (3.99 $\pm$ 1.43) at 12 months. No statistically significant differences were found in the DAS28, DAS28 delta, HAQ, HAQ delta at 18 and 24 months and in the EULAR response at any time. Switch rate was significantly different between patients with ANA seroconversion (median 1[0-1]) versus absence of seroconversion (median 0[0-1]), p=0.025. In the regression model ANA seroconversion did not predict switch rate and EULAR response over time.

Conclusion: This study showed that the majority of patients with rheumatoid arthritis treated with an anti-TNF- α agent developed ANA and that their presence may be associated with worse clinical results (DAS28) at 6 and 12 months. In fact, previous research suggested that a decrease in anti-TNF- α drug concentration due to the production of autoantibodies may lead to worse outcomes of treatment. Moreover, our data demonstrated that patients with ANA seroconversion

had a higher switch rate. Despite these results, there are no differences in the EULAR response between the two groups and ANA seroconversion did not predict this response over time. Therefore, ANA induced by anti-TNF- α agents should be monitored in patients with rheumatoid arthritis and its impact on treatment must be considered. Further research is needed to explore these results through large-scale prospective studies.

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POS0489

DOES TIME TO REMISSION DIFFER DEPENDING ON ROUTE OF ADMINISTRATION OF METHOTREXATE IN AN EARLY ARTHRITIS TREAT TO TARGET (T2T) COHORT?

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Background: Rheumatoid arthritis (RA) is a multisystem inflammatory disorder that affects the joints and other body tissues. Approximately 1% of the worldwide population is living with RA 1. Methotrexate is the first line DMARD used for treatment of RA 2.

Objectives: The aim of this study was to analyse MTX use in achieving remission in early arthritis patients and to compare the route of administration to see whether it affects the time interval to remission.

Methods: An observational, prospective study was performed on patients' data available from our Early Arthritis Cohort. Newly diagnosed patients with RA meeting the American College of Rheumatology (ACR) criteria were enrolled in T2T programme led by Advanced Nurse Practitioner (ANP) with consultant supervision. To assess their response to treatment, we used the Clinical Disease Activity Index (CDAI). SPSS was used to analyse the data.

Results: A total of 353 have completed the programme and of these, 341 were commenced on MTX. 208 patients (61%) were female. The MTX starting dose was 15mg for 88.4% (305/341) of patients. The median time to first increment in MTX dose was 7 weeks and the figure 1 was identical for the second increment. Of the 238 patients who started oral MTX, 18.48% (44) discontinued. 21.4% (22) of the 103 who started on SC-MTX discontinued (The p-value for discontinuation was 0.538). P-value for likelihood of achieving remission based on oral versus SC MTX was 0.248 and the p-value for time to achieve remission was 0.671 for oral versus SC MTX groups, see figure 1 attached.

Conclusion: Patients in this cohort are being started promptly on an appropriate dose of MTX and are escalated in a timely manner in-line with guidelines. Analysis showed no statistically significant difference in terms of time to remission, likelihood of achieving remission or discontinuation of MTX between oral and SC-MTX groups.

REFERENCES:

- [1] Carmona L, Villaverde V, Hernández-García C, Ballina J, Gabriel R, Laffon A, et al. The prevalence of rheumatoid arthritis in the general population of Spain. *Rheumatology*. 2002;41(1):88-95.
- [2] Rachapalli SM, Williams R, Walsh DA, Young A, Kiely PDW, Choy EH, et al. First-line DMARD choice in early rheumatoid arthritis—do prognostic factors play a role? *Rheumatology*. 2010;49(7):1267-71.

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SERUM MATRIX METALLOPROTEINASE 3 AS A MARKER TO DISCRIMINATE SUBCLINICAL DISEASE ACTIVITY FROM ULTRASOUND DEFINED REMISSION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Rheumatoid arthritis (RA) is a systemic disease which results in chronic inflammation that primarily involves synovial joints resulting in progressive joint destruction [1]. Detection of subclinical disease activity is important as radiographic progression was observed during remission course in some cases [2]. Ultrasound can detect subclinical activity and synovial inflammation, which predict relapse and radiographic progression [3].

Matrix Metalloproteinase 3 (MMP-3) is an enzyme, which is involved in joint destruction in RA patients. MMP-3 was found to correlate with disease activity, joint erosions, radiographic progression, drug responsiveness and disease outcome in patients with active RA [4]. However no data about its role in detection of subclinical activity in patients with clinical remission.

Objectives: To assess the role of MMP-3 as a marker to discriminate subclinical activity from ultrasound remission in rheumatoid arthritis patients with remission.

Methods: This study was conducted on 45 RA patients fulfilling remission or low disease activity criteria according to DAS 28 AND 45 healthy controls. Ultrasound evaluation was done for all patients using modified German US7 score. According to US7 score patients were classified into two groups: group with sonographic remission in which GS is 0±1 and the other group with subclinical disease activity with higher GS. Both groups underwent clinical and laboratory evaluation including MMP-3.

Results: Sonographic remission was achieved in 44% of patients (20 patients). There was no statistically significant difference as regard age, gender, smoking, disease duration, morning stiffness duration, CDAI, treatment and laboratory data apart from hemoglobin level between patients with subclinical disease activity and patients with remission. However, there is statistically significant difference between the two groups as regard joint deformity, extra articular manifestations, DAS 28, SDAI and hemoglobin level.

There was statistically significant difference in serum MMP-3 between RA patients and healthy control group. Serum MMP-3 was higher in RA patients with subclinical activity than patients with sonographic remission but the difference was not statistically significant (figure 1). Serum MMP-3 was positively correlated with ESR and synovitis score.

Figure 1.

Conclusion: Serum MMP-3 has correlation with US synovitis score. However, serum MMP-3 was not able to differentiate patients with sonographic remission from patients with subclinical disease activity. Ultrasound is still the gold standard for detection of subclinical disease activity.

REFERENCES:

- [1] Ergin, S. (2000). "Romatoid Artrit ve Sjögren Sendromu." *Fiziksel Tıp ve Rehabilitasyon*, Güneş Kitabevi: 1549-1576.
- [2] Ogishima, H., H. Tsuboi, N. Umeda, M. Horikoshi, Y. Kondo, M. Sugihara, T. Suzuki, I. Matsumoto and T. Sumida (2014). "Analysis of sub-clinical synovitis detected by ultrasonography and low-field magnetic resonance imaging in patients with rheumatoid arthritis." *Modern rheumatology* 24(1): 60-68.
- [3] Filippucci, E., E. Cipolletta, R. M. Mirza, M. Carotti, A. Giovagnoni, F. Salaffi, M. Tardella, A. Di Matteo and M. Di Carlo (2019). "Ultrasound imaging in rheumatoid arthritis." *La radiologia medica* 124(11): 1087-1100.
- [4] Lerner, A., S. Neidhöfer, S. Reuter and T. Matthias (2018). "MMP3 is a reliable marker for disease activity, radiological monitoring, disease outcome predictability, and therapeutic response in rheumatoid arthritis." *Best Practice & Research Clinical Rheumatology* 32(4): 550-562.

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