Conclusions: Work impairment is highly prevalent in contemporary rheumatoid arthritis patients. It is significantly correlated with mental health, even after adjusting for disease severity factors. Baseline mental health also predicts progression of work impairment. The relationship is likely bidirectional, and future research is justified to evaluate whether mental health interventions could improve work outcomes.

Disclosure of Interest: None declared

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THU0101 TISSUE METABOLITE OF TYPE I COLLAGEN, C1M, AND CRP PREDICTS STRUCTURAL PROGRESSION OF RHEUMATOID ARTHRITIS

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Background: Biomarkers of rheumatoid arthritis (RA) disease activity typically measure inflammation or autoimmunity (e.g. CRP, rheumatoid factor (RF)). Another class of biomarkers are structural proteins of the joint. C1M and C3M, metabolites of type I and III collagen, are such biomarkers. These biomarkers have previously been documented to provide additional value as compared to standard inflammation biomarkers, for prognosis and prediction of response to treatment¹.

Objectives: We investigated the relationship of high serum levels of C1M or C3M to radiographic progression, and benchmarked to CRP levels and RF status, demonstrated to be associated with structural progression².

Methods: Placebo treated patients of the OSK123 studies (Ph3 clinical trials testing efficacy of fostamatinib) with baseline serum biomarkers C1M, C3M, CRP and RF were included ($n_{BL}=474$). Van der Heijde mTSS was calculated at baseline and 24 week ($n_{24}=264$). Progression was defined as moderate or rapid (≥ 0.5 or ≥ 5 mTSS units/y). Patients were divided into subgroups; low, high or very high C1M, C3M and CRP (above/below median and highest quartile), or RF negative, positive and high positive (≥ 110 U/L)². Difference in clinical parameters were analysed by Mann-Whitney/Chi-squared tests, and multivariate predictive calculations by **Classification And Regression Tree** analysis including covariates (age, BMI, gender and disease activity assessment scores).

Results: High C1M, C3M and CRP levels were significantly associated with measures of disease activity ($p<0.05$) and patient reported scores ($p<0.05$). RF_{pos} was also associated with disease active scores ($p<0.05$). RF_{pos} and CRP ($p<0.001$), as well as C1M and C3M ($p<0.05$), were significantly associated with mTSS at baseline. For prognostic measures, there were 2.5 and 4-fold as many rapid progressors in the C1M_{high} and CRP_{high} ($p<0.05$), and in the C1M_{veryhigh} and CRP_{veryhigh} groups ($p<0.001$) compared C1M_{low} and CRP_{low}, respectively. C1M and CRP performed similarly in the predictive analysis with AUCs of 0.67 and 0.69 (table 1). The best model involving C1M in predicting rapid progressor included BMI, SJC and HAQ (AUC 0.85), whereas the best model for CRP included CRP, BMI, SJC and HAQ (AUC 0.85). C3M and RF did not provide prognostic value.

Model description	Progressors (delta mTSS ≥ 0.5 units per year)		Rapid progressors (delta mTSS ≥ 5 units per year)	
	AUC Specificity Sensitivity Correctly identified	Model parameters	AUC Specificity Sensitivity Correctly identified	Model parameters
C1M alone	0.600 59.7 53.8 56.7	C1Mveryhigh C1Mhigh	0.672 83.1 45.8 64.5	C1Mveryhigh C1Mhigh
C1M with demo., clinical ass., and X-ray	0.732 87.8 40.5 64.1	C1Mveryhigh Age BMI Disease duration HAQ ERN JSN	0.849 78.4 73.9 76.2	C1Mveryhigh BMI Disease duration HAQ
CRP alone	0.594 85.1 28.8 56.9	CRPveryhigh CRPhigh	0.687 84.0 50 67.0	CRPveryhigh CRPhigh
CRP with demo., clinical ass., and X-ray	0.717 76.1 51.9 64.0	CRPhigh Age BMI Disease duration SJC HAQ	0.847 53.4 95.7 74.2	CRPhigh BMI SJC HAQ

Conclusions: Of the four markers analysed only C1M and CRP were associated with structural progression. They seem to perform equally well, but reflect two different aspect of disease pathogenesis (tissue turnover vs. inflammation), thus may provide individual, but supplementary, information. These simple measures may be important for enrichment of clinical trials with structural progressors.

REFERENCES:

- [1] Siebuhr A, et al. Serological identification of fast progressors of structural damage with rheumatoid arthritis. *Arthritis Res. Ther* 2013.
- [2] Aletaha D, Alasti F, & Smolen JS. Rheumatoid factor determines structural progression of rheumatoid arthritis dependent and independent of disease activity. *Ann Rheum Dis* 2013.

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THU0102 HIGH RATES OF RESIDUAL DISEASE ACTIVITY DESPITE CURRENT THERAPIES IN A REAL LIFE RHEUMATOID ARTHRITIS COHORT: DATA FROM 1096 PATIENTS

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Background: It is unclear if the widespread use of biologic DMARDs (bDMARDs) and the implementation of the treat to target approach have led to better disease control in patients with rheumatoid arthritis (RA) in daily clinical practice.

Objectives: To study the longitudinal changes in disease activity in a large, real life, longitudinal RA cohort.

Methods: Multicenter (11 hospitals, 3 private offices), prospective, RA epidemiological study in Greece. Demographics, disease characteristics, treatments and co-morbidities were collected via a web-based platform in registered patients at baseline and one year after their 1st visit.

Results: 1,096 RA patients with available paired evaluations one year apart (mean interval: 13.4 $\pm$ 3.6 months) were included (women: 78%, mean age: 62.8 years, mean disease duration: 11 years, RF and/or anti-CCP positive: 60%, mean HAQ: 0.44 $\pm$ 0.56). At baseline, 50% (n=548) of patients were on conventional DMARDs (csDMARDs) alone, 35% on cs- and b-DMARD combination (n=379) and 11% on bDMARD monotherapy (n=124). Among bDMARD treated patients, 60% were

receiving tumour necrosis factor inhibitors (TNFi) while 40% were on corticosteroids (mean daily dose: 4.7 mg). Despite these therapies, 43% of patients had active disease (DAS28-ESR $\geq$ 3.2); 34% moderate (MDA, DAS28-ESR=3.2–5.1) and 9% high (HDA, DAS28-ESR $\geq$ 5.1) disease activity. During the 1 year observation period, among the group of patients with MDA who were only on csDMARDs, 15% started a bDMARD while among those on bDMARDs, 11% switched to another bDMARD. The respective rates of starting a bDMARD (in those on csDMARDs) or switching to another bDMARD (in those on bDMARDs), were much higher for patients in the HDA group (41% and 32% respectively, $p<0.001$ for both groups). At the end of the 1st year, the proportion of patients on TNFi and corticosteroids was 57% and 32%, respectively. Overall, despite a decrease in the DAS28-ESR score (from 3.2 ± 1.2 to 2.9 ± 1.3 , $p<0.001$), 37% of patients had still active disease (6% improvement after 1 year; MDA: 30%, HDA: 7%).

Conclusions: In a large, real life, RA cohort with almost half of patients on bDMARD-based therapies, more than one third of patients had still active disease at the end of the 1st year of follow-up. These findings could be explained in part by the low rate of bDMARD initiation or switching in this cohort or they could indicate the limitations of current therapeutic approaches in RA patients with longstanding disease in Greece.

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Disclosure of Interest: None declared

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THU0103 EVALUATION OF SERUM B-2 MICROGLOBULIN LEVELS AND ITS RELATIONSHIP WITH DISEASE ACTIVITY IN RHEUMATOID ARTHRITIS

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Background: β -2 microglobulin (β 2MG) is produced and secreted from T and B lymphocytes. In autoimmune diseases, due to lymphocyte activation and proliferation, serum β 2MG level is expected to be higher than normal. In a few studies, increased serum and synovial fluid β 2MG levels in rheumatoid arthritis (RA) were reported.

Objectives: The aim of this study was to evaluate the concentration of β 2MG in peripheral blood in RA patients and to show its relationship with disease activity.

Methods: In this study, 121 RA patients and 50 sex and age matched healthy controls were enrolled. Patients who had other inflammatory diseases or any kind of malignancy were excluded.

Results: The mean age of RA patients (97 female and 24 male) were 55 years (± 10.9 years) and mean disease duration was 9 years (min: 6 months, max: 42 years). The demographic data of patients and healthy controls are shown in table 1. There was a statistically significant difference between haemoglobin, erythrocyte sedimentation rate and C-reactive protein levels between two groups ($p<0.001$, $p<0.001$, $p=0.001$ respectively). Serum β 2MG levels were higher in RA group than healthy controls ($p<0.001$). When RA patients were grouped according to disease activity as remission to low disease activity (DAS28-ESR <3.2) ($n=65$) and moderate to severe disease activity (DAS28-ESR ≥ 3.2) ($n=56$), the serum β 2MG levels were higher in DAS28-ESR ≥ 3.2 group than in DAS28-ESR <3.2 group ($p=0.003$). The difference between serum β 2MG levels were statistically significant in low and high disease activity groups when grouped both according to DAS-ESR and DAS-CRP ($p=0.003$ and $p=0.006$, respectively). The seropositivity between two groups were similar ($p=0.385$), although serum ESR, CRP levels and the rate of morning stiffness were significantly higher in high disease activity group. The results were shown in table 2. According to Spearmann correlation test, the serum β 2MG level and DAS-ESR and DAS-CRP were positively correlated which were both statistically significant. ($r=0.378$, $p<0.001$ and $r=0.324$, $p<0.001$ respectively).

Abstract THU0103 – Table 1. Baseline characteristics of RA patients and healthy controls

Characteristics	RA(n=121)	Control (n=50)	p value
Female Sex, n (%)	97 (80.2)	35 (70.0)	0.150
Age, years	55.0 $\pm$ 10.9	52.6 $\pm$ 10.6	0.183
WBC	7736 $\pm$ 3177	7170 $\pm$ 1759	0.139
Hb	12.6 $\pm$ 1.5	14.1 $\pm$ 1.7	<0.001
Thrombocyte	290.4 $\pm$ 88.9	279.7 $\pm$ 65.2	0.441
ESR	24.3 $\pm$ 17.0	12.2 $\pm$ 8.2	<0.001
CRP (IQR)	2.5 (4.7)	6.1 (10.7)	<0.001
β 2-microglobulin	2.93 $\pm$ 1.20	2.21 $\pm$ 0.54	<0.001
DAS28-ESR	3.30 $\pm$ 1.16		
DAS28-CRP	3.60 $\pm$ 1.39		

Abstract THU0103 – Table 2. Baseline characteristics of RA patients

	DAS28-ESR $\leq$ 3.2 (n=65)	DAS28-ESR $>$ 3.2 (n=56)	p value
Female Sex, n (%)	48 (73.8)	29 (87.5)	0.060
Age, years	53.4 $\pm$ 11.3	56.9 $\pm$ 10.1	0.079
ESR	17.8 $\pm$ 12.3	31.9 $\pm$ 18.6	<0.001
CRP (IQR)	4.0 (7.9)	10.2 (12.6)	<0.001
B2-microglobulin	2.62 $\pm$ 0.87	3.29 $\pm$ 1.42	0.003
DAS28-ESR	2.42 $\pm$ 0.59	4.31 $\pm$ 0.78	<0.001
DAS28-CRP	2.67 $\pm$ 0.61	4.67 $\pm$ 2.26	<0.001
Morning stiffness, n (%)	13 (20)	24 (42.9)	0.007

Abstract THU0103 – Figure 1. The figure that shows the relationship of serum β 2MG with DAS28-ESR

Conclusions: Our results show that serum β 2MG concentration increase in RA and is higher in active patients. It can be concluded that serum β 2MG may be an appropriate parameter to monitor disease activity in rheumatoid arthritis.

Disclosure of Interest: None declared

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THU0104 THE TEMPORAL PROFILE OF ANTIBODIES DIRECTED AGAINST POST-TRANSLATIONAL MODIFICATIONS VARIES ACCORDING TO ISOTYPE AND TARGET IN PATIENTS WITH NEW-ONSET RHEUMATOID ARTHRITIS

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Background: Autoantibodies directed against antigens with post-translational modifications (PTMs), such as citrullination (ACPA), are a hallmark of rheumatoid arthritis (RA)¹. ACPA titres increase prior to disease onset, but are thought to be relatively stable after symptomatic inflammation is established². The temporal profile of antibodies against acetylated (AAPA) and carbamylated (ACarPA) peptides has not been so comprehensively characterised following the onset of joint swelling³.

Objectives: We aimed to track serum levels of anti-PTM antibodies over 18 months in patients with newly-presenting RA in our prospective observational cohort.

Methods: Patients with treatment-naïve inflammatory arthritis donated serum at baseline, 6 and 18 months. 103 patients satisfying ACR^{EULAR} 2010 criteria for RA underwent testing for IgG and IgA antibodies against peptides with citrulline (ACPA), carbamylated lysine (ACarPA), and acetylated lysine (AAPA) PTMs using ELISA as previously described⁴.

Results: 57% of participants were female, and 48% and 50% patients were anti-CCP2 or rheumatoid factor positive respectively. Mean age was 56 years (s.d. 15.2), symptom duration 55 days (s.d. 22.4), and DAS28CRP 4.4 (s.d. 1.3) at enrolment.

Comparing baseline and 18 month median antibody levels measured by optical density, a decrease was observed over time for IgG (0.26 vs 0.17, $p<0.0001$) and IgA AAPA (0.23 vs 0.09, $p<0.0001$), as well as both IgG and IgA antibodies against citrullinated peptides (0.47 vs 0.40, $p<0.0001$ and 0.16 vs 0.12, $p<0.0001$ respectively). Significant reductions occurred between baseline and 6 months for both IgG ($p<0.0001$) and IgA ($p<0.0001$) AAPA antibodies, but not between 6 and