time in the low DAS categories. This supports that remission should be the primary T2T goal in RA.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.3890

FRI0016 NO RELATIONSHIPS BETWEEN ACPA AND PERIODONTITIS IN EARLY RHEUMATOID ARTHRITIS

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Background: Proteins citrullination contributes to generate anticitrullinated peptide antibodies (ACPA) in rheumatoid arthritis (RA). Porphyromonas gingivalis (Pg) is one of main germs incriminated in the development of periodontitis (PD), it has an enzyme called peptidyl arginine deiminase which is able to citrullinate the host proteins

Objectives: The aim of this study was to seek for a possible association between ACPA and periodontitis

Methods: We conducted a case-control study of 69 patients with early rheumatoid arthritis (<2 years), naive of biotherapy and 138 age- and sex matched healthy controls. Smokers, diabetics, and subjects who received dental care and those who used antibiotics in the previous 6 months were not included. Demographic data and ACPA were determined. A periodontal examination was performed to all participants. Subgingival plaque samples were analysed to seek for Porphyromonas gingivalis (Pg) in both population in the case of periodontitis.

Results: The mean age of our patients was 40.75±12.04, the mean duration of the illness was 14.30±6.76 months (extremes: 1–24 months). ACPA was detected in 88% of patients and the mean titre was 255.57±409.78. PD frequency was higher in patient with PR compared with healthy controls (43% versus 29%) and a significant association was found between PR and PD (p<10⁻³). Patients with RA had 2.46 (CI 1.12 to 5.39) higher odds of having PD compared with healthy controls. In early RA, ACPA titre and rate was not associated with PD (p=0.06, p=0.44 respectively). Regarding the frequency of Porphyromonas gingivalis, there was no significant difference between the PR group and the control group (p=0.45). In addition, there was no significant difference between RA group and controls (p=0.68) concerning Porphyromonas gingivalis and ACPA

Conclusions: Periodontitis is a risk factor for the occurrence of rheumatoid arthritis. The ACPA does not seem to be related to periodontitis. In addition there was no association between ACPA and the presence of porphyromonas gingivalis.

REFERENCES:

- [1] Eriksson K, Nise L, Kats A, Luttrupp E, Catrina AI, Askling J, Jansson L, Alfredsson L, Klareskog L, Lundberg K, Yucel-Lindberg T. Prevalence of Periodontitis in Patients with Established Rheumatoid Arthritis: A Swedish Population Based Case-Control Study. *PLoS One* 2016;11(5):e0155956.
- [2] Laugisch O, Wong A, Sroka A, Kantyka T, Koziel J, Neuhaus K, Sculean A, Venables PJ, Potempa J, Möller B, Eick S. Citrullination in the periodontium - a possible link between periodontitis and rheumatoid arthritis. *Clin Oral Investig* 2016;20(4):675–683.
- [3] Dissick A, Redman RS, Jones M, Rangan BV, Reimold A, Griffiths GR, et al. Association of Periodontitis with Rheumatoid Arthritis: A Pilot Study. *Journal of Periodontology* 2010;81:223–230.
- [4] Mikuls TR, Payne JB, Yu F, et al. Periodontitis and porphyromonas gingivalis in patients with rheumatoid arthritis. *Arthritis & Rheumatology* 2014;66(5):1090–100.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.5346

FRI0017 AN EXPLORATORY STUDY ON THE ROLE OF VITAMIN D SUPPLEMENTATION IN IMPROVING PAIN AND DISEASE ACTIVITY IN RHEUMATOID ARTHRITIS

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Background: Lower serum vitamin D levels have been associated with various autoimmune disorders. Especially in patients affected by Rheumatoid Arthritis

(RA), has been observed an inverse correlation between serum levels of 25-hydroxyvitamin D (25OHD), pain and disease activity, but the cause-effect relationship is not clear.

Objectives: The aim of this exploratory study is to investigate the effects of supplementation with cholecalciferol (vitD3) in improving pain and disease activity in RA patients with or without vitamin D deficiency (25OHD<20 ng/ml).

Methods: In this prospective open-label intervention study, patients fulfilling the EULAR/ACR 2010 criteria for diagnosis of RA, in non-remission (DAS28-CRP>2.6), on stable disease-modifying antirheumatic drugs, and whose treatment was not expected to be changed over a 3 month period following inclusion, were recruited. DAS28-CRP, VAS pain and serum levels of 25OHD, were evaluated at the baseline and after 3 months of supplementation with oral 100,000 IU/monthly of vitD3.

Results: A sample composed by 61 patients (47 females), with an average age (SD) of 58.12 years within 26–86 years range were included. At baseline the mean (SD) 25OHD levels were 22.10 ng/mL. 57% of the patients were found to have vitamin D deficiency (<20 ng/mL). Mean serum 25OHD levels improved from 13±5 to 32±12 and from 29±7 to 41±10 ng/mL in patients with or without vitamin D deficiency, respectively. At baseline, mean VAS pain was significantly higher in patients with vitamin D deficiency. In the figure are shown DAS28-CRP and VAS pain at baseline and after 3 months of vitD3 supplementation both in patients with or without vitamin D deficiency. After large doses of VitD3, VAS pain significantly decreased in patients with vitamin D deficiency, while DAS28-CRP significantly improved only in patients without vitamin D deficiency at baseline.

Conclusions: VitD3 supplementation appears to be associated with significant and different effects on pain and disease activity in RA patients dependent on 25OHD serum levels. Vitamin D deficiency (<20 ng/mL) seems to be mainly correlated with pain, while higher levels of 25OHD might have immunomodulatory effects. A randomised, double-blind, low versus high vitD3 dose, placebo-controlled trial is recommended.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.5235

FRI0018 THE ABILITY OF DISEASE ACTIVITY MEASURES TO PREDICT MAJOR THERAPEUTIC CHANGE IN US VETERANS WITH RHEUMATOID ARTHRITIS

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Background: Current rheumatoid arthritis (RA) treatment guidelines recommend the use of disease activity measures (DAMs) to guide RA therapy. These guidelines recommend considering escalation of therapy in RA patients with high or moderate disease activity. Recent work by our group has demonstrated that many RA patients with high/moderate RA by Disease Activity Score with 28 joints (DAS28) did not have therapy escalated despite active disease (DAS28 ≥ 3.2).

Objectives: 1) To determine if the rate of major therapeutic change (MTC) for RA patients with high/moderate disease activity based on DAS28 was similar when measured using two other common DAMs; 2) to compare the ability of different DAMs to predict MTC across the full spectrum of RA disease activity.

Methods: US Veterans enrolled in the VA Rheumatoid Arthritis (VARA) registry with 1) a complete set of DAMs (DAS28, Clinical Disease Activity Index [CDAI], Routine Assessment of Patient Index Data 3 [RAPID3]) recorded (index date), 2) two other visits during the preceding 18 months separated by at least 60 days, and 3) clinical data available for 18 months prior to through 30 days following index date were eligible. Each patient was assessed for MTC within 1 week before and 30 days after index date. MTC was defined as any of the following: 1) initiation of new biologic or nonbiologic DMARD, 2) escalation of DMARD dose by ≥25%, 3) initiation of prednisone (as new agent or after 90 day gap during baseline), or 4) increase in monthly average prednisone dose by 25% and/or 5) injection of 2 or more joints with corticosteroids. MTC was analysed by DAM severity thresholds of 1) high, moderate, low, and remission, and 2) high, high/moderate, and high/moderate/low levels. Analyses of the latter thresholds included sensitivity, specificity, predictive values, and accuracy estimations for MTC at each DAM level.

Results: Of 1776 eligible patients, 89% were male, mean age was 63.4 years, mean disease duration was 13.4 years, 79% tested positive for rheumatoid factor,

and 63% positive for anti-cyclic citrullinated peptide antibodies. Overall, 33.1% (591/1776) of patients had an MTC. A markedly larger percentage of patients with high disease activity had MTC (range 55.1%–43.5%) compared to patients with moderate disease (range 38.7%–27.8%) (table 1). Sensitivity, specificity, predictive values, and accuracy at each DAM threshold level varied markedly by DAM, with RAPID3 having a higher sensitivity, lower specificity, and less accuracy than DAS28 or CDAI (table 2).

Abstract FRI0018 – Table 1. Rates of MTC Stratified by DAM

	Patients with MTC, n/N (%)		
	DAS28	CDAI	RAPID3
High	165/313 (52.7%)	231/419 (55.1%)	346/795 (43.5%)
Moderate	285/737 (38.7%)	219/601 (36.4%)	155/558 (27.8%)
Low	72/283 (25.4%)	105/547 (19.2%)	47/217 (21.7%)
Remission	69/443 (15.6%)	36/209 (17.2%)	43/206 (20.9%)

n, number of patients with MTC; N, number of patients with level of disease severity.

Abstract FRI0018 – Table 2. Performance of DAMs for Prediction of MTC

		Positive Threshold		
		High	High/ Moderate	High/ Moderate/ Low
Sensitivity	DAS28	27.9%	76.1%	88.3%
	CDAI	39.1%	76.1%	94.9%
	RAPID3	58.5%	84.8%	92.7%
Specificity	DAS28	87.5%	49.4%	31.6%
	CDAI	84.1%	51.9%	14.6%
	RAPID3	62.1%	28.1%	13.8%
Positive Predictive Value	DAS28	52.7%	42.9%	39.2%
	CDAI	55.1%	44.1%	35.4%
	RAPID3	43.5%	37.0%	34.9%
Negative Predictive Value	DAS28	70.9%	80.6%	84.4%
	CDAI	73.5%	81.3%	82.8%
	RAPID3	75.0%	78.7%	79.1%
Accuracy	DAS28	67.7%	58.3%	50.5%
	CDAI	69.1%	60.0%	41.0%
	RAPID3	60.9%	47.0%	40.0%

Conclusions: Most patients with high/moderate disease activity did not have a MTC. This observation was consistent regardless of which DAM was utilised. MTC increased with disease activity with all DAMs; however, DAS28 and CDAI appeared to have greater accuracy than RAPID3 at predicting MTC at all disease severity thresholds. There is need for continued evaluation of DAM thresholds for defining disease activity for MTC decisions, better DAMs, and/or better application of DAMs in clinical practice to improve the treatment of patients with active RA.

Acknowledgements: This study was sponsored by Immunex, a subsidiary of Amgen. Medical writing assistance provided by Amgen.

Disclosure of Interest: G. Cannon Grant/research support from: Amgen, C.-C. Teng Grant/research support from: Amgen, N. Accortt Shareholder of: Amgen, Employee of: Amgen, D. Collier Shareholder of: Amgen, Employee of: Amgen, T.-C. Lin Shareholder of: Amgen, Employee of: Amgen, B. Sauer Grant/research support from: Amgen Inc.

DOI: 10.1136/annrheumdis-2018-eular.1804

FRI0019

ARE DISEASE ACTIVITY, DISABILITY OR PSYCHOLOGICAL FACTORS MOST ASSOCIATED WITH PATIENTS WITH RHEUMATOID ARTHRITIS BEING SATISFIED WITH THEIR CONDITION AFTER 12 MONTHS FOLLOWING TREATMENT ONSET?

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Background: An important treatment goal in the management of patients with rheumatoid arthritis (RA) is patients being satisfied with their condition, the patient acceptable symptom state (PASS). It is unclear whether reduction in disease activity, the main therapeutic aim of RA treatment, is associated with reaching PASS, or whether reductions in other factors are also important.

Objectives: To analyse change over one year of disease activity, patient reported outcomes (PROs) and psychological factors and their association with PASS at one year.

Methods: The Rheumatoid Arthritis Medication Study (RAMS) is a prospective cohort of patients with RA starting MTX for the first time in the United Kingdom. At baseline and one year, patients reported demographics and completed pain and fatigue visual analogue scales (VAS-pain/VAS-fatigue), the Hospital Anxiety and Depression Scale (HADS-A, HADS-D) and the Health Assessment Questionnaire (HAQ). A research nurse performed a 28 swollen and tender joint count (SJC28/TJC28) and the disease activity score (DAS28) was calculated. Patients answered the question "Is your current condition satisfactory, when you take your general functioning and your current pain into consideration?" at baseline and at one year. Only patients not in PASS at baseline are included in this analysis. Change in disease related factors (SJC28, TJC28, DAS28), PROs (HAQ, VAS-pain, VAS-fatigue), and psychological factors (HADS-A, HADS-D) from baseline to one year were calculated (see table 1). Predictors of PASS at one year were assessed using multivariable logistic regression, adjusting for age and gender. The discriminative power of disease activity, PROs and psychological factors were assessed by comparing the area under the curve (AUC) of the receiver operating characteristic curve.

Results: Of 358 not in PASS at baseline (mean (SD) age: 58.1 (13.0) years; 244 (68.2%) women), 241 (67.3%) were in PASS after one year. The only independent predictors of PASS were change in HAQ, VAS-pain and HADS-D (OR (95% CI) per unit change from baseline: HAQ 0.38 (0.16, 0.91); VAS-pain 0.96 (0.95, 0.98); HADS-D 0.86 (0.75, 0.99)). The model containing PROs had significantly greater AUC compared to a disease activity model (0.91 vs. 0.84, $p=0.004$) and a psychological factors model (0.91 vs. 0.81, $p<0.0001$).

Abstract FRI0019 – Table 1. Baseline, one year and change scores stratified by whether patients were in PASS at one year

Variable	Median (IQR) baseline score		Median (IQR) one year score		Median (IQR) Change	
	PASS at one year	Not-PASS at one year	PASS at one year	Not-PASS at one year	PASS at one year	Not-PASS at one year
Disease activity						
SJC28	6.5 (2.5, 11.0)	6.0 (3.0, 12.0)	0.0 (0.0, 2.0)	3.0 (0.0, 7.0)†	-5 (-9, -2)	-2 (-6, 1)†
TJC28	6.0 (3.0, 12.0)	9.0 (5.0, 17.0)†	1.0 (0.0, 4.0)	8.0 (2.0, 14.0)†	-4 (-9, -1)	-2 (-8, 3)†
DAS28	4.6 (3.8, 5.4)	4.9 (4.2, 5.8)	2.7 (2.1, 3.5)	4.3 (3.5, 5.3)†	-1.6 (-2.9, -0.8)	-0.6 (-1.6, 0.4)†
PROs						
HAQ	1.3 (0.8, 1.8)	1.4 (1.0, 1.9)	0.6 (0.1, 1.1)	1.5 (1.0, 1.9)†	-0.5 (-1.0, -0.1)	0.0 (-0.4, 0.3)†
VAS-Pain	63 (46, 75)	68 (50, 80)	18 (7, 33)	60 (41, 76)†	-38 (-55, -18)	-5 (-24, 9)†
VAS-Fatigue	62 (37, 74)	72 (57, 85)†	29 (13, 54)	70 (55, 83)†	-24 (-43, -1)	-1 (-17, 12)†
Psychological						
HADS-D	7 (4, 10)	8 (5, 10)	3 (1, 6)	8 (5, 11)†	-2 (-5, 0)	1 (-1, 2)†
HADS-A	6 (4, 10)	8 (4, 12)†	4 (2, 8)	8 (4, 11)†	-2 (-4, 0)	0 (-2, 2)†

† $p<0.05$, † $p<0.01$ – PASS groups compared using quantile regression

DAS28 = Disease Activity Score 28, HADS-A = Hospital Anxiety and Depression Scale (Anxiety), HADS-D = Hospital Anxiety and Depression Scale (Depression), HAQ = Health Assessment Questionnaire, IQR = Interquartile range, PASS = Patient acceptable symptom state, PROs = Patient Reported Outcomes, SJC28 = swollen joint count (28), TJC28 = tender joint count (28), VAS = visual analogue scale.

Conclusions: Change in PROs have a greater association with attaining PASS at one year compared to disease related or psychological factors and should be taken into account when designing treatment strategies.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.5212

FRI0020

ANTI-CEP-1 ANTIBODIES AND OTHER AUTOANTIBODIES IN EARLY ARTHRITIS

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Background: As it is very important to identify patients with a high risk of developing rheumatoid arthritis (RA), new, diagnostic methods, evaluating the possibility of progression from undifferentiated arthritis (UA) to RA are needed.

Objectives: The aim of this work was the evaluation of the frequency of rheumatoid factor, anti-cyclic citrullinated peptide (anti-CCP) antibodies, mutated citrullinated vimentin antibodies (a-Sa), anti-CEP-1 antibodies, anti-filaggrin antibodies (AFA), heterogeneous nuclear ribonucleoprotein compies/anti-RA33-antibody (HnRNP/RA33), anti-CarP antibodies (a-Carp) in patients with early arthritis.

Methods: 74 patients with early arthritis and 20 healthy volunteers were enrolled to the study. 51 patients were diagnosed with RA, 23 with UA. Exclusion criteria were the application of disease-modifying antirheumatic drugs or glucocorticosteroids. In all patients the following laboratory tests were performed: inflammatory markers, rheumatoid factor (RF) and antibodies mentioned above, together with necessary diagnostic that enables diagnosis.

Results: In patients with early arthritis the sensitivity and specificity of the presence of RF was 69% and 95%, respectively, and of anti-CCP was 67% and 97%. In patients with early arthritis we observed significantly higher concentration of CEP-1 (65.8±111.6) than in the healthy group (2.0±0.0). In RF(+) RA patients we