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SAT0078

MAJOR CHANGES IN THERAPY PRODUCE SIGNIFICANT CLINICAL IMPROVEMENT ACROSS A BROAD RANGE OF CLINICAL DISEASE ACTIVITY IN US VETERANS WITH RHEUMATOID ARTHRITIS

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Background: Our recent work showed that 41% of patients with moderate/severe rheumatoid arthritis (RA) by Disease Activity Score for 28 joint count (DAS28) did not have changes in RA therapy as recommended by current guidelines (1). Reasons identified for the decision not to escalate therapy was provider's opinion that RA disease was adequately controlled despite moderate/severe disease activity by DAS28, and that changes in therapy may not produce significant improvements in disease activity (1).

Objectives: 1) Compare short-term differences in ACR20 response between patients with and without a major therapeutic change (MTC) over a range of disease activity; 2) Determine whether ACR20 responses vary by disease activity measures (DAMs) used to assess disease activity (i.e., DAS28, Clinical Disease Activity Index [CDAI], Routine Assessment of Patient Index Data 3 [RAPID3]).

Methods: Each clinic visit for US Veterans enrolled in the VA Rheumatoid Arthritis (VARA) registry was evaluated if the visit had: 1) a complete set of DAMs (DAS28, CDAI, RAPID3) recorded; 2) two other visits with all DAMs during the preceding 18 months separated by at least 60 days and one visit with all DAMs between 60 and 180 days following the visit date; 3) clinical data available for 18 months prior to visit date; and 4) ≥ 6 tender and ≥ 6 swollen joints at visit date. Each patient was assessed for MTC within 1 week before and 30 days after visit date. MTC was defined as any of the following: 1) initiation of new biologic or nonbiologic disease-modifying antirheumatic drug (DMARD) or prednisone (as new agent or after 90-day gap during baseline); 2) escalation of DMARD dose by $\geq 25\%$; or 3) increase in monthly average prednisone dose by 25%; and/or 4) injection of 2 or more joints with corticosteroids. Clinical improvement was defined as an ACR20 response comparing each eligible visit DAM to the first follow-up visit DAM observed between 60 and 180 days of the eligible visit date. ACR20 response was compared between eligible visits with and without a MTC and stratified by quartiles of disease activity by each DAM. The Generalized Estimating Equations (GEE) model was fitted using the exchangeable working covariance structure to account for clustering of visits within patients. Models for each DAM were adjusted for age, disease duration, race, seropositive status, comorbidities, disease stability, and recent medication changes in the observations period prior to the visit date.

Results: There were 383 patients (92% were male, mean age was 62.9 years, mean disease duration was 12.5 years, 83% tested positive for rheumatoid factor, and 79% positive for anti-cyclic citrullinated peptide antibodies) who contributed 1,193 eligible visits. Visits with a MTC had a higher rate of ACR20 response in comparison to visits without a MTC at all levels of disease activity. A MTC at a visit with the highest disease activity (quartile 4) consistently had the largest proportion of follow-up visits with an ACR20 response. The overall effect for MTC was statistically significant across all 3 DAMs. Across quartiles, the MTC group consistently had a higher proportion of follow-up visits with ACR20 response compared to the group without a MTC. Risk Ratios from the adjusted analysis are presented in the table.

Conclusion: All patients with active RA have a significant potential to benefit with a MTC. This potential for improvement was seen across all degrees of disease activity and with all three DAMs.

ACR 20 response with or without major therapeutic change (MTC)			
DAMs, quartiles (Q)	With MTC	Without MTC	Risk Ratio
DAS28			
Overall effect	34% (29%, 39%)	22% (18%, 28%)	1.52 (1.23, 1.88)
Q1: 2.35–4.87	25% (17%, 33%)	15% (10%, 22%)	1.60 (0.98, 2.54)
Q2: 4.88–5.60	33% (24%, 43%)	20% (14%, 28%)	1.65 (1.07, 2.56)
Q3: 5.61–6.29	30% (23%, 39%)	23% (16%, 30%)	1.31 (0.89, 1.95)
Q4: 6.30–8.76	47% (40%, 57%)	30% (22%, 41%)	1.55 (1.12, 2.38)
CDAI			
Overall effect	35% (31%, 40%)	23% (19%, 31%)	1.52 (1.19, 1.89)
Q1: 14.7–26.6	31% (22%, 41%)	15% (10%, 21%)	2.10 (1.28, 3.35)
Q2: 26.7–32.9	27% (20%, 35%)	21% (15%, 31%)	1.25 (0.84, 1.95)
Q3: 33.0–41.7	41% (33%, 49%)	30% (23%, 39%)	1.34 (1.02, 1.87)
Q4: 41.9–71.0	42% (34%, 52%)	26% (18%, 39%)	1.60 (1.10, 2.52)
RAPID3			
Overall effect	34% (29%, 38%)	21% (17%, 26%)	1.59 (1.28, 2.00)
Q1: 0.33–3.61	22% (14%, 31%)	18% (12%, 25%)	1.23 (0.69, 1.91)
Q2: 3.62–4.99	39% (31%, 49%)	21% (15%, 28%)	1.86 (1.32, 2.70)
Q3: 5.00–6.28	31% (23%, 39%)	20% (13%, 29%)	1.53 (0.92, 2.46)
Q4: 6.31–9.55	42% (35%, 51%)	25% (17%, 34%)	1.68 (1.19, 2.62)

Data presented with 95% confidence intervals

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SAT0079

PREDICTING PATIENTS WITH HIGH PAIN & PSYCHOLOGICAL SYMPTOMS (P&PS) IN EARLY RHEUMATOID ARTHRITIS USING LATENT CLASS ANALYSIS. RESULTS FROM THE TACERA, A LONGITUDINAL COHORT

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Background: Despite advances in the treatment of rheumatoid arthritis (RA), pain and psychological symptoms remain a burden for many patients. The precise relationship between inflammation and patient reported symptoms, such as pain, fatigue and mental health in the disease is unclear. However, evidence suggests that over time there may be discordance between inflammation and patient reported outcomes, such that some patients with low inflammation will experience persistent symptoms. It is hypothesised that three distinct patient sub-groups exist; low inflammation/low symptoms, low inflammation/high symptoms, and high inflammation/high symptoms.

Objectives: To identify sub-groups of patients with respect to inflammatory markers and levels of P&PS over time.

Methods: Demographic, clinical and laboratory data were recorded at baseline (pre-treatment), 6, 12, and 18-months from 239 early RA patients recruited to the Towards A Cure for Early Rheumatoid Arthritis (TACERA) cohort. Individual components of the DAS28 (tender joints, swollen joints, ESR, CRP and patient global) at post-treatment assessments, along with patient reported visual analogue scales for pain, fatigue and the SF-36 Mental Component Score (MCS) were used to identify sub-groups using longitudinal latent class analysis (LCA). Logistic regression models identified variables associated with class membership at 6, 12 and 18-months follow-up.

Results: LCA indicated two rather than the hypothesised three sub-groups; low inflammation/low symptoms and low inflammation/high symptoms. This was likely because ESR and CRP were well controlled by 6-months and maintained by 18-months for the majority of individuals. There were 86 (36%) 59 (35%) and 41 (39%) classified as having high symptoms at 6, 12 and 18-months. 78% of patients initially in the low symptom group remained in the low symptom group between 6 and 18-

months. Rheumatoid Factor (RF) positivity and higher baseline fatigue were associated with high symptoms at 6months; decreasing ESR from 6 to 12-months was associated high symptoms at 12months, and having high symptoms at 12-months, along with reduced Swollen Joint Count (SJC), CRP and MCS from month 12 to 18 was associated with high symptoms at 18-months.

Conclusion: Tight treatment control resulted in controlled Inflammation by 6-months, resulting in just two main patient sub-groups; those with low and high P&PS. Over one-third of patients experienced high pain and psychological symptoms. Membership of the high symptom group was associated with RF positivity but was mainly driven by prior symptom experience. Whilst inflammatory control remains a primary target, other treatments targeting pain, fatigue and mental health must be considered to reduce the burden of disease.

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SAT0080 COMPARISON OF INFLAMMATORY CYTOKINES LEVELS IN RHEUMATOID ARTHRITIS WITH CAROTID PLAQUE; CASE-CONTROL STUDY

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Background: There is a 50% increase in cardiovascular mortality in RA compared to controls. Chronic inflammation causes endothelial dysfunction and accelerated atherosclerosis. Key molecular pathways in this process are dependent on cytokines like TNF- α , IL-1, IL-6, among others, which are shared with RA. Increased disease activity could contribute to atherosclerosis. Carotid ultrasound (US) has recently been recommended as a screening tool for early detection of subclinical atherosclerosis.

Objectives: To compare different cytokines between Mexican-mestizo RA-subjects with/without carotid plaque (CP).

Methods: An observational cross-sectional trial was designed. Inclusion criteria: age between 40-75 years old, fulfillment of the 2010 ACR/EULAR classification criteria, and detection of a CP during a carotid US. Subjects with a prior diagnosis of cardiovascular disease or a poor US window were excluded. RA subjects were matched to controls (RA patients without CP) by age and cardiovascular (CV) comorbidities. Every subject had a carotid US performed; reviewed by two board-certified radiologists. Cytokines measured were IL-1, IL-6, TNF- α , VCAM-1, ICAM-1 and MMP-9, using an ELISA reader (Glomax E9032). Descriptive analysis was done with frequencies (%), median (q25-q75), and comparisons between groups with Chi square test and Mann U Whitney's test.

Results: 71 subjects were included, 95.8% were females, with a median age of 58 years (54-65). Levels of cytokines in Table 1. Comparisons between groups are in Table 2. Groups were well balanced, with no differences in CV comorbidities ($p>0.05$). No significant differences among cytokine levels regarding CP were found. Subjects in remission ($n=12$, 33%) had a lower prevalence of CP ($p<0.05$, OR: 0.3; 95% CI: 0.1-0.9) and a lower median IL-1 level than those with higher disease activity ($p<0.05$). No significant differences were found among any other of the compared cytokines.

Table 1. Cytokines levels

	Median(q25-q75)
IL1, pg/ml	8.1 (6.6-9.6)
TNF- α , pg/ml	76 (61-101)
IL6, pg/ml	4.4 (4.1-4.8)
ICAM, ng/ml	91 (61-141)
VCAM, ng/ml	56.5 (41.3-65.1)
MMP9, pg/ml	811 (721-931)

Table 2. Clinical characteristics.

Variable	CP (n= 37)	No CP (n=34)	p
Age, years median (q25-q75)	59.2 (54.8-66.1)	57.7 (53-61.2)	NS
Female, n (%)	35 (94.6)	33 (97.1)	NS
Dyslipidemia, n (%)	7 (18.9)	6 (17.6)	NS
T2DM, n (%)	10 (27)	7 (20.6)	NS
Hypertension, n (%)	12 (32.4)	10 (29.4)	NS
BMI, median (q25-q75)	29 (26.5-31.1)	27.9 (24.6-33.2)	NS
Disease duration, media $\pm$ SD	12.4 $\pm$ 9.9	10.6 $\pm$ 9	NS
DAS28 CRP, median (q25-q75)	2.9(1.5-3.9)	2.39 (1.8-3.1)	NS
MTX n, (%)	17 (45.9)	22 (64.7)	NS
Prednisone, n (%)	27 (73)	24 (70.6)	NS
IL-1 pg/ml, median (q25-q75)	8.7 (6.7-10.1)	7.9 (6.1-9.3)	NS
TNF- α pg/ml, median (q25-q75)	76 (61-101)	76 (61-96)	NS
IL-6 pg/ml, median (q25-q75)	4.4 (4.1-4.9)	4.4 (3.9-4.8)	NS
ICAM ng/ml, median (q25-q75)	91 (61-118.5)	83.5 (61-217.2)	NS
VCAM ng/ml, median (q25-q75)	58.1 (42.1-64.8)	54.3 (35.1-65.9)	NS
MMP9 pg/ml, median (q25-q75)	811 (711-938.5)	821 (724.7-931)	NS
Remission (DAS 28-CRP<2.6), n (%)	12 (33.3)	20 (58.8)	0.032

Conclusion: In our cohort subjects in remission had a lower prevalence of CP (OR= 0.3, 0.1-0.9). No difference was found between cytokines regarding CP. Subjects with active disease had a higher level of IL-1 than subjects in remission. To our best knowledge, this is the first study to evaluate levels of cytokines in Mexican RA-subjects.

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SAT0081 BOTH OVERFAT AND MYOPENIA ARE ASSOCIATED WITH PHYSICAL DYSFUNCTION IN RHEUMATOID ARTHRITIS PATIENTS

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Background: Comprehensive disease control has been recommended by EULAR guidelines for rheumatoid arthritis (RA) which includes simultaneous achievement of stringent control of the signs and symptoms of inflammation, the absence of radiographic progression and normal physical function. Identifying those patients at high risk of disability at a sufficiently early stage of their disease course presents a major challenge. The associations of body mass index (BMI) and body composition (BC) with physical activity function in RA patients still obscure.

Objectives: To investigate the characteristics of BC and BMI in RA patients and their association with physical activity function.

Methods: Consecutive RA patients were recruited and clinical data including disease activity, function and radiographic assessment were collected. BC was assessed by bioelectric impedance analysis. Overfat was defined by body fat percentage (BF%) as $\geq 25\%$ for men and $\geq 35\%$ for women. Myopenia was defined by appendicular skeletal muscle mass index (ASMI) $\leq 7.0\text{kg/m}^2$ in men and $\leq 5.7\text{kg/m}^2$ in women. Subjects were categorized by BMI as underweight ($\text{BMI}<18.5\text{ kg/m}^2$), normal weight ($18.5\text{ kg/m}^2\leq\text{BMI}<24\text{ kg/m}^2$), overweight ($24\text{ kg/m}^2\leq\text{BMI}<28\text{ kg/m}^2$) and obese ($\text{BMI}\geq 28\text{ kg/m}^2$) according to Chinese criteria. Physical dysfunction was defined by HAQ-DI ≥ 0.5 .

Results: There were 516 RA patients (mean age 49.8 ± 12.9 years old with 83% women) recruited, and 37% with physical dysfunction. Compared with those with normal physical function, RA patients with physical dysfunction