for further research in order to identify the reasons of non-active disease activity in patients classified clinically as in moderate or severe disease activity.

REFERENCE:

- [1] Jeka S, Dura M, Zuchowski P, Zwierko B, Wojciechowski R. The role of ultrasonography in monitoring long-standing rheumatoid arthritis: a pilot study. *Reumatologia* 2017;55(4):177-82.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.6096

SAT0132

COMORBIDITIES AFFECT THE RETENTION RATE BUT NOT THE CLINICAL RESPONSE IN A COHORT OF RHEUMATOID ARTHRITIS PATIENTS TREATED WITH TUMOR NECROSIS FACTOR INHIBITORS.

E. G. Favalli¹, M. Biggioggero¹, A. Becciolini¹, C. Crotti¹, L. Sinigaglia¹.

¹Department of Rheumatology, Gaetano Pini Institute, Milano, Italy

Background: Rheumatoid arthritis (RA) is frequently complicated by other comorbid diseases that may drive therapeutic strategy or interfere with achieving clinical response.

Objectives: To retrospectively evaluate the impact of comorbidities on treatment choice, 12-month clinical response, and 24-month retention rate in a cohort of RA patients treated with a first-line subcutaneous tumor necrosis factor alpha inhibitor (TNFi).

Methods: Study population was extracted from a local registry which included all RA patients receiving adalimumab (ADA) or etanercept (ETN) as first-line biologic drug between January 2001 and December 2013. The prevalence of common RA comorbidities was computed and the study population was stratified according to Rheumatic Disease Comorbidity Index (RDICI) RDICI=0 vs RDICI≥1 for evaluating the role of comorbidities on the choice between ETN and ADA; the prescription of concomitant methotrexate (MTX); and the impact of comorbidities on 1-year Disease Activity Score 28 (DAS28-ESR) remission and EULAR good-moderate response rates. The 24-month retention rate was computed by the Kaplan-Meier method and a Cox proportional hazard model was developed to examine the role of RDICI and other baseline factors as predictors of TNFi persistence.

Results: 310 RA patients (153 ADA and 157 ETN) were included (female 82.1%, mean±standard deviation (SD) age 53.6±13.1 years, mean disease duration 11.6±9.2 years, mean baseline DAS 28.5±1.21, RF positivity 76.4%, mean HAQ 1.39±0.56). 41.2% of patients had at least one comorbidity (overall mean RDICI 0.73) and the prevalence of conditions is reported in table 1. The proportion of patients with RDICI≥1 was similar in the subgroup receiving or not concomitant MTX (55.1% versus 44.8%, respectively; p=0.57) and similar (p=0.22) in patients treated with ADA (44.8%) or ETN (37.8%). No individual comorbidity was associated with the prescription of MTX or the choice between the two TNFis. No difference was found in the rates of both EULAR good-moderate response (61.3% vs 53.7%, p=0.175) and DAS28-ESR remission (31.4% vs 27.2%, p=0.463) according to baseline RDICI score. On the other hand, elevated RDICI is a predictor of biologic drug discontinuation (Hazard Ratio [HR] 1.17, confidence interval [95% CI] 1.00-1.37; p=0.04), whereas treatment with ETN (HR 0.50, 95% CI 0.35-0.71; p<0.001) and concomitant MTX (HR 0.57, 95% CI 0.40-0.81; p=0.002) were both associated with a lower risk of TNFi withdrawal.

COMORBIDITY	PREVALENCE (n=310)
Osteoporosis (no fractures)	24.5%
Hypertension	20.3%
Depression	11.8%
Cardiovascular disease	10.6%
Lung disease	7.9%
Fibromyalgia	7.6%
Autoimmune Thyroid disease	5.8%
Dyslipidemia	5.5%
Gastrointestinal disorders	5.1%
Diabetes	3.3%
Osteoporotic fractures	2.4%
Neurological disorders	1.8%
History of malignancy	0.3%

Conclusions: in our real-life experience, the baseline presence of comorbidity seemed to not influence the prescription of concomitant MTX and to not drive the choice between ADA and ETN. Comorbidities did not affect 1-year clinical response, but were associated with a higher risk of TNFi discontinuation over a 2-

year follow-up period. The use of ETN and concomitant treatment with MTX were both strong predictors of drug persistence.

REFERENCE:

1. England BR, Sayles H, Mikuls TR, et al. Validation of the rheumatic disease-comorbidity index. *Arthritis Care Res* 2015;67(6):865-72.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.4412

SAT0133

PREVALENCE OF TYPE 2 DIABETES AND EVALUATION OF PATIENT CHARACTERISTICS AMONG PATIENTS WITH AND WITHOUT RA FROM COMMUNITY RHEUMATOLOGY CLINICS

E. Alemao¹, L. Ferri¹, D. Paul¹, A. Marshall¹, L. McDonald², A. Rao³, V.

R. Anupindi⁴, G. Craig⁵, K. Knapp⁵. ¹Bristol-Myers Squibb, Princeton, United States; ²Bristol-Myers Squibb, Uxbridge, United Kingdom; ³MuSigma, Bangalore, India; ⁴MuSigma, Princeton; ⁵Discus Analytics LLC, Spokane, United States

Background: RA and type 2 diabetes (T2D) have common core pathophysiologic pathways, such as insulin resistance and increased glycated end products related to endothelial dysfunction, which may portend cardiovascular disease.¹ Currently there is limited real-world evidence of T2D prevalence among patients (pts) with RA.

Objectives: To estimate the prevalence of T2D and insulin resistance among pts with RA vs control (osteoarthritis [OA] pts). To evaluate characteristics among RA pts with/without T2D.

Methods: A retrospective study was conducted on a subset of the JointMan database (an electronic medical record of >6000 pts from >10 providers. At each visit, diagnosis, medications, test results, co-morbidities and demographic data were collected. Pts aged ≥18 years with ≥2 diagnoses of RA or satisfying ACR criteria from 1 Jan 2009 to 30 Nov 2017 were included with a control group (pts with ≥2 OA diagnoses in the same period). Pts were considered to have T2D if they had a diagnosis code, diabetic medications prescription, HbA1c ≥6.5%, random glucose test ≥200 mg/dL or prior report of T2D. Between-group prevalence was compared using a chi-squared test and characteristics of pts with/without T2D were compared using Fisher's exact, chi-squared and Mann-Whitney tests.

Results: Data were analysed from 4181, 1157 and 1626 pts in RA-only, OA-only and dual (RA plus OA) cohorts, respectively. The RA-only cohort was younger and had a lower proportion of white pts compared with other cohorts (Table). T2D prevalence was significantly higher in the dual cohort (24.3%, n=395) vs RA-only (16.2%, n=676; p<0.001) and OA-only cohorts (10.5%, n=121; p<0.001). T2D prevalence was significantly higher in the RA-only vs OA-only cohorts (p<0.001). Sicca and Sjögren's syndromes were more prevalent co-morbidities in pts with RA only with vs without T2D (16.3 vs 13.0%; p=0.023) and a similar trend was observed for thyroid disorder (6.4 vs 3.7%; p=0.001).

Table 1. Pt Characteristics by Cohort

	RA only (n=4181)		OA only (n=1157)		Dual (RA plus OA) (n=1626)	
	With T2D (n=676)	No T2D (n=3505)	With T2D (n=121)	No T2D (n=1036)	With T2D (n=395)	No T2D (n=1231)
Age (years), mean (SD)	59.6 (13.5)	59.6 (14.8)	68.6 (9.8)	65.4 (11.4)	64.7 (10.5)	64.5 (11.1)
Female, n (%)	504 (74.6)	2643 (75.4)	83 (68.8)	761 (73.5)	294 (74.4)	943 (76.6)
Race, n (%)						
American Indian or Alaska Native	29 (4.3)	71 (2.0)	6 (5.0)	9 (0.9)	12 (3.0)	27 (2.2)
White	521 (77.1)	2579 (73.6)	105 (86.8)	921 (88.9)	363 (91.9)	1127 (91.6)
Co-morbidities, n (%)						
Sicca/Sjögren's syndromes	110 (16.3)	456 (13.0)	20 (16.5)	117 (11.3)	92 (23.3)	356 (28.9)
Thyroid disorders	43 (6.4)	128 (3.7)	3 (2.5)	65 (6.3)	27 (6.8)	68 (5.5)
Charlson Comorbidity Index, mean (SD)	1.02 (0.15)	1.01 (0.18)	1.05 (0.34)	1.01 (0.12)	1.01 (0.14)	1 (0.09)

Conclusions: A higher prevalence of T2D was observed in pts with RA compared with controls. In addition, co-morbidities of Sjögren's syndrome and thyroid disorder were higher in T2D pts with RA but not for dual RA plus OA.

REFERENCE:

1. de Groot L, et al. *Arthritis Res Ther* 2011;13:R205.

Disclosure of Interest: E. Alemao Shareholder of: Bristol-Myers Squibb, Employee of: Bristol-Myers Squibb, L.Ferri Employee of: Bristol-Myers Squibb, D. Paul Employee of: Bristol-Myers Squibb, A. Marshall Share holder of: Bristol-Myers Squibb, Employee of: Bristol-Myers Squibb, L. McDonald Employee of: Bristol-Myers Squibb, A. Rao Consultant for: Bristol-Myers Squibb, V. Anupindi Consultant for: Mu Sigma, G.Craig Share holder of: Discus Analytics, Grant/ research support from: Bristol-Myers Squibb, Consultant for: Premera Blue Cross/ Blue Shield of Washington and Alaska, Celgene, Bristol-Myers Squibb, Genentech, Novartis, Employee of: Arthritis Northwest, Paid instructor for: Washington State University Elson Floyd School of Medicine; University of Washington, Speakers bureau: Bristol-Myers Squibb, UCB, Genentech, Celgene, Novartis, Abbvie, Sanofi/Regeneron, Eli Lilly, K. Knapp Shareholder of: Discus Analytics, LLC, Employee of: Discus Analytics, LLC
DOI: 10.1136/annrheumdis-2018-eular.2582

SAT0134 MORTALITY AND MULTIPLE CAUSES OF DEATH IN RHEUMATOID ARTHRITIS PATIENTS. RESULTS FROM A LARGE POPULATION-BASED COHORT IN THE VENETO REGION, 2010-2015.

F. Ometto¹, U. Fedeli², C. Botsios³, E. Schievano², M. C. Corti², L. Punzi¹.
¹Department of Medicine - DIMED, University of Padova; ²Epidemiological Department, Veneto Region; ³Department of Medicine - DIMED, University of Padova, Padova, Italy

Background: Mortality rates in patients with rheumatoid arthritis (RA) are 1.5-1.6 fold higher than in the general population^{1,2}. No recent data on mortality in large cohorts of RA patients in Italy are available.

Objectives: The aim of this study was to assess standardized mortality ratios (SMRs) and multiple causes of death in RA subjects living in the Veneto Region between 2010 and 2015.

Methods: We identified in the electronic archive of the Veneto Region a cohort of patients aged 20-89 years who were exempt from copayment for RA in January 2010, and linked them with the archive of causes of deaths of the period 2010-2015. The record-linkage was performed on previously anonymized records. In the Veneto Region a copy of all death certificates is transmitted to the Regional Epidemiology Service for coding of causes of death according to the International Classification of Diseases, 10th Edition. Each subject was followed from 1st January 2010 either until death, or 90 years of age, or 31st December 2015, whichever came first.

In the Veneto Region, the archive of causes of death include all diseases mentioned in the death certificate, and the selection of the underlying cause of death (UCOD) is performed by means of the Automated Classification of Medical Entities, a computer program developed by the US National Center for Health Statistics. SMRs with 95% confidence intervals, were computed as the ratios between deaths observed in the cohort, and those expected according to age- and gender-specific regional mortality rates.

Number of deaths and standardized mortality ratio (SMR) with 95% Confidence Interval (CI)		
	Deaths (n)	SMR (95% CI)
Certain infectious and parasitic diseases (A00-B99)	88	2.34 (1.88-2.89)
Septicemia (A40-A41)	66	3.07 (2.37-3.90)
Neoplasms (C00-D48)	519	0.98 (0.90-1.07)
Diseases of the blood and blood-forming organs (D50-D89)	23	3.22 (2.04-4.83)
Endocrine, nutritional and metabolic diseases (E00-E90)	47	0.96 (0.73-1.25)
Diabetes mellitus (E10-E14)	53	0.93 (0.67-1.26)
Mental and behavioural disorders (F00-F99)	50	0.90 (0.67-1.18)
Dementia (F00-F03)	44	0.86 (0.62-1.15)
Diseases of the nervous system (G00-G99)	61	0.89 (0.68-1.14)
Alzheimer's disease (G30)	27	0.90 (0.59-1.31)
Diseases of the circulatory system (I00-I99)	783	1.56 (1.45-1.67)
Hypertensive diseases (I10-I15)	101	1.51 (1.23-1.83)
Ischemic heart diseases (I20-I25)	247	1.51 (1.33-1.71)
Other heart diseases (I00-I09, I26-I51)	201	1.64 (1.42-1.88)
Cerebrovascular diseases (I60-I69)	182	1.43 (1.23-1.65)
Diseases of the respiratory system (J00-J99)	177	1.83 (1.57-2.12)
Pneumonia (J12-J18)	61	2.22 (1.70-2.86)
Chronic lower respiratory diseases (J40-J47)	54	1.47 (1.10-1.92)
Interstitial pulmonary diseases (J84)	20	3.47 (2.12-5.36)
Diseases of the digestive system (K00-K93)	117	1.93 (1.60-2.32)
Vascular disorders of intestine (K55)	21	2.40 (1.48-3.66)
Diseases of liver (K70-K76)	20	0.95 (0.58-1.47)
Diseases of the musculoskeletal system (M00-M99)	149	17.3 (14.7-20.4)
Rheumatoid arthritis (M05-M06)	130	63.3 (52.9-75.2)
Diseases of the genitourinary system (N00-N95)	27	1.29 (0.85-1.88)
External causes of mortality (V01-Y84)	70	1.65 (1.28-2.08)
Falls (W00-W19)	20	1.95 (1.19-3.01)
All causes	2142	1.42 (1.36-1.48)

Results: Overall 16,098 residents diagnosed with RA and aged 20-89 years were enrolled in the cohort. Follow-up was complete for above 99% of study subjects. The overall follow-up amounted to 88,599 person-years, with 2,142 registered decedents. The most common causes of death were circulatory diseases (36.6%), neoplasms (24.2%), and respiratory diseases (8.3%). SMR in RA

subjects was 1.42 (1.36-1.48). Mortality was significantly increased from circulatory, respiratory, digestive, infectious, hematological diseases and falls (figure 1). Mortality from neoplasms was similar to that expected based on rates from the general population. RA was selected as the underlying cause of death in 6.1% of all deaths in the cohort and was mentioned in 25.4% of death certificates.

Conclusions: Overall, a 42% excess risk of death could be observed among patients with RA in the Veneto Region. These data confirm results from previous studies in large cohorts of RA subjects [1,2].

REFERENCES:

- [1] Sokka T, Abelson B, Pincus T. Mortality in rheumatoid arthritis: 2008 update. *Clin Exp Rheumatol* 2008;26(Suppl 51):S35-61.
- [2] van den Hoek J, Boshuize HC, Roorda LD, et al. Mortality in patients with rheumatoid arthritis: a 15-year prospective cohort study. *Rheumatol Int* 2017;37:487-493.

Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2018-eular.4307

SAT0135 CYTOKINE ACTIVATION AND FORMATION OF NEPHROPATHY IN EARLY RHEUMATOID ARTHRITIS: CLINICAL AND PATHOPHYSIOLOGICAL PARALLELS

D. Rekalov¹, G. Prytkova¹, R. Kulynych¹. ¹Rheumatology, Zaporizhzhia Regional Clinical hospital, Zaporizhzhia, Ukraine

Background: RA is characterized by not only joints destruction, but also of other organs and systems, particularly, lungs, heart, blood vessels, kidneys, etc. Nephropathy is currently the leading symptomatic complex of Rheumatoid Arthritis (RA), with upto 73% frequency, being identified as a prognostic criterion of disease severity and outcome. The development of renal insufficiency, as a rule, is the main cause of the fatal outcome of RA without possibility of regular hemodialysis to such patients.

Objectives: of the study are to determine pathophysiological relation between cell-mediated immunity (tumornecrosis factor-alpha (TNF-α)) activation and renal dysfunction in the patients with early RA (eRA).

Methods: We analyzed the data from 35 early RA patients of average age of 50,71±2,25 years (ranged 18 - 76 years, 80% of women) with 9,21±0,43 months mean duration of the disease by the time of the study initiation. Urine and blood tests were performed to verify the main indicators of kidney function and inflammation cytokines significant interaction.

Results: All signs of renal dysfunction at the baseline in the patients with eRA were associated with glomerular filtration rate decrease and excretion of urine protein increase. Dynamics of albumin urine, according to the analysis of variance for one-factor scheme, were significantly determined by the state of disease activity, reflecting the severity of joint damage. High urine β-2-microglobulin level was significantly associated with the expression rate of main inflammatory cytokines as per binary regression analysis.

Table 1. Differences in the renal function features in the patients with early RA depending on the TNF-α expression (M±m (95%- confidence interval)).

Indicator, units of measure	Patients with RA (n=35)			The level of significance of differences between groups
	The TNF-α level less than the median 170 pg/ml (n = 18)	The TNF-α level higher than the median 170 pg/ml (n = 17)	In general, for the group (n = 35)	
GFR Cockcroft-Gault, ml / min	135,66±4,15	121,58±5,55	129,54±3,95	p<0,05
Albumin urine, mg/L	70,48±15,09 (40,3-100,67)	124,27±15,02 (94,22-154,31)	70,48±15,09 (40,3-100,67)	p<0,05
β ₂ -microglobulin urine, μg/L	983,28±72,39 (758,5-1128,06)	1438,53±100,21 (1238,11-1638,95)	1283,28±72,39 (1138,5-1428,06)	p<0,05
The ratio of albumin / creatinine urine, mg / g creatinine	38,79±3,8 (31,2-56,39)	95,93±14,9 (71,13-110,73)	83,83±9,63 (64,58-103,09)	p<0,05
Glomerular penetration index, mg/l	0,42±0,04 (0,34-0,5)	1,23±0,24 (0,74-1,72)	0,81±0,14 (0,54-1,09)	p<0,05

Conclusions: The obtained dependence showed the dynamics of expression of tubular disorders in early RA with a progressive deterioration which did associate with the levels of TNF-α expression, and variety of the urine microglobulin rates in the interval 200-350 μg/L. Reliable correlation (r=0.51, p<0.05) between beta-2-microglobulinuria and TNF-α levels was clearly shown, revealing the relationship described by the formula $MGU = -481 + 937 \times \log_{10} (TNF-\alpha)$ as per regression analysis. The severity of tubular damage in early RA is associated with TNF-α expression, especially in the patients with TNF-α above 250 pg/mL, when microalbumin urine rates were significantly higher (p=0.00043). We identified robust data that in the early RA patients with high TNF-α, the number of reported cases of microalbumin urine was significantly higher than in those with low levels.