Acknowledgements: We would like to thank Michaela Reiser for technical support. This study was supported by the Deutsche Forschungsgemeinschaft (DFG) PANDORA FOR2886

Disclosure of Interests: Nicola Pfeuffer: None declared, Johannes Knitza Consultant of: consulting work for Abaton GmbH, Manuel Grahammer: None declared, David Simon: None declared, Fabian Hartmann: None declared, Louis Schuster: None declared, Koray Tascilar: None declared, Gerhard Krönke: None declared, Georg Schett: None declared, Arnd Kleyer: None declared.

DOI: 10.1136/annrheumdis-2023-eular.2304

POS0324

OBESITY IS A RISK FACTOR FOR POOR RESPONSE TO TREATMENT IN EARLY RHEUMATOID ARTHRITIS - A NORD-STAR SPIN-OFF STUDY

Keywords: Randomized control trial, Prognostic factors, Rheumatoid arthritis

V. Dubovyk[1], G. Gröndal[2,3], B. Gudbjornsson[2,3], E. A. Haavardsholm[4], M. Heiberg[4], M. L. Hetland[5,6], K. Hørslev-Petersen[7,8], M. C. Kapetanovic[9], A. Kastbom[10], J. Lampa[11], K. Lend[11,12], D. Nordström[13], M. Nurmohamed[12,14], M. Rizk[15], A. Söderbergh[16], T. Uhlig[4,17], M. Østergaard[5,6], R. Van Vollenhoven[11,12], A. Rudin[1], C. Maglio[1]. *[1]University of Gothenburg, Rheumatology and Inflammation research, Gothenburg, Sweden*; *[2]Landspitali University Hospital, Centre for Rheumatology Research, Reykjavik, Iceland*; *[3]University of Iceland, Faculty of Medicine, Reykjavik, Iceland*; *[4]Diakonhjemmet Hospital, Center for treatment of Rheumatic and Musculoskeletal Diseases (REMEDY), Oslo, Norway*; *[5]University of Copenhagen, Department of Clinical Medicine, Faculty of Health Sciences, Copenhagen, Denmark*; *[6]Rigshospitalet, Copenhagen Center for Arthritis Research (COPECARE) and DANBIO Center for Rheumatology and Spine Diseases, Glostrup, Denmark*; *[7]University Hospital of Southern Denmark, Danish Hospital for Rheumatic Diseases, Sønderborg, Denmark*; *[8]University of Southern Denmark, Department of Regional Health Research, Odense, Denmark*; *[9]Skåne University Hospital, Departament of Clinical Sciences, Lund, Sweden*; *[10]Linköping University, Department of Biomedical and Clinical Sciences, Linköping, Sweden*; *[11]Karolinska Institute, Department of Medicine, Rheumatology Unit, Center for Molecular Medicine (CMM), Stockholm, Sweden*; *[12]Amsterdam University Medical Centers, Department of Rheumatology and Amsterdam Rheumatology Center, Amsterdam, Netherlands*; *[13]Helsinki University Hospital, Department of Rheumatology, Helsinki, Finland*; *[14]Amsterdam Rheumatology & immunology center location Reade, Rheumatology, Amsterdam, Netherlands*; *[15]Värmlands Hospital, Rheumatology Clinic, Västerås, Sweden*; *[16]Örebro University Hospital, Departament of Rheumatology, Örebro, Sweden*; *[17]University of Oslo, Faculty of Medicine, Oslo, Norway*

Background: Several therapeutic options are currently available to treat rheumatoid arthritis (RA); however, the response to treatment is highly variable, and not all patients achieve clinical remission [1]. Obesity is suggested to lower the chances of remission [2], even though a recent observational study has shown that obesity is not associated with reduced response to conventional synthetic anti-rheumatic drugs in patients with early RA [3].

Objectives: The aim of this study is to determine if obesity affects the response to treatment in participants with early RA.

Methods: This report includes 393 Swedish patients from the NORD-STAR study, which is a multicenter, randomized trial on 812 patients with untreated early RA [4]. The 393 participants have been randomized at baseline into 4 arms of treatment: methotrexate combined with (1) prednisolone, (2) certolizumab, (3) abatacept, or (4) tocilizumab. Scores for disease activity and blood samples were measured and collected before randomization and at 24-week follow-up. Multiple linear regression and binary logistic regression analyses were performed after adjustment for sex, baseline age, anti-citrullinated peptide antibody status, current smoking, disease activity score- C-reactive protein (DAS28-CRP), and treatment randomization. The outcomes for this report were: DAS28-CRP ≤3.2 (DAS28-CRP low disease activity), DAS28-CRP ≤2.6 (DAS28-CRP remission) and clinical disease activity index (CDAI) ≤2.8 (CDAI remission).

Results: In total, 75 (19%) participants had obesity at baseline, defined as body mass index (BMI) ≥30 kg/m^2. The percentage of patients with obesity in each treatment group was (1) 25%, (2) 15%, (3) 19% and (4) 19%. At baseline, there were no differences in terms of disease activity indices and inflammation parameters between patients with BMI <30 vs. ≥30 kg/m^2, except for the number of swollen joints (SJC28), which was slightly lower in those with obesity (mean+SD, 8±5 vs. 9±5, p=0.018). At 24-week follow-up, patients with obesity had higher disease activity indices and inflammation parameters compared to patients with lower BMI (Table 1). Moreover, patients with obesity had a lower chance of achieving response to treatment as measured by DAS28-CRP ≤3.2 (OR 0.5, 95% CI 0.2 - 0.9, p=0.025), DAS28-CRP ≤2.6 (OR 0.4, 95% CI 0.2 - 0.6, p <0.001) and CDAI remission (OR 0.4, 95% CI 0.2 - 0.8, p=0.006), compared to patients with lower BMI (Figure 1). BMI-treatment interaction was not significant for any score of disease activity.

Conclusion: In patients with early RA, obesity was not associated with higher disease activity before treatment initiation. However, 24 weeks after treatment, patients with obesity had higher disease activity and lower chances to respond to therapy compared to patients with lower BMI irrespective of treatment.

Table 1. Disease activity scores and inflammatory parameters at 24 weeks follow-up stratified by baseline BMI

	BMI (kg/m^2)		P-values
	< 30	≥ 30	
DAS28-ESR	2.2±1.1	2.8±1.2	<0.001
DAS28-CRP	2.1±0.9	2.6±1.0	<0.001
CDAI	5.0±5.3	7.5±6.4	0.001
SJC28	0.7±1.4	0.9±1.4	0.418
TJC28	1.8±3.1	3.0±4.2	0.256
Global VAS, patient, mm	17±18	25±22	<0.001
Global VAS, investigator, mm	8±9	11±11	0.018
ESR, mm/h	11±10	15±16	0.031
CRP, mg/L	2.2±3.1	4.4±7.1	<0.001

Abbreviations: TJC28, tender joint count; VAS, visual analogue scale of pain; ESR, erythrocyte sedimentation rate.

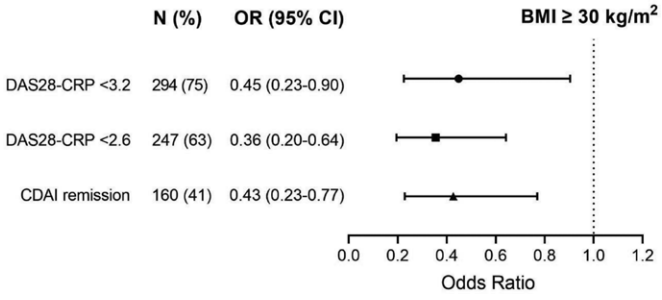

Figure 1. Multivariable binary logistic regression analysis for response to treatment at 24 weeks (reference category: BMI< 30 kg/m^2)

REFERENCES:

[1] Smolen, J.S., et al., Ann Rheum Dis, 2022. doi: 10.1136/ard-2022-223356
[2] Liu, Y., et al., Arthritis Care Res (Hoboken), 2017. doi: 10.1002/acr.22932.
[3] Dey, M., et al., Rheumatology (Oxford), 2021. doi: 10.1093/rheumatology/keab389.
[4] Hetland, M.L., et al., BMJ, 2020. doi: 10.1136/bmj.m4328.

Acknowledgements: We would like to acknowledge the NORD-STAR Study group.

Disclosure of Interests: Violetta Dubovyk: None declared, Gerdur Gröndal: None declared, Björn Gudbjornsson Speakers bureau: Novartis and Nordic-Pharma, Consultant of: Novartis, Espen A Haavardsholm: None declared, Marte Heiberg: None declared, Merete Lund Hetland Grant/research support from: Research grants from Abbvie, Biogen, BMS, Celltrion, Eli Lilly, Janssen Biologics B.V, Lundbeck Fonden, MSD, Medac, Pfizer, Roche, Samsung Biopies, Sandoz, Novartis, Kim Hørslev-Petersen: None declared, Meliha C Kapetanovic: None declared, Alf Kastbom: None declared, Jon Lampa: None declared, Kristina Lend: None declared, Dan Nordström: None declared, Michael Nurmohamed: None declared, Milad Rizk: None declared, Annika Söderbergh Consultant of: Roche, Grant/research support from: Roche, Till Uhlig Consultant of: Consultant for Pfizer and UCB., Mikkel Østergaard Speakers bureau: Abbvie, BMS, Boehringer-Ingelheim,

Celgene, Eli-Lilly, Galapagos, Gilead, Hospira, Janssen, MEDAC, Merck, Novartis, Novo, Orion, Pfizer, Regeneron, Roche, Sandoz, Sanofi and UCB., Consultant of: Abbvie, BMS, Boehringer-Ingelheim, Celgene, Eli-Lilly, Galapagos, Gilead, Hospira, Janssen, MEDAC, Merck, Novartis, Novo, Orion, Pfizer, Regeneron, Roche, Sandoz, Sanofi and UCB, Grant/research support from: Mikkel Østergaard has received research grants from Abbvie, BMS, Merck, Novartis and UCB, Ronald van Vollenhoven Speakers bureau: Speaker, for which institutional and/or personal honoraria were received: AbbVie, AstraZeneca, BMS, Galapagos, GSK, Janssen, Pfizer, UCB., Consultant of: Consultancy, for which institutional and/or personal honoraria were received: AbbVie, AstraZeneca, Biogen, BMS, Galapagos, Janssen, Pfizer, UCB., Grant/research support from: Research Support (institutional grants): BMS, UCB. Support for Educational programs (institutional grants): MSD, Novartis, Pfizer, Roche, Sanofi, UCB, Anna Rudin: None declared, Cristina Maglio: None declared.

DOI: 10.1136/annrheumdis-2023-eular.3036

POS0325 RHEUMATOID ARTHRITIS PATIENTS AND WEATHER PATTERNS: A RHUMADATA™ STUDY OF 14,200 PATIENT-REPORTED OUTCOMES MATCHED WITH METEOROLOGICAL DATA

Keywords: Real-world evidence, Patient reported outcomes, Rheumatoid arthritis

M. Joly-Chevrier[1], L. Coupal[2], L. Choquette Sauvageau[2], D. Choquette[2].
[1]Université de Montréal, Médecine, Montréal, Canada; *[2]Institut de rhumatologie de Montréal, Rhumatologie, Montréal, Canada*

Background: Anecdotally, patients with rheumatoid arthritis (RA) report seasonal changes in their symptoms. Anatomically, atmospheric pressure variations are captured by baroreceptors, which may generate this perception.
Objectives: To correlate seasonal changes with subjective assessment scores.
Methods: Environment Canada provided meteorological data from 2015 to 2020 for Montreal (Dorval). Hourly measurements of temperature, relative humidity, and pressure were available. We matched daily meteorological data with patient-reported pain (PtP), fatigue (PtF), and disease activity (PtGA) assessments from RHUMADATA™ participants. We calculated daily means, minimums, and maximums, as well as changes from the previous day for the winter and summer months. For the years 2015 to 2020, Pearson Correlation Coefficients (PCCs) were computed between Patient Reported Outcomes (PROs) and weather measurements. Optimal regression models (OM) were derived based on Akaike's Information Criteria (AIC).
Results: RA patients' PROs were matched with meteorological data (7411 winter measurements and 6789 summer measurements). At the time of the first PRO assessment, the mean age and disease duration were 60.1(13.5) and 10.5 (10.4), and 74.6% of patients were women. Patients provided an average of 14 PROs. In winter, PtP, PtF and PtGA were 3.48 (2.79), 3.49 (2.96) and 3.42 (2.66), and 3.45 (2.81), 3.46 (2.96) and 3.33 (2.63) in summer. PtGA was statistically higher in winter (p-value=0.0379). PCC and OMs are shown in Table 1. In winter, all correlations are very weak (less than 0.19). PtGA is not correlated with any weather measures in both winter and summer. PtP and PtF correlate with some weather measures in both seasons.
Conclusion: In this study of 14200 wheather-matched PROs, mean PtP, PtF, and PtGA scores are higher in winter among RA patients, but the differences are small. Few meteorological measures are significantly correlated with PROs, and all correlations are very weak. Meteorological variables explain a quite small percentage of the variation in PRO variation (small R-square). No consistent relationship between PROs and meteorological conditions is reported by other smaller studies.
REFERENCES: NIL.
Acknowledgements: NIL.
Disclosure of Interests: Maxine Joly-Chevrier: None declared, Louis Coupal: None declared, Loïc Choquette Sauvageau: None declared, Denis Choquette Speakers bureau: Abbvie, Amgen, Eli Lilly, Fresenius Kabi, Novartis, Pfizer, Sandoz, Tevapharm, Consultant of: Abbvie, Amgen, Eli Lilly, Fresenius Kabi, Novartis, Pfizer, Sandoz, Tevapharm, Grant/research support from: Abbvie, Amgen, Eli Lilly, Fresenius Kabi, Novartis, Pfizer, Sandoz, Tevapharm.
DOI: 10.1136/annrheumdis-2023-eular.1455

POS0326 POLYGENIC RISK SCORE OF RHEUMATOID ARTHRITIS PREDICTS BONY EROSION

Keywords: Prognostic factors, Rheumatoid arthritis, Genetics/Epigenetics

T. S. Wu[1], Y. J. Chen[1], W. N. Huang[2], Y. H. Chen[2], Y. M. Chen[1,2]. *[1]Taichung Veterans General Hospital, Department of Medical Research, Taichung, Taiwan, Republic of China*; *[2]Taichung Veterans General Hospital, Division of Allergy, Immunology and Rheumatology, Taichung, Taiwan, Republic of China*

Background: Polygenic risk scores (PRS) are widely used to estimate disease risks and predict clinical outcomes. However, differences exist among PRS derived from genome-wide association study (GWAS) of ethnicities across the globe.
Objectives: We aimed to build up PRS for predicting the development of rheumatoid arthritis (RA) in a Taiwanese population and investigate whether PRS of RA may be associated with bone erosion.
Methods: We constructed PRS using GWAS data from a hospital-based cohort of 2044 RA cases and 7950 non-RA controls participating in the Taiwan Precision Medicine Initiative. LDpred2, PLINK and PRsice2 models were used to evaluate the area under curve (AUC) of RA susceptibility in both training and testing datasets (1022 RA cases and 3975 controls).

Table 1. Pearson correlation coefficients and "best" regression models.

		Winter (Dec 1st to Mar 31st)						Summer (Jun 1st to Sep 30th)					
		PtP		PtF		PtGA		PtP		PtF		PtGA	
		PCC[1,2]	OM[3]	PCC	OM	PCC	OM	PCC[1]	OM	PCC	OM	PCC	OM
R^2			0.0016		0.0023		0.0010		0.0004		0.0016		0.0001
Intercept			7.637		9.934		3.317		3.515		3.521		3.457
Temperature	Min	-0.011	0.043	-0.024 δ		-0.015		0.005		-0.001		0.006	
	Max	-0.018		-0.030 γ		-0.023		0.001		0.002		0.000	
	Mean	-0.016	-0.054	-0.030 γ	-0.015	-0.021		0.004		0.003		0.004	
	Mean-Mean[4]	0.006		0.008		0.000		0.000		-0.018		-0.003	
	Min-Max[4]	0.002	0.013	0.003		0.002		0.003		-0.003		-0.004	
	Max-Min[4]	0.013		0.019	-0.017	0.008		-0.004		-0.030 δ	-0.035	-0.003	
Relative humidity	Min	0.024 δ		0.026 δ		0.012		-0.005		-0.015		-0.010	
	Max	0.012		0.022		0.004	-0.006	0.000		-0.018		-0.013	
	Mean	0.027 δ		0.028 δ		0.015	0.009	-0.007		-0.021		-0.015	
	Mean-Mean	0.014		0.013		0.012		-0.006		-0.008		-0.006	
	Min-Max	-0.009		-0.004		-0.006		0.001		0.005		-0.001	
	Max-Min	-0.020		0.025 δ		0.014		-0.006		-0.011		-0.008	
Atmospheric pressure	Min	-0.015		-0.022	-0.006	-0.012		-0.007		0.011	0.048	0.006	
	Max	-0.013	-0.004	-0.020		-0.015		-0.006		0.002		-0.001	0.003
	Mean	-0.013		-0.020		-0.015		-0.006		0.006	-0.045	0.002	
	Mean-Mean	-0.013		-0.020		-0.012		0.001		0.019		0.014	
	Min-Max	-0.008		-0.019		-0.014		0.000		0.012		0.009	
	Max-Min	-0.013		-0.019		-0.005		0.003	0.011	0.026 δ		0.020	

[1] PCC=Pearson Correlation Coefficients. [2] γ: 0.001<p≤0.01, δ: 0.01<p≤0.05. [3] The best model was selected by computing Akaike's Information Criteria (AIC) for all possible subsets of multiple regression models for main effects. The model with the smallest AIC value is deemed the "best" model. [4] Difference from the previous day.