Objectives: To assess the occurrence and the predictive factors of subclinical and clinical atherosclerosis in patients with RA.

Methods: During 2015, consecutive patients, admitted to Italian Rheumatology Units, were assessed in GIRRCs (*Gruppo Italiano di Ricerca in Reumatologia Clinica e Sperimentale*) cohort [2]. After that, patients were followed-up in a 3-year, prospective, observational study, assessing the occurrence of subclinical (carotid and/or peripheral arteries atherosclerotic lesions detected by ultrasound imaging) and clinical atherosclerosis (myocardial infarction and/or congestive heart failure and/or cerebrovascular accidents) and possible predictive factors. McNemar test was employed to assess the changes in subclinical and clinical atherosclerosis and regression analyses exploited the ORs for the occurrence of those comorbidities.

Results: After 3 years of prospective follow-up, 797 patients (82.7% female, median age of 60 years, range 21-89) were assessed. We also observed a median RA duration of 8.35 years (range 0.1-35), 70.9% of patients showed rheumatoid factor and 55.7% ACPA. Among "traditional" CV risk factors, we observed that BMI was 27.21 ± 4.05 , 33% of patients reported smoking habit, 49.3% were affected by high blood pressure (HBP) and 12.3% by type 2 diabetes (T2D). Corticosteroids were administered in 75.5% of patients (low dosage 66.8%), methotrexate in 86.8%, hydroxychloroquine in 28.1% and biologic DMARDs in 60.7%. The remission was reached and maintained in 42.6% of patients, during the follow-up. We recorded an increased rate of subclinical atherosclerosis (70 vs 130 patients $p < 0.0001$) and clinical atherosclerosis (30 vs 46 patients, $p < 0.001$), at the end of follow-up. The multivariate regression analysis showed that T2D (OR: 4.50, 95%CI: 1.74-11.62, $p = 0.002$), HBP (OR: 2.03, 95%CI: 1.04-4.14, $p = 0.042$), ACPA (OR: 2.36, 95%CI: 1.19-4.69, $p = 0.002$) and mean values of CRP during the follow-up (OR: 1.07, 95%CI: 1.03-1.14, $p = 0.040$) were associated with subclinical atherosclerosis. Differently, the maintenance of remission was associated with a reduced risk of subclinical atherosclerosis (OR: 0.25, 95%CI: 0.11-0.56, $p = 0.001$). The multivariate regression analysis showed that T2D was associated with clinical atherosclerosis (OR: 6.21, 95%CI: 2.19-17.71, $p = 0.001$). Conversely, the maintenance of remission was associated with a reduced risk of clinical atherosclerosis (OR: 0.20, 95%CI: 0.09-0.95, $p = 0.041$).

Conclusion: The maintenance of remission was strongly associated with a reduced risk of clinical and subclinical atherosclerosis in 3-year prospective follow-up. Among "traditional" CV risk factors, T2D was significantly associated with both clinical and subclinical atherosclerosis.

REFERENCES:

- [1] Nurmohamed MT, et al. *Nat Rev Rheumatol*. 2015;11:693-704
- [2] Ruscitti P, et al. *Medicine (Baltimore)*. 2017;96:e8180.

Disclosure of Interests: Piero Ruscitti Grant/research support from: PFIZER INNOVARE 2018, Speakers bureau: MSD, BMS, SOBI, LILLY, PFIZER, Paola Cipriani Grant/research support from: ACTELION, Speakers bureau: ACTELION, Vasiliki Liakouli Grant/research support from: PFIZER, Speakers bureau: SANOFI, Daniela Iacono Speakers bureau: PFIZER, Ilenia Pantano: None declared, Giulia Maria Destro Castaniti: None declared, Nicola Maruotti Speakers bureau: N Maruotti has received speaker honoraria from Pfizer outside this work, Domenico Paolo Emanuele Margiotta: None declared, Licia Picciariello: None declared, Francesco Caso: None declared, Rosa Daniela Gremiale Grant/research support from: BMS, Consultant for: JANSSEN, CELGENE, Speakers bureau: PFIZER, JANSSEN, BMS, NOVARTIS, Fabiola Atzeni: None declared, Raffaele Scarpa Speakers bureau: ABBVIE, MSD, PFIZER, LILLY, JANSEEN, CELGENE, Federico Perosa Speakers bureau: OCCASIONALLY, Antonella Afeltra Grant/research support from: MSD, PFIZER, ABBVIE, ROCHE, UCB, Speakers bureau: MSD, PFIZER, BMS, ROCHE, SANOFI, Francesco Paolo Cantatore

Speakers bureau: PFIZER, ROCHE, Giuliana Guggino Grant/research support from: Laborest, Pfizer, Consultant for: Novartis, Abbvie, Speakers bureau: Sandoz, Francesco Cicia Grant/research support from: CELGENE, PFIZER, Consultant for: UCB, NOVARTIS, CELGENE, PFIZER, LILLY, Paid instructor for: UCB, NOVARTIS, CELGENE, PFIZER, LILLY, JANSSEN, Speakers bureau: UCB, NOVARTIS, CELGENE, PFIZER, LILLY, JANSSEN, ROCHE, AMGEN, Roberto Giacomelli Grant/research support from: Pfizer, Actelion, Speakers bureau: Actelion, Bristol-Myers Squibb, Merck Sharp & Dohme, Abbvie, Pfizer, Sobi, Roche
DOI: 10.1136/annrheumdis-2019-eular.3122

OP0091

RISK OF MEDICAL COMPLICATIONS FOLLOWING TOTAL HIP OR KNEE ARTHROPLASTY IN PATIENTS WITH RHEUMATOID ARTHRITIS: A NATIONWIDE REGISTER-BASED COHORT STUDY

René Cordtz^{1,2}, Lars Erik Kristensen², Anders Odgaard³, Søren Overgaard⁴, Lene Dreyer^{5,6}, ¹Rigshospitalet – Gentofte, Center for Rheumatology and Spine Diseases, Hellerup, Denmark; ²Bispebjerg and Frederiksberg Hospital, The Parker Institute, Frederiksberg, Denmark; ³Herlev and Gentofte University Hospital, Department of Orthopaedic Surgery, Hellerup, Denmark; ⁴Odense University Hospital, Department of Orthopaedic Surgery and Traumatology, Odense, Denmark; ⁵Aalborg University and Aalborg University Hospital, Dept. of rheumatology, Aalborg, Denmark; ⁶DANBIO, Nationwide, Denmark

Background: Total hip and total knee arthroplasty (THA/TKA) are major surgeries carrying a risk of complications. Patients with rheumatoid arthritis (RA) are at increased risk of venous thromboembolism (VTE), arterial thromboembolic events (ATE), and infections in a non-surgical setting.

Objectives: To investigate the risk of VTE, ATE, and non-surgical infection following THA/TKA in patients with RA compared with osteoarthritis (OA); and to explore the impact of biologics treatment.

Methods: In a nationwide register-based study, patients with RA and OA who had elective THA/TKA in 2000-2014 were identified in the Danish Hip Arthroplasty Register/Danish Knee Arthroplasty Register and followed up to 90 days after surgery for the occurrence of VTE, ATE, and infections. Cox models stratified on sex and type of surgery (THA vs TKA) and adjusted for age, calendar period, history of chronic obstructive pulmonary disease (COPD), diabetes mellitus (DM), cancer, VTE and CVD were carried out. Outcome information was obtained through linkage with the Danish National Patient Registry.

In DANBIO, we identified RA patients treated with biologics within 90 days preceding surgery and estimated their risk of each outcome compared with non-biologics treated RA patients in a Cox model adjusted for the propensity score (PS) of receiving biologics as a restricted cubic spline covariate. The PS was conditional on age, sex, calendar period, use of methotrexate, other csDMARDs, and/or glucocorticoids, pre-surgical DAS28, HAQ-DI, VAS physician, and COPD, DM, cancer and/or VTE.

Results: In total, 2899 and 112,571 patients with RA and OA were followed-up (Table).

Conclusion: In this nationwide cohort study, RA patients were at increased risk of infection after THA/TKA compared to OA patients, but treatment with biologics did not further increase the risk.

As seen in other studies RA patients had a lower risk of VTE following TKA when compared with OA patients, but our finding of an increased incidence of VTE in biologics-treated patients warrants further studies.

Disclosure of Interests: René Cordtz: None declared, Lars Erik Kristensen Grant/research support from: UCB, Biogen, Janssen Pharmaceuticals, and Novartis, Consultant for: Consultant for AbbVie, Amgen, Biogen, BMS, Celgene,

Table. Patient characteristics and risk of venous thromboembolism (VTE), arterial thromboembolism (ATE), and non-surgical infection following total hip or total knee arthroplasty (THA/TKA) among patients with rheumatoid arthritis (RA) compared with osteoarthritis (OA), and biologics treated compared with non-biologics treated RA patients.

	RA 2899	OA 112,571	p	Biologics treated 411	Non-biologics treated 1391	p
N						
Female	73%	58%	<0.001	73%	74%	0.43
Age at surgery, mean (s.d.)	66 (11)	69 (10)	<0.001	62 (12)	65 (10)	<0.001
Had TKA surgery	63%	44%	<0.001	67%	63%	0.09
Received thromboprophylaxis	99%	99%	0.53	97%	99%	0.002
History of VTE	3%	2%	0.001	3%	4%	0.31
Prevalent CVD	17%	15%	0.01	11%	15%	0.07
History of cancer	6%	7%	0.03	4%	6%	0.05
History of hospitalisation due to infection	10%	4%	<0.001	12%	8%	0.02
Outcome	Events, n (%)		HR (95%CI)	Events, n (%)		HR (95%CI)
VTE	25 (1.0)	1167 (1.3)	0.7 (0.5 to 1.1)	8 (1.9)	7 (0.5)	5.5 (1.7 to 18.4)
ATE	22 (0.8)	849 (0.7)	1.2 (0.8 to 1.8)	4 (1.0)	8 (0.6)	2.8 (0.7 to 11.1)
Infection	73 (2.5)	2224 (2.0)	1.3 (1.0 to 1.6)	11 (2.7)	35 (2.5)	0.9 (0.4 to 1.9)

Abbreviations: HR, hazard ratio, 95%CI, 95% confidence interval.

RA was associated with an increased risk of infection, but a lower risk of VTE ($HR_{TKA} = 0.6$, 0.3 to 1.0, $p = 0.04$). Compared with non-biologics treated, biologics-treated patients were not at increased risk of infection but had a 5-fold increased risk of VTE.

Eli Lilly, Janssen Pharmaceuticals, MSD, Novartis, Pfizer, Roche, Sanofi, and UCB Pharma., Speakers bureau: Pfizer, AbbVie, Amgen, UCB, BMS, Biogen, MSD, Novartis, Eli Lilly and Company, and Janssen Pharmaceuticals, Anders Odgaard: None declared, Søren Overgaard: None declared, Lene Dreyer Consultant for: MSD, UCB and Janssen Pharmaceuticals, Speakers bureau: MSD, UCB and Janssen Pharmaceuticals, Speakers bureau: UCB, MSD, Eli Lilly and Janssen Pharmaceuticals.

DOI: 10.1136/annrheumdis-2019-eular.490

OP0092

ASSOCIATIONS BETWEEN CLINICAL VARIABLES AND PSYCHOLOGICAL SYMPTOMS IN RHEUMATOID ARTHRITIS: A NETWORK SCIENCE PERSPECTIVE

Hsiu Yen Tung¹, Sam Norton¹, Faith Matcham¹, James Galloway¹, Matthew Hotopf¹. ¹King's College London, London, United Kingdom

Background: Rheumatoid arthritis (RA) is associated with an increased prevalence of common mental disorders, including anxiety and depression (Matcham et al. 2013). Borsboom's (2017) network theory of mental illness is gaining traction as a model for depression which incorporates biological, social and psychological aspects of depression by looking at interactions between individual symptoms and other variables within a wider network. Currently applications have been restricted to psychiatric samples, however, this model may potentially help gain a clearer understanding of the causal links clinical variables and mental health symptoms in RA.

Objectives: To study the prescriptions of NSAIDs in patients with rheumatoid arthritis (RA), psoriatic arthritis (PsA) and ankylosing spondylitis (AS) registered in ICEBIO and matched controls, and explore their relationship with disease activity measures. In addition, to explore the impact of initial TNF α -inhibitor therapy on NSAID prescription rates.

Objectives: To test the feasibility of a network analysis approach to examine associations between clinical variables and mental health symptoms in RA.

Methods: The data used are from patients attending rheumatology clinics at King's College Hospital who completed patient reported outcomes (PROs) electronically via the Integrating Mental and Physical Healthcare (IMPARTS) system. Over 1,000 patients completed PROs via IMPARTS, with a subsample of 211 extracted for this analysis where psychological screening and inflammatory markers were recorded concurrently (<14days). The screening tools used were the two-item Patient Health Questionnaire (PHQ2) and the two-item Generalised Anxiety Disorder (GAD2), which assess the core symptoms of depression and anxiety: low pleasure/interest, low mood, high anxiety, uncontrollability of worry. Additional data recorded were joint counts and visual analogue scales for pain, fatigue and global disease activity. Missing data were imputed using multiple imputation. Network analysis was conducted using the *ggraph* package in R based on the regularised correlations between variables. With a graphical network model of variables created to calculate centrality values.

Results: Figure 1 below illustrates that the symptoms with the most connections were PHQ1 (low pleasure/interest), GAD2 (uncontrollable worry), pain and global disease activity. As expected the strongest connections were between PHQ1 (low pleasure/interest) with PHQ2 (low mood), GAD1 (high anxiety) with GAD2 (uncontrollable worry), pain with patient global, tender joints with swollen joints, and ESR with CRP.

The results highlight pain and PHQ2 (low mood) as having both the highest degree (3.9 & 3.8, respectively) and betweenness centrality (22 & 10, respectively). This indicates that these are the variables with both the highest number of connections and providing the shortest pathway between other symptoms and so may act as key variables linking inflammation and mental health. Pain and global disease activity had the highest closeness centrality (0.033 & 0.032, respectively), illustrating that they have the shortest path with all other symptoms and capture the influence of both inflammation and mental health. Tender and swollen joints have weak connections to the mental health variables, suggesting that that extra-articular aspects of pain may be important.

Conclusion: Inflammation in RA does not appear to have a strong influence on mental health, with pain providing the main connection between these areas of the network. Concerning the symptoms of mental health considered, all were strongly connected but low mood provided the main connection between clinical and psychological variables. This indicates mood as potentially a key variable in RA, which is easy to monitor in routine care.

Disclosure of Interests: Hsiu Yen Tung: None declared, Sam Norton: None declared, Faith Matcham: None declared, James Galloway Consultant for: Pfizer Inc, Matthew Hotopf: None declared

REFERENCES:

Borsboom, D. (2017). A network theory of mental disorders. *World Psychiatry*, 16(1), 5-13. doi:10.1002/wps.20375 Matcham, F., Rayner, L., Steer, S., & Hotopf, M. (2013). The prevalence of depression in rheumatoid arthritis: a systematic review and meta-analysis. *Rheumatology (Oxford)*, 52(12), 2136-2148. doi:10.1093/rheumatology/ket169

DOI: 10.1136/annrheumdis-2019-eular.2095

OP0093

THE INCIDENCE AND RISK FACTOR OF NEW CAROTID PLAQUES AND THE PROGRESSION RATE OF CAROTID PLAQUES IN PATIENTS WITH RHEUMATOID ARTHRITIS IN 6 YEARS PROSPECTIVE CASE CONTROL STUDY. -TOMORROW STUDY-

Shohei Anno^{1,2}, Kentaro Inui², Tadashi Okano², Kenji Mamoto², Yuko Sugioka³, Masahiro Tada⁴, Tatsuya Koike^{3,5}, Hiroaki Nakamura². ¹Osaka social medical center, Orthopaedic Surgery, Osaka, Japan; ²Osaka City University Graduate School of Medicine, Orthopaedic Surgery, Osaka, Japan; ³Osaka City University Graduate School of Medicine, Center for Senile Degenerative Disorders (CSD), Osaka, Japan; ⁴Osaka City General Hospital, Orthopaedic Surgery, Osaka, Japan; ⁵Search Institute for Bone and Arthritis Disease (SINBAD), Shiraahama, Japan

Background: Cardiovascular disease is one of the complications of rheumatoid arthritis (RA). Patients with RA show higher rates of cardiovascular disease mortality and overall mortality compared with individuals without RA. The presence of an abnormally increased intima-media thickness (IMT) in the carotid artery and carotid plaques on carotid ultrasound are useful for assessing the presence of subclinical atherosclerosis. A greater presence of carotid artery IMT and carotid plaques is a predictor of cardiovascular disease events.

Objectives: The objective of this study was to evaluate progression of carotid plaques in 6 years by comparing 2011 and 2017, and to assess the risk factors of progression.

Methods: This study included 208 patients with RA and 204 age- and sex-matched controls (Co) in the Total Management Of Risk factors in Rheumatoid arthritis patients to IOWer morbidity and mortality (TOMORROW) study. This was a 10-year cohort study that started in 2010. Carotid ultrasound was performed in 2011 and 2017. Ultrasound examination of bilateral carotid arteries was performed using high-resolution B-mode ultrasound (Hi VISION Avius; Hitachi Aloka Medical, Tokyo, Japan) with a 6- to 18-MHz liner array transducer. IMT was evaluated as the distance between the luminal-intimal interface and the medial-adventitial interface. IMT was measured using two calipers on the frozen frame of a suitable longitudinal image. The upper limit of normal for IMT was defined as 1.0 mm. Lesions with any focal structure that protruded into the vessel lumen for at least an IMT $\geq$ 1.1 mm were defined as atherosclerotic plaques. Subsequently, the plaque score was assessed as the sum of the maximal thicknesses of all plaques in bilateral carotid arteries in the scanning area. Plaque scores were categorized as follows: none, no plaques; mild, score of 1.1–5.0; moderate, score of 5.1–10.0; and severe, score of > 10.0.

Results: A total of 175 patients with RA (mean age: 58.9 $\pm$ 12.7 years, female ratio: 85.7%, mean disease duration: 15.0 $\pm$ 11.7 years) and 185 Co (mean age: 58.5 $\pm$ 12.5 years, female ratio: 84.3%) were finally analyzed. Carotid plaques were observed more frequently in the RA group than in the Co group in 2011 (n = 82 vs n = 66, p = 0.04). However, the incidence of new plaques was not significantly different between the RA and Co groups (n = 33 vs n = 44, p = 0.94). Age (p = 0.015) and the presence of diabetes (p = 0.009) were higher in patients with RA and new plaques than in those without new plaques. Multivariate logistic regression analysis did not show that RA was a risk factor for the incidence of new plaques (OR: 0.90, 95% CI: 0.47–1.73, p = 0.750). However, the presence of hypertension (OR: 3.11, 95% CI: 1.43–6.74, p = 0.004), the presence of diabetes (OR: 6.13, 95% CI: 1.13–33.4, p = 0.036) were risk factors for the incidence of new plaques. The plaque score became advanced in the RA and Co groups (both p < 0.001) in 6 years.

Conclusion: There are no significant differences in the incidence of new plaques and the progression rate of the plaque score between patients with RA and Co. This finding might due to the recent advances in RA treatment, such as methotrexate or biologic DMARDs. In patients with RA, the presence of hypertension and diabetes represents a risk factor for the incidence of new plaques.