Background: The most important T-cell subtype in maintenance of immune tolerance is T regulatory cells (Treg). These are characterized by CD4 and CD25 receptors on surface, and by showing FoxP3 regulatory factor, which is necessary for maintaining the suppressive activity of Treg cells in peripheral blood (PB). Previous studies have studied Treg cells in PB and synovial fluid in patients with Juvenile Idiopathic Arthritis (JIA). However, there was insufficient evidence to draw robust conclusions about Treg implication in JIA, due to small sample size and variable results across studies. A deeper understanding of regulatory mechanism in JIA may increase comprehension on variability among JIA subtypes and may help to establish prognosis on the follow up.

Objectives: To analyze Treg cells level in PB of JIA patients and its relation with disease activity.

Methods: Descriptive, cross-sectional, observational study conducted in a regional reference centre for Pediatric Rheumatology. We included consecutive patients with JIA diagnosed by ILAR criteria. The primary variable was the Treg percentage in PB measured by flow cytometry. To assess JIA activity, we used disease activity indexes (JADAS10, 27, 71 – CRP/ESR and cJADAS), Wallace remission criteria, VAS disease activity by patient/parents and physicians, morning stiffness, multidimensional evaluation (JAMAR) and acute phase reactants (CRP and ESR). Assessment of long-term damage was evaluated with JADI. Association analyses among study variables and Treg levels were performed by Pearson's correlation coefficient and Mann Whitney's U test.

Results: Ongoing study, we present a preliminary analysis with first 50 JIA patients. Mean age (SD) was 11.3 yr (4.6), being females 60%. Most common JIA subtype was persistent oligoarticular (42%) followed by RFneg polyarticular (24%). 42% patients were treated by csDMARD and 46% by biological agents. Mean levels of CRP and ESR were 0.18 mg/dl (0.3) and 6.3 mm/hr (5.4), respectively. At the time of the study, 84% of patients were in remission (Wallace criteria). Mean of JADAS 27-VSG, JADAS 27-PCR and cJADAS were 3.6 (5.1), 3.7 (5.1), and 3.7 (5.5), respectively. Mean long-term damage scores were 0.48 (1.1) for JADI-A and 0 for JADI-E. Mean levels of Treg cells in PB were 2.11% (1.1). The table shows the association between clinical variables and % of Treg. We can observe a significant, inverse and moderate correlation between Treg levels and disease activity by patient/parents, disability and quality of life (global and the physical component). Close to statistical significance, we found inverse and moderate correlation between Treg cells and all JADAS scores, cJADAS, disease activity by physician and morning stiffness. There was no association between Treg and acute phase reactants. Furthermore, there were no differences in Treg cells in Wallace remission ($p=0.692$) and regarding use of conventional or biological DMARD ($p=0.984$ and $p=0.386$, respectively).

Conclusion: According to our preliminary data, higher levels of Treg cells in PB of patients with JIA could be related with lesser disease activity and better quality of life. Larger studies are needed to confirm whether this Treg-mediated regulatory mechanism can have prognostic implication JIA.

Variables	r	p value
CRP (mg/dl)	-0.24	0.099
ESR (mm/hour)	-0.15	0.314
VAS-disease activity (patient / parents)	-0.28	0.049
VAS-disease activity (physician)	-0.25	0.081
JADAS10 (VSG)	-0.27	0.064
JADAS27 (VSG)	-0.27	0.064
JADAS71 (VSG)	-0.27	0.064
JADAS10 (PCR)	-0.28	0.054
JADAS27 (PCR)	-0.28	0.054
JADAS71 (PCR)	-0.28	0.054
c JADAS10	-0.26	0.065
Disability (JAFA – JAMAR)	-0.34	0.021
Quality of life (PRQL – JAMAR)	-0.39	0.007
Quality of life physical (PRQLPh – JAMAR)	-0.46	0.001
Quality of life psychosocial (PRQLPs-JAMAR)	-0.21	0.156
Morning Stiffness	-0.27	0.066

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.5427

11. Basic and translational pain science

AB0175 INNOVATIVE PREPARATION OF CURCUMIN NANOPARTICLES TO IMPROVE ANTI-INFLAMMATORY EFFECT IN RHEUMATIC DISEASE

A. Soltani¹, N. Abdolahi¹, Y. Ghanbari¹, ¹Golestan Rheumatology Research Center, Golestan University of Medical Sciences, Gorgan, Iran (Islamic Republic of)

Background: Curcumin (Cur) as a natural compound can be used in the wide spectrum of healthy functions and pharmacological activities [1-4]. It shows great promise for medication of various pro-inflammatory chronic illnesses [5]. In this study, we evaluate the ability of poly(lactide-co-glycolide)(PLGA) and different grades of PVA (polyvinyl alcohol) and lecithin as a drug delivery system for poorly soluble Cur

Objectives: The goal of this study was to prepare and characterize Cur encapsulated PLGA and different grades of PVA and lecithin as an efficient nanocarrier for improve anti-inflammatory effect in rheumatic disease

Methods: The PLGA nanospheres were formulated and then characterized for percent yield, encapsulation efficiency, surface morphology, and in vitro drug release profiles. At first, 6mg of Cur was added to the organic phase including 24mg of polymer dissolved in 5mL of dichloromethane to constitute 1:4 (drug-to-polymer) ratios. Then, a mixture of PVA-lecithin (at about 5 cc) was added to maintain the stability of double emulsion droplets. The emulsion was continuously stirred at 300 rpm for 24 hours (at temperature of 37.5 °C) to evaporate the solvent, leaving behind the colloidal suspension of the drug-encapsulated nanoparticle in aqueous phase. The encapsulation of Cur into PLGA was characterized by Fourier transform infrared spectroscopy (FT-IR) and Transmission electron microscopy (TEM).

Results: Our studies achieved the successful formation of smooth surface and spherical shape Cur encapsulated into PLGA nanoparticles by the TEM image confirmed. The particle size distribution demonstrated a range of 30nm to 100nm, with the mean particle size being 45nm. FTIR study implies successful loading of Cur into the nanoparticles. We show high drug-loading efficiency about $98 \pm 0.5\%$ for 6% of Cur weight in total ingredients weight of PLGA (w/w). It was also seen that a slower sustained release of 10% CUR in 48 hours is observed with biocompatible PLGA in phosphate buffered saline (pH = 7.4). The MTT assay of the Cur-PLGA exhibited no cytotoxic effect on Normal mouse fibroblast cells (L-929) cell line. IC50 of Cur -PLGA increased 99.5% against Cur nanoparticles ($33.57 \pm 0.62 \mu\text{M}$) ($P < 0.05$).

Conclusion: In this study, we constructed a novel preparation of curcumin nanoparticles with PLGA and different grades of PVA (polyvinyl alcohol) and lecithin to improve the bioavailability of CUR and PLGA exhibited no cytotoxic effect on L-929 cell line

References: In this study, we constructed a novel preparation of curcumin nanoparticles with PLGA and different grades of PVA (polyvinyl alcohol) and lecithin to improve the bioavailability of CUR and PLGA exhibited no cytotoxic effect on L-929 cell line

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.5157

12. Rheumatoid arthritis - prognosis, predictors and outcome

AB0176 RISK OF ANTI-CITRULLINATED PEPTIDE ANTIBODIES AND RHEUMATOID FACTOR IN MALE SMOKERS: DATA FROM KUWAIT REGISTRY FOR RHEUMATIC DISEASES (KRRD)

A. Al-Herz¹, A. Sultan², A. Almahmeed², K. Saleh³, A. Al-Awadhi⁴, W. Al-Kandari⁵, E. Hasan¹, A. Ghanem⁵, M. Hussain¹, Y. Ali⁵, E. Nahar⁵, A. Alenizi⁶, S. Hayat⁵, F. Abutiban⁶, A. Aledai¹, A. Al-Qadhi⁷, H. Alhajeri⁵, H. Behbehani⁵, N. Alhadhood³, A. Alsaber⁸ on behalf of KRRD. ¹Al-Amiri Hospital, Kuwait, Kuwait; ²Kuwait Institute for Medical Specializations, Kuwait, Kuwait; ³Farwaniya Hospital, Kuwait, Kuwait; ⁴Faculty of Medicine, Kuwait University, Jabriya, Kuwait; ⁵Mubarak Al-Kabeer Hospital, Jabriya, Kuwait; ⁶Jahra Hospital, Al Jahra, Kuwait; ⁷Sabah Hospital, Kuwait, Kuwait; ⁸University of Strathclyde, Department of Mathematics and Statistics, Glasgow, United Kingdom

Background: Smoking has been proposed to be associated with the development of anti-citrullinated peptide antibodies (ACPA) in rheumatoid arthritis (RA) patients.

Objectives: To study the relationship between smoking and ACPA as well as smoking and RF in patients with RA in Kuwait Registry for Rheumatic Diseases (KRRD).

Methods: Data on RA patients were extracted from KRRD from four major hospitals from February 2013 through December 2019. As females rarely smoke in Kuwait with a smoking prevalence of 3% in female RA patients in KRRD, females were excluded from the study population to reach the minimum statistical percentage needed to perform chi square test and assess the association between smoking and other variables. Statistical tests were applied where appropriate. Logistic regression was conducted to adjust for possible confounders including

age, disease duration, comorbidities, family history of a rheumatic disease, ANA, treatment agents and disease activity and quality of life assessment tools.

Results: A total of 863 RA male patients were studied with a mean age of 53.9±12.5 years and a mean disease duration 7.3±5.5 years. 652 (75.6%) had positive RF and 624 (72.3%) had positive ACPA. 431 (50%) had at least one comorbidity. 640 (74.2%) were on conventional disease modifying agents (cDMARDs) and 223 (25.8%) were on biologic therapy. 183 (21.2%) were smokers. After adjustment of other factors, logistic regression showed that smokers were significantly different than non-smokers in terms of a positive ACPA ($\beta=1.051$, $p<0.001$, odds=4.019) and a positive RF ($\beta=-0.804$, $p=0.019$, odds=2.517). **Conclusion:** Smokers have a higher risk of expressing a positive RF and a positive ACPA in a male population. Smoking should be considered as a possible risk factor for RA and efforts should be done to educate the population to cease smoking to possibly lower that risk.

References:

- [1] Benowitz, N.L., 2009. Pharmacology of nicotine: addiction, smoking-induced disease, and therapeutics. Annual review of pharmacology and toxicology, 49, pp.57-71.
- [2] Firestein, G.S., 2003. Evolving concepts of rheumatoid arthritis. Nature, 423(6937), p.356.
- [3] Heliövaara, M., Aho, K., Aromaa, A., Knekt, P. and Reunanen, A., 1993. Smoking and risk of rheumatoid arthritis. The Journal of rheumatology, 20(11), pp.1830-1835.
- [4] Hoy, K. W., 2009. Quantitative Research in Education: A Primer. SAGE. pp. 69-86.
- [5] Kerlan-Candon, S., Combe, B., Vincent, R., Clot, J., Pinet, V. and Eliaou, J.F., 2001. HLA-DRB1 gene transcripts in rheumatoid arthritis. Clinical & Experimental Immunology, 124(1), pp.142-149.
- [6] Kuada, J., 2012. Research Methodology: A Project Guide for University Students. Samfundslitteratur. pp. 45-56.
- [7] Kumar, R., 2010. Research Methodology: A Step-by-Step Guide for Beginners. SAGE. pp. 148-159.
- [8] Masdotir, B., Jonsson, T., Manfreðsdóttir, V., Víkingsson, A., Brekkan, Á. and Valdimarsson, H., 2000. Smoking, rheumatoid factor isotypes and severity of rheumatoid arthritis. Rheumatology, 39(11), pp.1202-1205.
- [9] Neuman, W., 2009. Understanding research. Boston: Pearson. pp. 230- 255.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.6388

AB0177

RHEUMATOID ARTHRITIS SAUDI DATABASE (RASD): A SINGLE CENTER EXPERIENCE

R. Hassan¹, M. Cheikh¹, H. Almoallim², H. Faruqi¹, R. Alquraa¹, A. Eissa¹, A. Alhazmi³, N. Janoudi¹. ¹Doctor Soliman Fakeeh Hospital, Jeddah, Saudi Arabia; ²Umm AlQura University, Makkah, Saudi Arabia; ³Alzaidi Chair of Research in Rheumatic Diseases, Makkah, Saudi Arabia

Background: National Registries are essential to direct current practice and design appropriate management strategies¹. Rheumatoid arthritis (RA) registries in the middle east and north Africa remain scarcely represented².

Objectives: Our objective is to describe the Saudi RA population and to compare the findings to internationally reported data.

Methods: This is a cross sectional, analytical study that was conducted at Doctor Soliman Fakeeh Hospital (DSFH). The study ran from December of 2014 and concluded in December of 2018 using a pool of 433 patients. Inclusion criteria included adults older than 18 years of age who fulfilled the 2010 American College of Rheumatology criteria for diagnosis of RA³. Data were collected from patients and entered in a specially designed program for this registry. They included main demographic details, lag times to final disease diagnosis. Disease Activity Score-28-C Reactive Protein (DAS-28-CRP) was calculated on presentation and on subsequent visits with intervals ranging from three to six months between them. Multiple regression model was used to assess the predictors of disease activity. We charted the lines of medications given, including conventional and biologic disease modifying antirheumatic drugs (DMARDs), following treat to target strategies⁴.

Results: Out of 430 patients, 76.68% were female, while only 23.32% were male and the mean age was found to be 49.26 years with SD±11.

At initial presentation, 45.5% had demonstrated active disease (moderate or high disease activity) based on DAS-28-CRP scores while 54.5% were in remission or low disease activity. Out of the total number of clinic visitors, 330 had regular follow ups for more than 1 year while 103 patients were either irregularly visiting the rheumatology clinic or had lost follow up. The remission rates after 1 year had increased to 79.7% (263 patients), while 9.7% (32 patients) had low disease activity and no patients had sustained high disease activity at the end of follow up. It was also found that the female gender, higher Health Assessment Questionnaire-Disability Index (HAQ-DI) and a longer lag1/lag2 period were

associated with higher disease activity in our population. Biologic medications had been used by 129 patients (29.7%) while conventional DMARDs were given to 304 patients (70.3%).

Conclusion: We described a population of RA patients in a single center in SA. We detected higher remission rates at one year of follow up. This could be attributed to many factors, including good referral systems and treat to target strategies with easier access to biologic medications.

References:

- [1] Singh JA, Saag KG, Bridges SL Jr, Akl EA, Bannuru RR, Sullivan MC, Vaysbrot E, McNaughton C, Osani M, Shmerling RH, Curtis JR, Furst DE, Parks D, Kavanaugh A, O'Dell J, King C, Leong A, Matteson EL, Schousboe JT, Drevlow B, Ginsberg S, Grober J, St Clair EW, Tindall E, Miller AS, McAlindon T. 2015 American College of Rheumatology Guideline for the Treatment of Rheumatoid Arthritis. *Arthritis Rheumatol*. 2016 Jan;68(1):1-26.
- [2] Smolen, Josef S., et al. "EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs: 2013 update." *Annals of the rheumatic diseases* 73.3 (2014): 492-509.
- [3] Saag KG, Teng GG, Patkar NM, Anuntiyo J, Finney C, Curtis JR, et al. American College of Rheumatology 2008 recommendations for the use of non-biologic and biologic disease-modifying antirheumatic drugs in rheumatoid arthritis. *Arthritis Rheum* 2008;59: 762-84.
- [4] Hussain W, Noorwali A, Janoudi N. From symptoms to diagnosis: an observational study of the journey of rheumatoid arthritis patients in Saudi Arabia. *Oman Med J*. 2016;31(1):29.

Disclosure of Interests: Rola Hassan Grant/research support from: Pfizer pharmaceuticals, Mohamed Cheikh Grant/research support from: Pfizer pharmaceuticals, Hani Almoallim Grant/research support from: Pfizer pharmaceuticals, Hanan Faruqi Grant/research support from: Pfizer pharmaceuticals, Reem AlQuraa Grant/research support from: Pfizer pharmaceuticals, Ayman Eissa Grant/research support from: Pfizer pharmaceuticals, Aous Alhazmi Grant/research support from: Pfizer pharmaceuticals, Nahid Janoudi Grant/research support from: Pfizer pharmaceuticals

DOI: 10.1136/annrheumdis-2020-eular.4708

AB0178

PERIARTICULAR OSTEOPHYTE FORMATION PROTECTS AGAINST TOTAL KNEE ARTHROPLASTY IN RHEUMATOID ARTHRITIS PATIENTS WITH ADVANCED JOINT DAMAGE

S. Asai¹, N. Takahashi¹, K. Terabe¹, T. Kojima¹, N. Ishiguro¹. ¹Nagoya University Graduate School of Medicine, Department of Orthopedic Surgery, Nagoya, Japan

Background: New medications including biologics and aggressive treatment strategies can halt the inflammatory and destructive disease processes in patients with rheumatoid arthritis (RA), and in some cases repair damaged joints. In the process of damaged joint repair, periarticular osteophyte formation might be detected radiographically (1). However, little is known about the clinical and functional role of osteophyte formation in RA joints. Total joint arthroplasty, a common procedure for treating damaged large joints, can serve as a surrogate for the long-term outcome of large joint destruction in patients with RA.

Objectives: To determine the influence of periarticular osteophyte formation on the incidence of total knee arthroplasty (TKA) in patients with RA.

Methods: This retrospective longitudinal study used data from a registry of patients with RA starting biologics. A flow chart summarizing the study design is shown in Figure 1. A total of 130 symptomatic (tender and/or swollen) knee joints in 80 patients were studied with a median follow-up of 12 years. All data were analyzed using the knee joint as the statistical unit of analysis. The cumulative incidences of TKA were estimated using Kaplan-Meier curves, and compared according to the presence or absence of osteophyte on plain anteroposterior radiograph [osteophyte (+/-)] and the extent of advanced joint damage as defined by Larsen's grading system (0-II vs. III-V).

Results: Baseline characteristics of all subjects included in this study are shown in Table 1. A total of 42 knees underwent TKA during the follow-up period. There was no significant difference in the cumulative incidence of TKA between the osteophyte (+) and osteophyte (-) groups (31% vs. 34% at 10 years, $P=0.718$) (Fig. 2A). The cumulative incidence of TKA was significantly higher for the Larsen grade III-V group compared to the Larsen grade 0-II group (56% vs. 10% at 10 years, $P<0.001$) (Fig. 2B). While no significant difference was observed in the cumulative incidence of TKA between the osteophyte (+) and osteophyte (-) groups in the Larsen grade 0-II group (9% vs. 10% at 10 years, $P=0.774$) (Fig. 2C), the cumulative incidence of TKA was significantly lower for the osteophyte (+) group compared to the osteophyte (-) group in the Larsen grade III-V group (38% vs. 74% at 10 years, $P=0.010$) (Fig. 2D). Multivariate analysis using Cox proportional hazards models revealed that older age [hazard ratio (HR): 1.04