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Acknowledgements: This research was supported by an Australian Government Research Training Program Scholarship.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.3439

AB0143

THE EFFECT OF RHEUMATOID ARTHRITIS AND SPONDILOARTHRITIS ON PREGNANCY: A LONGITUDINAL RETROSPECTIVE COHORT STUDY

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Background: Many patients with rheumatoid arthritis (RA) and spondyloarthritis (SpA) are in their childbearing years. Concerns exist regarding the interplay between the rheumatic diseases and the pregnancy (1).

Objectives: Actually, there are contradictory data regarding the pregnancy outcome in patients with RA and SpA (2). Thus, we performed this longitudinal retrospective study to evaluate the effect of RA and SpA on pregnancy outcome.

Methods: The data of 78 pregnancies of 60 women followed from April 2017 to December 2020 at pregnancy clinic of Internal Medicine Unit, San Bortolo Hospital, Vicenza and Rheumatology Unit, University of Verona were reviewed. Fifty (64.1%) women were affected by RA and 28 (35.9%) by SpA. Information regarding demographic data, disease activity, drug exposure and maternal/foetal outcomes were collected in an electronic database. Details concerning pregnancy complications and congenital malformation were also collected. We compared pregnancy and foetal/neonatal outcome, medication use and disease activity between women affected by RA and SpA. Moreover, we evaluated the effect of disease activity on pregnancy outcome.

Results: Overall, there were 70 (86.4%) live births, 10 (12.3%) miscarriages and 1 (1.2%) foetal death. There were three twin pregnancies. Even there was a higher rate of glucocorticoids and bDMARDs use in RA than in SpA group, respectively 40% vs 21% and 70% vs 57.1%, there were no statistical differences regarding drug exposure at conception. Moreover, there were no differences concerning disease activity at conception. Still, a higher rate of glucocorticoids and bDMARDs, respectively 26% vs 10.7% and 46% vs 39.3% were used in RA than in SpA patients during pregnancy. Furthermore, we did not find any statistical differences regarding maternal and foetal/neonatal outcome between pregnancies in the RA and those in the SpA groups. There were four (4.9%), congenital malformation, two (3.8%) in RA group and two (6.9%) in SpA group. About one-third of patients 24 (30.7%) presented a moderate disease activity at conception as evaluated by DAS28PCR and BASDAI. However, there were no significant differences, on maternal and foetal/neonatal outcome in patients with moderate activity disease with respect of those in clinical remission.

Conclusion: Even a higher rate of glucocorticoids and bDMARDs were used in RA than in SpA patients, there was no differences on pregnancy outcome between them.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.3486

AB0144

PREDICTIVE FACTORS OF SUSTAINED CLINICAL REMISSION IN RHEUMATOID ARTHRITIS

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Background: Sustained remission (SR) is an ultimate treatment goal in the management of patients with rheumatoid arthritis (RA) (1) and is associated with better RA prognosis, reflected by the quality of life, physical function and radiographic progression (2).

Objectives: To investigate the prevalence and predictors of SR in RA patients.

Methods: A longitudinal prospective study of patients with RA. At the inclusion, the patients were in remission DAS28 ESR₁ ≤ 2.6 for at least 6 months. A B-mode and power doppler (PD) ultrasound of 42 joints and 20 tendons was performed. Synovial hypertrophy (SH) and tenosynovitis in B-mode and PD were defined and scored from 0 to 3 using the OMERACT. The CDAI, SDAI, Boolean remission criteria, the health assessment questionnaire (HAQ) and the radiological Sharp score were calculated. Then, the DAS28 erythrocyte sedimentation rate (ESR) was evaluated

at 6 and 12 months. SR was defined as the persistence of a DAS28 ESR₁ ≤ 2.6 at 6 or 12 months without any change in RA therapy during the follow-up. Unstable remission (UR) was defined either as DAS28 ESR₁ > 2.6 at 6 or 12 months or an increase in RA therapy because of a relapse during the follow-up.

Results: At baseline, thirty-seven patients were included. At 6 and 12 months, 28 and 24 patients completed follow-up, respectively. In decreasing order, Boolean remission (92.2%), DAS28 ESR₁ remission (85.7%), SDAI remission (85%) and CDAI remission (83.3%) achieved SR at 6 months. At 12 months, SR was found in 100% in Boolean remission, 87.5% in SDAI remission, 86.7% in CDAI remission and in 79.7% in DAS28 ESR₁ remission. At 6 months, only the ESR (17mm/1h in SR versus 32mm/1h in UR, p=0.04) was associated with SR. The disease duration, remission duration, swollen and tender joints, DAS28 ESR₁, HAQ, rheumatoid factor, radiological Sharp score and ultrasound parameters weren't associated with SR. At 12 months, the squeeze test (15% in SR vs 80% in UR, P=0.01), the ESR (15mm/1h in SR versus 30mm/1h in UR, p=0.03), the Boolean remission (61.1% in SR versus 0% in UR, p=0.04) and the DAS28 ESR₁ (mean: 1.8 in SR versus 2.5 in UR, P=0.01) were associated with SR. However, no association was found with radiological Sharp score and ultrasound parameters. On multivariate analysis, the ESR (OR=1.13, CI95%=1.01-1.2, p=0.03) and the Squeeze test (OR=21.3, CI95%=1.7-263, p=0.01) were predictors of SR, at 12 months. **Conclusion:** At 6 and 12 months, 79.7%-85.7% of patients in DAS28 ESR₁ remission achieved sustained remission, respectively. Boolean and DAS28 ESR₁ remission were associated with SR. Unlike DAS28 ESR₁, Boolean remission seems to reflect more the SR. The squeeze test and the ESR were predictors' factor. However, the radiological and the ultrasound parameters didn't show any association.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.3555

AB0145

SMARTPHONE- AND SMARTWATCH-ACQUIRED DAILY STEPS, ACTIVITY, AND BAROMETRIC PRESSURES ASSOCIATED WITH SUBJECTIVE MEASURES OF RHEUMATOID ARTHRITIS: A PROSPECTIVE STUDY FOR RA DIGITAL PHENOTYPING

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Background: Symptoms in patients with rheumatoid arthritis (RA) are potentially influenced by exercise load and meteorological change, and often vary from day to day, especially in unstable condition of RA. Patients with RA not infrequently experience worsening of joint symptoms when the load on the joint, such as walking and doing housework, exceeds a moderate range. However, the worsening of joint symptoms is often not observed in the midst of the loading of the joint, but often becomes apparent after a few hours or days.

Objectives: To elucidate the relationship between smartphone- and smartwatch-acquired daily objective data (barometric pressures, steps, and activity) and daily subjective patient reported outcomes of RA.

Methods: A smartphone (iPhone 8) and a wristband-type smartwatch (Fit-bit Versa 2) were lent to each patient for free. A mobile app was developed and installed into the smartphones to collect patients' daily subjective RA symptoms including Pt-P-VAS (patient-pain-visual analogue scale), Pt-G-VAS (pt-general-VAS), PtTJCCount(68)(patient self-determined tender joint count among 68 joints), PtTJCCount(28), PtSJCount(66)(patient self-determined swollen joint count among 66 joints), PtSJCount(28). Also, the smartwatch data and physicians' assessment were collected from the same subject. Physicians' and patients' assessment of TJC, SJC, and G-VAS was independently performed without seeing each other's assessment. We conducted a simple linear regression analysis with outcome variables of Pt-P-VAS, Pt-G-VAS, PtTJCCount(68), PtTJCCount(28), PtSJCount(66), and PtSJCount(28). The independent variables included smartphone-acquired daily steps and barometric pressure of the reported day and the previous day, and smartwatch-acquired minutes of "lightly active (1-3 METs equivalent)", "fairly active(3-6 METs equivalent)", and "very active(>6 METs equivalent)" of the reported day and previous day. We defined low barometric pressure as below 1000 hPa. The level of activity was measured by the smartwatch. Patients were blinded to daily barometric pressure data and their daily active time when the patients answered daily symptom questions on the smartphones.

Results: A total of five patients were enrolled. At baseline, mean ($\pm$ standard deviation (SD)) age was 50.8 ± 14.8 years; all patients were females; mean disease duration was 6.6 ± 4.9 years; mean SDAI was 18.6 ± 25.5 ; mean DAS28-CRP was 3.23 ± 1.85 ; mean morning stiffness was 134 ± 116 min; mean HAQ-DI was 0.7 ± 0.9 . Mean observation period was 77.8 days. Because of the missing data, the sample size (N) for the regression analysis varies with the outcomes: Pt-P-VAS and Pt-G-VAS are 250 while PtTJCount and PtSJCount are 260. The table 1 showed that the patients' assessment of TJC, SCJ, and G-VAS was correlated well with the physicians' assessment.

Table 1.

Evaluation item	Correlation between physicians and patients (ρ)
Tender Joint Count (68)	0.909
Tender Joint Count(28)	0.913
Swollen Joint Count(66)	0.896
Swollen Joint Count(28)	0.890
General VAS	0.688

The figure 1 showed the change associated with one SD increment in each independent variable with 90% confidence intervals. Low barometric pressure was associated with bad health conditions (high Pt-G-VAS, Pt-P-VAS, and SJCount). Moreover, longer very active time in the previous day ("veryactive_1" in the Figure 1) was associated with bad health condition (high SJCount). Many steps were associated with good health conditions (low Pt-G-VAS, Pt-P-VAS, and SJCount).

Figure 1.

Conclusion: High barometric pressure was associated with good health conditions, and longer very active time in the previous day was associated with bad health condition. Barometric pressure data and physical activity data acquired by mobile digital devices may predict the change in RA symptoms. Further investigation in larger patient numbers is warranted.

Acknowledgements: The authors would like to thank Harumi Kondo for her assistance.

Disclosure of Interests: Keisuke Izumi Speakers bureau: Abbvie, Asahi Kasei Pharma, Bristol Myers Squibb, Chugai Pharmaceutical, Eli-Lilly, Mochida Pharmaceutical, Ono Pharmaceutical, Grant/research support from: Abbvie, Asahi Kasei Pharma, Daisuke Moriawaki Employee of: CyberAgent, Inc., Takamichi Toda Employee of: AI Shift, Inc., Misako Higashida-Konishi: None declared, Manami Koyama: None declared, Hisaji Oshima: None declared, yutaka okano Speakers bureau: Asahi Kasei Pharma, Yuko Kaneko Speakers bureau: AbbVie, Astellas, Ayumi, Bristol-Myers Squibb, Chugai, Eisai, Eli Lilly, Hisamitsu, Jansen, Kissei, Kirin, Novartis, Pfizer, Sanofi, Takeda, Taisho, Tanabe-Mitsubishi, and UCB, Shigeru Ko: None declared, Tsutomu Takeuchi Speakers bureau: Abbott Japan Co, Ltd, Bristol-Myers KK, Chugai Pharmaceutical Co, Ltd, Eisai Co, Ltd, Janssen Pharmaceutical KK, Mitsubishi Tanabe Pharma Co, Pfizer Japan Inc, Takeda Pharmaceutical Co, Ltd, Astellas Pharma and Daiichi Sankyo Co, Ltd., Consultant of: Astra Zeneca KK, Eli Lilly Japan KK, Novartis Pharma KK, Mitsubishi Tanabe Pharma Co, Asahi Kasei Medical KK, Abbvie GK and Daiichi Sankyo Co, Ltd., Grant/research support from: Abbott Japan Co, Ltd, Astellas Pharma, Bristol-Myers KK, Chugai Pharmaceutical Co, Ltd, Daiichi Sankyo Co, Ltd, Eisai Co, Ltd, Janssen Pharmaceutical KK, Mitsubishi Tanabe Pharma Co, Pfizer Japan Inc, Sanofi-Aventis KK, Santen Pharmaceutical Co, Ltd, Takeda Pharmaceutical Co, Ltd, Teijin Pharma Ltd, Abbvie GK, Asahikasei Pharma Corp and Taisho Toyama Pharmaceutical Co, Ltd.

DOI: 10.1136/annrheumdis-2021-eular.3730

AB0146
HAND AND WRIST ACTIVE RANGE OF MOTIONS AND CONTRIBUTING FACTORS IN RHEUMATOID ARTHRITIS: A CROSS-SECTIONAL STUDY

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Background: Patients with rheumatoid arthritis (RA) usually impaired range of motions (ROMs), especially hand and wrist active ROMs (AROMs), thus influencing their ability to perform daily activities and health-related quality of life (HR-QoL). However, little is known about the potential factors of reduced hand and wrist AROMs and their relations to quality of life in Chinese RA patients.

Objectives: To explore the contributing factors of hand and wrist AROMs and their associations with HR-QoL and functional limitation in Chinese RA population.

Methods: In this cross-sectional study, 108 patients were enrolled from Affiliated Hospital of Nantong University between November 2018 and July 2019. We measured all the participants' AROMs with different directions of the hand and wrist in both sides, including volar flexion, ulnar deviation, radial deviation and radial deviation of the wrist joint, the first metacarpophalangeal (MCP1) flexion, interphalangeal (IP) flexion, volar abduction, radial abduction and thumb opposition (cm) in the thumb, average flexion, hypertension and abduction of the MCP2-5, average proximal interphalangeal (PIP) 2-5 and distal interphalangeal (DIP) 2-5 flexions, total active range of motion (TAM) of the second to the fifth fingers (TAM2-TAM5). Their sociodemographic, physical, psychological, disease-related data, acute phase reactants, laboratory indicators, drug usage and HR-QoL were examined as well. Statistical analysis used Pearson's and Spearman's correlation analysis, univariate and multivariate linear regression analyses.

Results: In univariate analyses, we found that living in rural area, longer disease duration, comorbidity, hospitalization, more swollen joints, higher disease activity, pain level, C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), red blood cell count and glucocorticoids usage were associated with most of the decreased hand and wrist AROMs ($P \leq 0.050$), while higher education and annual income were related to most of the increased hand and wrist AROMs ($P \leq 0.048$). In multivariate analyses, higher disease duration ($P \leq 0.023$) and higher disease activity ($P \leq 0.033$) were correlated with most of the decreased hand and wrist AROMs. Interestingly, the psychological factor, anxiety, was only positively associated with thumb opposition in both univariate and multivariate analyses ($P \leq 0.001$). Additionally, most of the declined hand and wrist AROMs were associated with functional impairment and poor HR-QoL, especially in physical components ($P < 0.05$).

Conclusion: Various factors, especially longer disease duration and higher disease activity, were related to decreased hand and wrist AROMs, and thus causing functional impairment and poor HR-QoL in RA patients. Clinical physicians and medical faculties should pay more attention to disease activity and disease-related symptoms of these patients in order to maintain their activity of daily living (ADL) ability and improve HR-QoL.