**Methods:** Study group included 88 patients with RA, their age was 53±11,5, 79.3% of women, 89.8% of RF "+," DAS28 5.2±1.2, receiving DMARDs (methotrexate 59.5% and leflunomide 19.8%), who were administered with tofacitinib 5mg 2 times a day due to inefficacy or intolerance of biological DMARDs. There were assessed the pain severity using Brief pain inventory (BPI) questionnaire, the presence of neuropathic pain component (NPC) using PainDETECT questionnaire and signs of CS using Central Sensitisation Inventory (CSI) questionnaire at early time after tofacitinib administration, RA activity using DAS28 after 3 and 6 months.
**Results:** The mean pain severity at baseline was 5.3±2.0 according to the visual analogue scale (VAS 0-10), 51.1% of patients had signs of central sensitization (CSI ≥ 40), 15.9% had NPC (PainDETECT ≥18). 7 days after tofacitinib intake there was statistically reliable reduction of pain severity – up to 4.1±1.8 ($p<0.05$) and CS – CSI from 40.4±13.5 to 36.5±12.5 (p=0.01). After 28 days, the effect was higher: the pain level (VAS) was 2.8±1.6 (p=0.000), PainDETECT decreased from 11.8±5.6 to 6.8±3.1 (p=0.000), CSI – to 31.6±13.9 (p=0.000). DAS28 after 3 and 6 months was 3.7±1.3 and 3.6±1.2. The number of patients with pain decrease of ≥50% after 28 days of therapy was 59.9%. Low RA activity after 3 months. (DAS28 ≤3.2) was achieved in 64.4% of patients. There was a clear correlation between the number of patients with significant pain reduction at 28 days and the number of patients with low RA activity after 3 and 6 months ($r_S$=0.548, p=0.000; $r_S$=0.790, p=0.000). Six patients withdrew from the study due to inefficacy or social reasons. There were no serious adverse reactions.
**Conclusion:** The application of JAK inhibitor tofacitinib allows to reach a fast analgesic effect and reduce CS signs. An early clinical response to tofacitinib (pain relief) predicts a decrease in RA activity after 3 and 6 months of the therapy. Limitation: Open-label observatory study.
**Disclosure of Interests:** None declared
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## AB0136 ASSESSING THE RELATIONSHIP AMONG OBESITY, GENETIC POLYMORPHISM, AND CLINICAL PARAMETERS IN PATIENTS WITH RHEUMATOID ARTHRITIS

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**Background:** Several study suggested body mass index(BMI) may influence development of rheumatoid arthritis(RA). There are conflicting reports concerning the impact of high BMI on development of RA, but several reports of obese on drug resistance and functional impairment. The relationship of genetic polymorphism on obesity is unclear in RA.
**Objectives:** To examine the relationship among BMI, genetic polymorphism of obesity, disease activity of RA, laboratory parameters, and therapeutic agent of RA.
**Methods:** We have carried out a retrospective observational study by systematically analyzing medical records of total 289 patients diagnosed with RA in Shinko Hospital between March 2016 and December 2019. We also conducted genotyping single nucleotide polymorphisms (SNPs) including FTO (rs1558902 and rs9939609), UCP1 (rs1800592), ADR2(rs1042713) and ADR3(rs4994) after informed consent. Obesity was defined as BMI over than 25 and patients were divided between obese ("Ob") and non-obese ("non-Ob"). These SNPs, DAS-28CRP, laboratory parameters, methotrexate dose, use of biological DMARDs were compared between Ob and non-Ob patients.
**Results:** Of these 289 patients, 82.7% was female, mean age was 61.9 years and BMI was 22.4. Univariate logistic regression showed differences ($p<0.1$) between Ob and non Ob groups in UCP1 gene mutation(63.6% vs 78%, P=0.018), DAS(2.24 vs 1.99, P=0.033),triglyceride abnormality(23.8% vs 9.3%, P=0.021), HDL(56 vs 71, P=0.00009), HbA1c abnormality(26.5% vs 12.1%, P=0.019),γGTP(32 vs 21, P=0.00037), ALP (253 vs 230, P=0.0058), ALT (26.5 vs 20, P=0.029),and MTX dose(6 vs 8, P=0.066). Multivariate logistic regression showed that Ob group was significantly associated with HDL(OR=0.976, 95%CI 0.958 to 0.995), UCP1 gene mutation(OR=0.446, 95%CI 0.202 to 0.984), γGTP(OR=2.321, 95%CI 1.269 to 4.245), and MTX dose(OR=0.866, 0.784 to 0.957).
**Conclusion:** Obesity in patients with RA had significant positive correlation with γGTP, and negative correlation with HDL, UCP gene mutation and MTX dose.
**Disclosure of Interests:** None declared
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## AB0137 THE ASSOCIATION BETWEEN AUTOANTIBODY LEVELS AND THE OUTCOMES OF ANTI-TUMOUR NECROSIS FACTOR ALPHA TREATMENT IN RHEUMATOID ARTHRITIS - A RETROSPECTIVE COHORT STUDY WITH TWO YEARS FOLLOW-UP

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**Background:** In rheumatoid arthritis (RA), autoantibodies namely anticitrullinated protein antibodies (Anti-CCP) have prognostic value, independently predicting radiologic progression. However, the evidence is still controversial about how the autoantibody levels change over time and their role in treatments outcomes and in monitoring disease activity in RA.
**Objectives:** This study aimed to characterize the changes of autoantibodies levels (rheumatoid factor (RF) and Anti-CCP) over time and to explore the association between these autoantibodies and the outcomes of the first anti-tumour necrosis factor alfa (anti-TNF-α) therapy as first biologic agent in RA.
**Methods:** An observational retrospective cohort study was conducted with two years of follow-up. Patients with diagnosis of RA according to American College of Rheumatology (ACR) criteria and registered on Rheumatic Diseases Portuguese Register (Reuma.pt) who started their first anti-TNFα agent (as first biologic) between 2003 and 2018 were included. Patients with positive RA (>30 UI/mL) and/or positive Anti-CCP (>10 U/mL) at their first visit were included. Demographic, clinical and laboratory data were obtained by consulting Reuma.pt. Disease Activity Score for 28 joints [DAS28(3v); DAS28(4v); DAS28(3v; C-Reactive Protein (CRP)), DAS28(4v; CRP), delta DAS28(4v)], Health Assessment Questionnaire (HAQ), delta HAQ, Anti-CCP and RF levels were assessed at baseline, 12 and 24 months. Continuous variables are presented with mean, standard deviation, median, quartile 1 and quartile 3. Categorical variables are presented with absolute and relative frequencies. To examine the differences between Anti-CCP and RF levels at baseline, 12 months and 24 months the Wilcoxon test for paired samples was performed. In order to correlate the Anti-CCP and RF levels with DAS28 variables, delta DAS28(4v), HAQ and delta HAQ at baseline, 12 months and 24 months, a correlation coefficient, Spearman's coefficient, was used.
**Results:** A total of 116 patients (mean age of 50.2±10.4 years old; 85.3% female) with RA were included with a median disease duration of 10.5 [5-18.5] years and a follow-up time of 8 [5-14] years. About 49% of patients were FR and Anti-CCP positivity, 38% only FR positivity and 13% only Anti-CCP positivity. At baseline, 64 (55.2%) patients had an erosive disease and 50 (43.1%) had extra-articular manifestations. Compared to the baseline (160[74.8-496]), FR levels decreased significantly at 12 months (121[49.1-321.8]) and 24 months (107.5[43.3-332]) with a p=0.017 and p=0.029, respectively. There were no differences in Anti-CCP levels over time. No correlation was found between FR/Anti-CCP levels and different DAS28 variables, DAS28(4v) delta, HAQ, and HAQ delta at 12 months and 24 months.
**Conclusion:** We found that in patients with RA treated with a first anti-TNF-α agent as first biologic, FR levels decreased at 12 months and 24 months follow-up. However, our study failed to demonstrate a correlation between autoantibodies levels and disease activity (DAS28 variables and delta DAS28(4v)), HAQ and delta HAQ. In fact, previous research demonstrated that there is an association between autoantibodies levels and disease activity in RA, nonetheless not being static and increasing with signs of inflammation at baseline. So, further research with large samples is needed to explore this correlation considering the adjustment for confounding inflammatory variables, such as number of swollen or tender joints and morning stiffness.
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## AB0138 A MOLECULAR SIGNATURE RESPONSE CLASSIFIER STRATIFIES SEROPOSITIVE RHEUMATOID ARTHRITIS PATIENTS BASED ON THEIR LIKELIHOOD OF INADEQUATE RESPONSE TO TNF INHIBITOR THERAPIES

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**Background:** There is an urgent need for precision medicine in targeted therapy selection for the treatment of rheumatoid arthritis (RA). TNF inhibitor (TNFi) therapies are the most prescribed targeted therapy for RA patients, yet the majority of patients fail to achieve a clinically meaningful response using this medication class. A blood-based molecular signature test evaluates RNA and clinical metrics to stratify RA patients based on their likelihood of having an inadequate response to TNFi therapies.[1] Patients unlikely to respond to TNFi therapies can be directed to a different treatment option such as a JAK inhibitor, thus reducing the time needed to identify an effective therapy, improving confidence in and adherence to treatment, and increasing the patients' chance of reaching treat-to-target goals.

**Objectives:** High-titers of anti-cyclic citrullunated protein (anti-CCP) have been independently associated with reduced response to TNFi therapy;[2] thus, we evaluated the ability of a blood-based molecular signature response classifier (MSRC) test to stratify RA patients by their likelihood of inadequate response to TNFi therapies – regardless of their positive or negative anti-CCP status.
**Methods:** A subset of patients enrolled in the Network-04 prospective observational trial evaluating the ability of a molecular signature response classifier to stratify patients were subdivided into two groups based upon whether they were positive (N = 72) or negative (N = 74) for anti-CCP. The odds of inadequate response to TNFi therapies were calculated based on whether or not a patient had a molecular signature of non-response to TNFi therapy at baseline before the start of treatment. Odds ratios and confidence intervals were calculated[3,4] to represent the strength of association between detecting the molecular signature of non-response and the patient's failure to achieve ACR50 at 6 months.
**Results:** The odds that a patient with a molecular signature of non-response failed to meet ACR50 criteria at 6 months was approximately three times greater than among those patients who lacked the signal (Table 1). No significant difference in odds ratios was observed between patients who were positive or negative for anti-CCP.

**Table 1. The odds of patients with a molecular signature of non-response failing to achieve an ACR50 response 6 months after TNF inhibitor therapy initiation**

| | Odds ratio (95% confidence interval) |
|---|---|
| Anti-CCP positive | 3.5 (1.3-9.7) |
| Anti-CCP negative | 3.1 (1.2-8.3) |

**Conclusion:** The MSRC test evaluates RA disease biology and accurately stratifies patients based on their likelihood of having an inadequate response to TNFi therapies, regardless of being negative or positive for anti-CCP autoantibodies. Rheumatologists can use the results of the MSRC test to inform targeted therapy selection for RA patients, instead of their anti-CCP serostatus, eliminating the variability inherent to the anti-CCP measurement and its inability to consistently predict TNFi therapy incompatibility. With the MSRC test, providers can rely on a more predictable and accurate assessment of TNFi therapy success or failure when coordinating patient management.
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## AB0139 RHEUMATOID ARTHRITIS AND SLEEP QUALITY

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**Background:** Consequences of rheumatoid arthritis (RA) are many and varied: physical, psycho-affective and financial.
**Objectives:** The objective of our study is to evaluate the impact of RA on sleep quality.
**Methods:** We conducted a cross-sectional study including 49 RA patients. An evaluation of sleep quality using the MOS-Sleep Scale was performed.
**Results:** The mean age of patients was 54.1 years, with a female predominance (89.8%). The mean duration of RA was 11.43 ± 7.32 years with a mean time to diagnosis of 2.35 years. Rheumatoid factor was positive in 77.6% of cases. A atlanto-axial dislocation was found in 4.1% of cases and coxitis in 8.2% of cases. All patients were on symptomatic treatment, 57.1% of whom were on corticosteroid therapy. 83.67% of patients were on cs-DMARDs and 14.2% were on biologics. At inclusion, sleep was optimal in 63.2% of cases and the mean Sleep Problem Index was 26.19 ± 22.77. The index of sleep problems was higher in older subjects and in those with long diagnostic delays. The presence of co-morbidities and atlanto-axial dislocation and/or coxitis was associated with impaired sleep quality. Also, VAS pain and EGP were associated with an increase in the sleep problem index. In the multivariate study, EGP, the presence of co-morbidities and atlanto-axial dislocation and/or coxitis were the independent factors affecting sleep quality.
**Conclusion:** The impact of RA on the patient's quality of life and especially the quality of sleep is confirmed by several studies in the literature. A global management of the patient is necessary in order to adapt well to his disease.
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## AB0140 A HIGH-CONFIDENCE DEFINITION OF THERAPEUTIC RESPONSE IN RHEUMATOID ARTHRITIS USING A MONTE CARLO SIMULATION APPROACH

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**Background:** Therapy choice and therapy change depend on the ability to accurately assess patients' disease activity. The clinical assessments used to evaluate treatment response in rheumatoid arthritis have inherent variability, normally considered as measurement error, intra-observer variability or within subject variability. Each contribute to variability in deriving response status as defined by composite measures such as the ACR or EULAR criteria, particularly when a one-time observed measurement lies near the boundary defining response or non-response. To select an optimal therapeutic strategy in the burgeoning age of precision medicine in rheumatology, achieve the lowest disease activity and maximize long-term health outcomes for each patient, improved treatment response definitions are needed.
**Objectives:** Develop a high-confidence definition of treatment response and non-response in rheumatoid arthritis that exceeds the expected variability of subcomponents in the composite response criteria.
**Methods:** A Monte Carlo simulation approach was used to assess ACR50 and EULAR response outcomes in 100 rheumatoid arthritis patients who had been treated for 6 months with a TNF inhibitor therapy. Monte Carlo simulations were run with 2000 iterations implemented with measurement variability derived for each clinical assessment: tender joint count, swollen joint count, Health Assessment Questionnaire disability index (HAQ-DI), patient pain assessment, patient global assessment, physician global assessment, serum C-reactive protein level (CRP) and disease activity score 28-joint count with CRP.[1-3] Each iteration of the Monte Carlo simulation generated one outcome with a value of 0 or 1 indicating non-responder or responder, respectively.
**Results:** A fidelity score, calculated separately for ACR50 and EULAR response, was defined as an aggregated score from 2000 iterations reported as a fraction that ranges from 0 to 1. The fidelity score depicted a spectrum of response covering strong non-responders, inconclusive statuses and strong responders. A fidelity score around 0.5 typified a response status with extreme variability and inconclusive clinical response to treatment. High-fidelity scores were defined as >0.7 or <0.3 for responders and non-responders, respectively, meaning that the simulated clinical response status label among all simulations agreed at least 70% of the time. High-confidence true responders were considered as those patients with high-fidelity outcomes in both ACR50 and EULAR outcomes.
**Conclusion:** A definition of response to treatment should exceed the expected variability of the clinical assessments used in the composite measure of therapeutic response. By defining high-confidence responders and non-responders, the true impact of therapeutic efficacy can be determined, thus forging a path to development of better treatment options and advanced precision medicine tools in rheumatoid arthritis.
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