Conclusion: Disrupting specific immune and stromal cell interactions offers novel opportunities for targeted therapeutic intervention in RA and PsA.

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OP0069

INCLUSION OF PATIENT RESEARCH PARTNERS IN REMEDY – A RESEARCH CENTER FOR TREATMENT OF RHEUMATIC AND MUSCULOSKELETAL DISEASES

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Background: Active collaboration between patients and researchers in development and implementation of scientific projects is important to ensure a good match between patient’s preferences and the scientific focus in research, contribute to more patient-oriented health research agendas, enhance patient friendly design of research projects, and creating support for implementation (1). Such involvement is strongly advocated by EULAR and is often a prerequisite to receive funding for clinical research projects. At Diakonhjemmet Hospital in Norway, the division of rheumatology and research has for many years worked to involve patient research partners (PRPs) in research. A patient advisory board was established in 2007, led by a person (20% position) who herself has a rheumatic disease. In eight years from 2002, the division will receive funding from the Norwegian Research Council to establish and host a clinical research center for treatment of Rheumatic and Musculoskeletal diseases – the REMEDY center.

Objectives: To describe how involvement of PRPs are organised within the REMEDY center.

Methods: An organisation map was developed as part of the application for funding. The leader of the patient advisory board, together with three senior researchers, were involved in several rounds of discussions on how PRP involve-funding. The leader of the patient advisory board, together with three senior staff members deemed appropriate by the Centre Director. The leader of the patient advisory board has a 50% position. Additionally, there is funding for board activities, and for PRP involvement in initial project phases, whereas PRP activities are included in applications for external funding.

Conclusion: The REMEDY center has organised to ensure involvement of PRPs at all organisational levels, from individual research trials to the strategic and operational management of the center.


Disclosure of Interests: None declared.


OP0070

INTERVENTION WITH METHOTREXATE IN ARTHRALGIA AT RISK FOR RHEUMATOID ARTHRITIS TO REDUCE THE DEVELOPMENT OF PERSISTENT ARTHRITIS AND ITS DISEASE BURDEN (TREAT EARLIER): A DOUBLE-BLEND, RANDOMISED, PLACBEO-CONTROLLED TRIAL

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Background: Rheumatoid arthritis (RA) is the most common autoimmune disease, and requires long-term treatment to suppress inflammation. Currently, methotrexate is initiated as first-line treatment when arthritis becomes clinically apparent with joint swelling. However, disease processes begin long before and become clinically recognizable when patients develop symptoms. We hypothesized that the ‘at risk phase’ of symptoms and subclinical joint-inflammation is a therapeutic window to permanently modify the disease course.

Objectives: We studied if intervention in the pre-arthritis phase of arthralgia and subclinical joint inflammation prevents the development of clinical arthritis or reduces the burden of disease.

Methods: In this randomised, double-blind, 2-year proof-of-concept trial, adults with arthritis clinically suspected of progressing to RA and MRI-detected subclinical joint-inflammation, recruited from all rheumatology outpatient-clinics in the south-west Netherlands, were randomly assigned (1:1) to a single intramuscular glucocorticoid injection (120 mg) and a one-year course of oral methotrexate (up to 25 mg/week), or placebo injection and placebo tablets. Subsequently, participants were followed for another year without study medication. The primary endpoint was the development of clinically detectable arthritis (fulfilling the 2010 RA-criteria or involving ≥2 joints) that persisted for at least 2 weeks. Patient reported physical functioning, along with symptoms and workability, were key secondary endpoints and measured 4-monthly. Additionally, the course of MRI-detected inflammation was studied (the sum of tenosynovitis, synovitis, osteitis, scored with the RA-MRI Scoring (RAMRIS) method). All participants entered the intention-to-treat analysis. We performed two prespecified subgroup analyses. Firstly, analyses were restricted in participants with high risk of clinical arthritis development (PPV ≥70%). Secondly, analyses were stratified for ACPR-status. The trial is registered with the Netherlands Trials Registry (NTR4853 trial NL4599).

Results: From April 16th, 2015 to September 11th, 2019, we randomly assigned 236 participants to treatment (n=119) or placebo (n=117). After 24 months, arthritis free survival was similar in both groups (80% versus 82%, HR 0.81 (95% CI 0.45-1.46)). Physical functioning improved more in the treatment-group during the first months and remained better (mean between-group difference over two years HAQ -0.1(-0.2,0.03;p=0.004). Similarly, pain (-9 on scale 0-100: (95%CI -12.4, p<0.001), morning stiffness (-12 (95%CI -1.16, 8.3;p=0.001), pretesteemness (-8% (95%CI -13%, -3%;p=0.001) showed sustained improvement compared to placebo. MRI-detected joint-inflammation was also persistently improved (mean difference over 2 years -1.4 points (95%CI -2.0, -0.9;p<0.001). High-risk participants in the treatment group showed a delay in clinical arthritis development, and exchange of knowledge and experience.
**Conclusion:** Methotrexate, the cornerstone treatment of RA, initiated at the pre-arthritis stage of joint symptoms and subclinical inflammation, did not prevent the development of clinical arthritis, but modified the disease course as measured by sustained improvement in MRI-detected inflammation, related symptoms and impairments. These findings of sustained disease modification may open up a new treatment landscape in a pre-arthritis phase of RA, where limitations can be just as severe as at the onset of clinical arthritis.

**Background:** Environmental air pollution has been associated with disruption of the immune system at a molecular level.

**Objectives:** The primary aim of the present study is to describe the association between long-term exposure to air pollution and risk of developing immune-mediated conditions.

**Methods:** We conducted a retrospective observational study on a nation-wide dataset of women and men. Diagnoses of various immune-mediated diseases were retrieved. Data on the monitoring of PM10 and PM2.5 concentrations were retrieved from the Italian institute of environment protection and research (ISPRA). The long-term average PMs concentrations were the exposure of interest. Every study subject was linked to a PMs exposure value, which resulted from the average concentration of urban, rural and near-traffic stations of the subject residency from January 2013 to November 2020. Patients were linked to the nearest air quality station through ZIP code centroids. Generalized linear models were employed to determine the relationship between autoimmune diseases prevalence and PM. The fully adjusted model included age, body mass index (BMI), menopause, glucocorticoid treatment, treatment with adjuvant hormone therapy for breast or prostate cancer, specialty of the physician that entered the data and macro-area of residency (stratified as a categorical variable: northern Italy, central Italy and southern Italy).

**Results:** 81,363 subjects were included in the study. We found a positive association between PM10 and the risk of autoimmune diseases (β+0.007, p 0.014). Every 10 µg/m³ increase in PM10 concentration was associated with an incremental 7% risk of having autoimmune disease. Exposure to PM10 above 30 µg/m³ and PM2.5 above 20 µg/m³ was associated with a 12% and 13% higher risk of autoimmune disease pooled together, respectively (aOR 1.12, 95% CI 1.05-1.20 and aOR 1.13, 95% CI 1.06-1.20). Exposure to PM10 was associated with an increased risk of rheumatoid arthritis (aOR 1.408, 95% CI 1.271-1.560) but no other autoimmune diseases, whereas exposure to high levels of PM2.5 were associated with an increased risk of rheumatoid arthritis (aOR 1.559, 95% CI 1.401-1.734), CTDs (aOR 1.147, 95% CI 1.024-1.286) and IBDs (1.206, 95% CI 1.028-1.415) but no other autoimmune diseases.

**Conclusion:** Long-term exposure to air pollution was associated with higher risk of developing autoimmune diseases, in particular rheumatoid arthritis, CTDs and IBD. Chronic exposure to levels above the threshold for human protection was associated with a 10% higher risk of developing immune-mediated diseases.

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**ASSOCIATION BETWEEN LONG-TERM EXPOSURE TO AIR POLLUTION AND IMMUNE-MEDIATED DISEASES: A POPULATION-BASED COHORT STUDY**

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