SHORT-TERM EXPOSURE TO OUTDOOR AIR POLLUTANTS AND RHEUMATOID ARTHRITIS ACTIVITY IN METROPOLITAN AREAS IN THE NORTH OF ITALY

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Background: Air pollution is believed to cause oxidative stress and systemic inflammation, which could trigger autoimmunity in rheumatoid arthritis (RA). Several epidemiological studies investigated the possible role of air pollution in the outbreak of RA with controversial results. As far as we know, studies on the effects on disease activity of short-term exposure have not been published.

Objectives: To evaluate the impact of short-term exposure to air pollutants (daily mean PM10, PM2.5, NO2, and O3) on disease activity in patients with RA.

Methods: Consecutive patients with RA (ACR/EULAR Criteria 2010) resident in Lombardy (Italy) were enrolled. In each patient Disease Activity Score on 28 joints (DAS28), Simple Disease Activity Index (SDAI) were assessed. Daily PM10, PM2.5, NO2, and O3 concentrations, estimated by Regional Environmental Protection Agency at municipality resolution, were used to assign short-term exposure from day of visit back to 14 days. Multivariable linear regression models were performed to identify the day of the pollutants independently associated with disease activity.

Results: 422 RA patients were enrolled in the study between January and June 2018: 81.5% females, mean age 58.2±13.3 years, mean disease duration 16.1±11.5 years, 273% current smokers, 59.5% RF positivity, 54.5% ACPA positivity. Sparse punctual statistically significant negative associations emerged at the univariate analysis between PM10, PM2.5, NO2 and the outcomes, although PM2.5 statistical significance was found by analysing the influence of therapy on the interaction between PM2.5 and DAS28 (Figure below): a positive trend between PM2.5 and DAS28 appeared in the first two groups (no therapy, 0.013±0.007, p=0.06 and csDMARDs, 0.006±0.004, p=0.17), whereas a statistically significant inverse association was seen in the b/tsDMARDs group (-0.005±0.002, p=0.01). Therapy interaction was particularly evident in several days before the visit also for O3.

Conclusion: The changes of the outcome measures related to the increase of the pollutants’ levels did not reach the minimal clinically important difference, therefore air pollution seems barely relevant on disease activity once the loss of tolerance is established in RA. O3 and PM2.5/NO2 always exhibit an opposite association was seen in the b/tsDMARDs group (-0.005±0.002, p=0.01). Therapy interaction was particularly evident in several days before the visit also for O3.

Disclosure of Interests: Francesca Ingegnoli: None declared, Tania Ubiali: None declared, Tommaso Schioppo: None declared, Valentina Longo: None declared, Simona Iodice: None declared, Ennio Giulio Favalli Consultant of: Consultant and/or speaker for BMS, Eli-Lilly, MSD, UCB, Pfizer, Sanofi-Gence, Novartis, and Abbvie, Speakers bureau: Consultant and/or speaker for BMS, Eli-Lilly, MSD, UCB, Pfizer, Sanofi-Gence, Novartis, and Abbvie, Orazio De Lucia: None declared, Antonella Murgi: None declared, Valentina Bollati: None declared, Roberto Caporali Consultant of: AbbVie; Gilead Sciences, Inc.; Lilly; Merck Sharp & Dohme; Celgene; Bristol-Myers Squibb; Pfizer; UCB, Speakers bureau: Abbvie; Bristol-Myers Squibb; Celgene; Lilly; Gilead Sciences, Inc; MSD; Pfizer; Roche; UCB

DOI: 10.1136/annrheumdis-2020-eular.2757
Disclosure of Interests: Laurette van Boheemen: None declared, S.A. Turk: None declared, M.H. van Beers - Tas: None declared, W.H. Bos Grant/research support from: abbvie, sanofi, roche, cellgene, ucb, novartis, Speakers bureau: abbvie, Sanofi, Eli Lilly, Diane Marsman: None declared, E.N. Griep: None declared, M. Starmans: None declared, C.D. Popa: None declared, A.M. van Sijl: None declared, Maarten Boers: None declared, Michael Nurmohamed Grant/research support from: Not related to this research, Consultant of: Not related to this research, Speakers bureau: Not related to this research, Dirkjan van Schaardenburg: None declared

DOI: 10.1136/annrheumdis-2020-eular.2805

**AB0231**

**RHEUMATOID ARTHRITIS PATIENTS TREATED WITH ABATACEPT AT A COMMUNITY RHEUMATOLOGY CLINIC AND WHO ARE POSITIVE FOR ANTICYCLIC CITRULLINATED PEPTIDE ANTIBODIES HAVE MORE SUSTAINED CLINICAL RESPONSES THAN PATIENTS NEGATIVE FOR THE MARKER**

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**Background:** Treating Rheumatoid Arthritis (RA) patients to target (T2T) has been shown to result in better outcomes in patients with RA [1]. There are now a number of therapeutic options to accomplish this goal, but determining which agent to select for each individual has not been defined.

**Objectives:** The purpose of this post hoc analysis was to assess if Anticyclic Citrullinated Peptide Antibody (anti-CCP) status effects outcomes following treatment of RA patients with Abatacept.

**Methods:** Patients at a community based rheumatology clinic undergo disease activity measure assessments on a routine basis as part of the implementation of T2T strategy with ongoing assessments on at least a yearly basis. Over the past 15 years there have been 78 patients initiated on treatment with Abatacept at this clinic. Anti-CCP and Rheumatoid factor status is routinely obtained when patients are first seen in the clinic. A patient was considered to be Anti-CCP positive if the test was 20 u/mL or greater. As a comparison, the 53 patients in the clinic on Tofacitinib were also analyzed.

The difference in sustained clinical response rates between seropositive and seronegative patients were determined for these two groups. Sustained clinical response was defined as remaining on treatment for at least three years. Patients who were lost to follow up or who died, while on treatment for less than three years, were not included. Statistical analysis was performed with IBM SPSS V. 25

**Results:** Fifty anti-CCP positive patients and twenty-two anti-CCP negative patients treated with Abatacept were clinically assessed and results of the post hoc analysis are shown in Table one. Chi square risk estimate 4.61 Clinical sig p= 0.01. Logistic regression: Unadjusted Risk ratio (95% CI) 4.61 (1.54, 8.16) Clinical sig p= .01. Adjusted Risk Ratio (95% CI) 4.21 (1.23, 7.19.) Clinical sig = 0.03.

Results of the post hoc analysis for patients treated with Tofacitinib are shown in Table two. Chi square risk estimate 1.75 (not clinically significant.) Unadjusted Risk 1.70 (not clinically significant). Adjusted Risk 1.42 (not clinically significant).

**Conclusion:** Rheumatoid Arthritis patients who are Anti-CCP positive and who are treated with Abatacept in a community rheumatology clinic have a significantly greater number of sustained clinical responses than patients who are Anti-CCP negative.

<table>
<thead>
<tr>
<th>CCP * Responder Crosstabulation Tofacitinib</th>
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<tr>
<td>% within CCP</td>
<td>47.2%</td>
<td>52.8%</td>
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</table>

This difference for patients treated with Tofacitinib was not clinically significant in this clinic, though a higher percentage of Anti-CCP positive patients treated with Tofacitinib responded (72% vs 60%).

Anti-CCP positivity could be used as a clinical marker to select patients with rheumatoid arthritis to be treated with Abatacept.

**References:**

**Disclosure of Interests:** None declared

**DOI:** 10.1136/annrheumdis-2020-eular.2223

**AB0232**

**PAIN SCORE WITH VISUAL ANALOG SCALE OF 30MM OR MORE IS A RISK FACTOR OF WORSENING CLINICAL DISEASE ACTIVITY INDEX (CDAI) AT THREE MONTHS AFTER ATTAINING CDAI REMISSION IN PATIENT WITH RHEUMATOID ARTHRITIS**

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**Background:** In treating with rheumatoid arthritis (RA), it is needless to say essential treatment goal with first priority. On the other hand, patient’s pain influences on clinical indices deeply, however, pain score is not been regarded as most important despite that correlates with patient reported outcome.

**Objectives:** Clinical significance of remnant pain score for clinical outcome although attaining remission in clinical disease activity index (CDAI) statistically.

**Methods:** RA patient who have attained remission with CDAI were picked up. These patients were divided into two groups whether CDAI at three month after the first CDAI remission attained; namely CDAI-R or CDAI-F. Background data such as sex, age at onset, age, anti-cyclic citrullinated polypeptide antibodies (ACPA), rheumatoid factor (RF), Sharp/van der Heijde Score (SHS), clinical disease activity score (CDAI), C-reactive protein (CRP), modified Health Assessment Questionnaire score (mHAQ), and pain score with visual analog scale (PS-VAS) at first consultation, time span from the first consultation to first CDAI remission were compared between the two groups using Mann-Whitney U-test. CDAI, CRP, mHAQ, PS-VAS, and QOL value calculated from EuroQOL-5 dimension questionnaire (EQ-5D) at the time of CDAI were also statistically compared with Mann-Whitney U-test. Parameters that demonstrated statistical significance within 5% were picked up, and odds ratio for CDAI remission were calculated with binary logistic regression analysis. Moreover, parameters that demonstrated statistical significance with p-value within 5% were evaluated with receiver’s observational characteristics (ROC) analysis, and cut-off index (COI) was calculated.

**Results:** A total of 907 patients with 594 CDAI-R and 313 CDAI-F were recruited. Demographic characteristics of the two groups were shown in Table 1. SHS at first consultation and time span from first consultation to CDAI remission attained demonstrated significantly less in the CDAI-R than the CDAI-F group, while the other parameters demonstrated no significant difference. CRP, CDAI, mHAQ, PS-VAS, and QOL at CDAI remission demonstrated significant difference between the CDAI-R and CDAI-F groups. With binary logistic regression analysis, CRP, CDAI, and PS-VAS demonstrated significant regression for CDAI-R with 1.68, 0.71, and 0.78 in odds ratio, respectively, COI for CDAI remission was 0.4, 1.0, and 30 for CRP (p=2.4 x 10^-5), CDAI (p=3.0 x 10^-6), and PS-VAS (p=2.4 x 10^-4), respectively.

**Conclusion:** PS-VAS at the moment of CDAI remission is suggested to be predictive factor for sustaining CDAI remission at three months thereafter as well as CRP value and the CDAI score.