**Epidemiology, risk factors for disease or disease progression**

**POS034** PREVALENCE AND TRENDS OF PULMONARY HYPERTENSION IN AUTOIMMUNE DISEASES

**Keywords:** Lungs, Comorbidities, Epidemiology

P Khandwala1, D. Desai2, M. Sen1, 1Einstein Medical Center Philadelphia, Rheumatology, Philadelphia, United States of America; 2Einstein Medical Center Philadelphia, Hospice and Palliative Medicine, Philadelphia, United States of America

**Background:** Pulmonary hypertension (PHTN) is a known complication of connective tissue diseases such as Systemic lupus erythematosus (SLE), Scleroderma (Scl), and Mixed connective tissue disease (MCTD).[1] The underlying mechanism for development of PHTN is remodeling and vasconstriction of pulmonary arteries and arterioles.[2] There have been cases of severe PHTN in SLE patients that have shown improvement with immunosuppressive therapy, hence accentuating the role of inflammation in pathogenesis.[3] The Prevalence of PHTN is not well studied, and there are no large cohort studies available. This study was undertaken to capture the trend in the prevalence of PHTN in the aforementioned diseases.

**Objectives:** To determine the prevalence of PHTN in SLE, Scl, and MCTD, analyze the trend over a 15-year period as well as identify racial predisposition, length of stay (LOS), and cost of hospitalization in these patients.

**Methods:** We used the Nationwide Inpatient Sample database (years 2003-2018) and extracted patients with PHTN using validated International Classification of Disease (ICD) codes. Data from 2015 was excluded from the study considering the transition of the coding system from version 9 to 10. We identified cases having the diagnosis of SLE, Scl, and MCTD. Prevalence, as well as demographics, cost of hospitalization, and length of stay (LOS), were analyzed and charted. Data were analyzed using statistical analysis system 9.4 software.

**Results:** Over the period of 15 years, we identified 2,155,750 cases of PHTN. As seen in the graph, patients with SLE had the highest prevalence of PHTN. The prevalence rate of SLE in PHTN cases in 2003 was 0.92% which significantly increased to 1.05% in 2018, with a peak of 1.15% seen in 2014 (p <0.0001). Prevalence rate of Scl in PHTN decreased from 1.07% in 2003 to 0.80% in 2018 (p< 0.0001). It was seen that the prevalence rate of MCTD in cases with PHTN significantly increased from 0.06% in 2003 to 0.23% in 2018, (p<0.0001). It was observed that the average age of PHTN cases was significantly younger in SLE (55.60 vs 70.80 years, p < 0.0001), Scl (62.94 vs 70.72 years, p < 0.0001), and MCTD (58.49 vs 70.66 years, p <0.0001). On examining the racial distribution, African Americans, Hispanics, and Native Americans were more likely to have underlying SLE, Scl, and MCTD, respectively. PHTN was more prevalent in females in all 3 diseases. The average cost of hospitalization was significantly higher in PHTN cases with MCTD ($76,696.7 vs $65,643.3, p<0.0001) and SLE ($69,106.5 vs $65,620.6, p<0.0001), while it was not significantly lower in PHTN cases with Scl ($65,272.9 vs $65,659.9, p = 0.65). Average LOS was significantly longer in PHTN with SLE (6.73 vs 6.64 days, p = 0.0812) and SLE (6.73 vs 6.64 days, p = 0.0812) and shorter in PHTN with Scl (6.62 vs 6.64 days, p = 0.7917).

**Conclusion:** Improved survival, seen secondary to increased awareness, better diagnostic testing, multidisciplinary team approach, and newer treatment modalities has led to an increase in the prevalence of patients living with PHTN. Interestingly, our study shows that the prevalence of PHTN in SLE and MCTD is increasing while decreasing for Scl. Racial predisposition becomes evident, which demands a higher index of suspicion for the early diagnosis of PHTN in the respective races. There is a higher socioeconomic burden for patients with PHTN and autoimmune disease, as reflected by the increased LOS and cost of hospitalization.

**REFERENCES:**


**POS035** THE COURSE OF CYTOKINE AND CHEMOKINE GENE EXPRESSION IN CLINICALLY SUSPECT ARTHRALGIA PATIENTS DURING PROGRESSION TO INFLAMMATORY ARTHRITIS

**Keywords:** Rheumatoid arthritis, Cytokines and chemokines

J. Heurtz1, C. Rogier1, E. Niemantsverdriet2, S. Van den Eeden2, P. De Jong1, E. Lubberts1, A. Geluk1, A. Van der Helm – van Mil1,2, 1Erasmus MC, Rheumatology, Rotterdam, Netherlands; 2Leiden University Medical Center (LUMC), Rheumatology, Leiden, Netherlands; 3Leiden University Medical Center (LUMC), Infectious Diseases, Leiden, Netherlands

**Background:** Autoantibody-responses rise years before onset of inflammatory arthritis (IA) and are stable during transitioning from clinically suspect arthralgia (CSA) to IA. Cytokine and chemokine levels also rise years before IA-onset. However, the course in the at-risk stage of CSA during progression to disease or non-progression is unknown.

**Objectives:** To increase the understanding of processes mediating disease development, we studied the course of cytokine, chemokine and related receptors gene expression in CSA-patients during progression to IA, and in CSA-patients who ultimately did not develop IA.

**Methods:** Whole-blood RNA-expression of 37 inflammatory cytokines/chemokines/receptor was determined by dual-colour reverse-transcription multiplex ligation-dependent probe amplification, in paired samples of CSA-patients at CSA-onset and either at IA-development or after 24-months without IA-development. ACPA-positive and ACPA-negative CSA-patients developing IA were compared at CSA-onset and during progression to IA. GEE-models tested changes over time. A false discovery rate approach was applied.

**Results:** None of the cytokines/chemokine genes significantly changed in expression between CSA-onset and IA-development (Figure 1A). In CSA-patients without IA-development, G-CSF expression decreased (p=0.001), whereas CCR6 and TNIP expression increased (p<0.001 and p=0.002, respectively) over a 2-year period (Figure 1B). Expression levels in ACPA-positive and ACPA-negative CSA-patients who developed IA were similar.

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**Disclosure of Interests:** None Declared.

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Prevalence of Pulmonary Hypertension

**Figure 1.** (A) Modelled course of gene expression of 37 cytokines/chemokines/related receptors in CSA-patients that progressed to IA. Cytokines, chemokines and related receptors were measured at baseline and at time of IA-development and for reasons of clarity presented in two plots. No statistically significant changes were observed during follow-up. (B) Modelled course of gene expression of CCR6, G-CSF and TNIP1 in CSA-patients that did not progress to IA. Cytokines, chemokines and related receptors were measured in paired samples from each patient with 2-year intervals. For comparison, the course of patients that progressed to IA was included, here the 2nd samples was collected at IA-development. CSA, clinically suspect arthralgia; IA, inflammatory arthritis.
Conclusion: Whole-blood gene expression of assessed cytokines/chemokines/related receptors did not change significantly from CSA to IA-development. This suggests that changes in expression of these molecules may not be related to the final process of developing chronicity and may have occurred preceding CSA-onset. Changes in gene expression in CSA-patients without IA-development may provide clues for processes related to resolution.

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Disclosure of Interests: None Declared.

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POS0036

TUMOUR NECROSIS FACTOR INHIBITORS USE AND DISCONTINUATION AMONG PREGNANT WOMEN WITH CHRONIC INFLAMMATORY DISEASES

Keywords: Pregnancy and reproduction, bDMARD, Descriptive studies

L. K. Flatman1,2, S. Bernatsky1,2,3, J. Mahlman1,2,3, Y. St-Pierre4, O. Basso1, A. Berard5,6, E. Vinel1,2,3, 1McGill University, Epidemiology, Biostatistics and Occupational Health, Montreal, Canada; 2Research Institute of the McGill University Health Centre, Centre for Outcomes Research and Evaluation, Montreal, Canada; 3McGill University, Department of Medicine, Faculty of Medicine, Montreal, Canada; 4McGill University Health Centre, Division of Rheumatology, Division of Clinical Epidemiology, Department of Medicine, Montreal, Canada; 5McGill University Health Centre, Division of General Internal Medicine, Montreal, Canada; 6McGill University, Department of Obstetrics and Gynecology, Faculty of Medicine, Montreal, Canada; 7University of Montreal, Faculty of Pharmacy, Montreal, Canada; 8CHU Sainte-Justine, Research Center, Montreal, Canada; 9Université Claude Bernard Lyon 1, Faculty of Medicine, Lyon, France

Background: Previous guidelines (2006) recommended that tumour necrosis factor inhibitors (TNFi) be discontinued during pregnancy. Despite new guidelines (2016 & 2020) now recommending against this, the choice to stop TNFi pre-conception is patient- and provider-dependent. Observational studies have evaluated use of disease-modifying anti-rheumatic drugs (DMARDs) during pregnancy, but few have specifically assessed TNFi discontinuation pre-conception. Understanding trends and predictors of TNFi discontinuation pre-conception may help inform initiatives to improve care and optimize maternal and fetal outcomes.

Objectives: We examined trends in TNFi discontinuation pre-conception over time, and evaluated the characteristics of pregnant women with chronic inflammatory diseases who stopped using TNFi pre-conception (without resuming in pregnancy) compared with those who used TNFi at any time during pregnancy.

Methods: We created a cohort of pregnant women with rheumatoid arthritis (RA), ankylosing spondylitis, psoriatic arthritis (PsA), psoriasis (PsO), and/or inflammatory bowel diseases (IBD) who delivered between 2011 and 2019, using the MarketScan commercial database. TNFi use was defined as at least 1 filled prescription or infusion procedure claim, categorized according to the timing of the filled prescription or infusion procedure date in relation to the gestational period: 1) TNFi pre-conception only (i.e. at least 1 prescription filled or infusion procedure claim in the 12 weeks preceding the gestational period but none within the gestational period) or 2) TNFi use at any time during pregnancy (i.e. any prescription filled or infusion procedure claim during the gestational period, including restarts, new starts, and those continuing from pre-conception).

Results: We identified 3,372 pregnancies; 13% discontinued TNFi in the 12 weeks before conception and did not restart, and 86% were exposed to TNFi during pregnancy. Pregnancies in IBD patients accounted for 47% of all pregnancies. Nearly all pregnancies with IBD were exposed to TNFi during pregnancy (95%). Compared to those with IBD, more patients with RA (difference of 18%, 95% CI 15-21%) and PsA/PsO (20%, 95% CI 16-24%) discontinued their TNFi. Corticosteroid use was similar in both TNFi exposure groups, while patients who took TNFi during pregnancy were more likely to use non-biologic DMARDs concurrently. Over time, a lower proportion of patients stopped TNFi pre-conception (2011-2013 19% vs 2014-2016 13% vs 2017-2019 10%; p-value for trend <0.0001).

Conclusion: In our sample, 13% discontinued TNFi in the 12 weeks before conception and did not restart. The proportion of patients stopping TNFi pre-conception between 2017-2019 decreased compared to earlier years, possibly reflecting updated guidelines. Further research on TNFi discontinuation in the years after the 2020 ACR guidelines is warranted.

Table 1. Characteristics of pregnant women with chronic inflammatory diseases who stopped TNFi pre-conception and those who took TNFi at any time during gestation (n=3,372).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total (n=3372)</th>
<th>TNFi pre-conception only (n=470)</th>
<th>TNFi any time during pregnancy (n=2902)</th>
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<tbody>
<tr>
<td>Maternal Diagnosis, n (%)</td>
<td></td>
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<tr>
<td>All</td>
<td>1588 (47)</td>
<td>470/1588 (30)</td>
<td>2902/1588 (18)</td>
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<tr>
<td>IBD only</td>
<td>807 (24)</td>
<td>178/807 (22)</td>
<td>620/807 (77)</td>
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<tr>
<td>RA only</td>
<td>530 (16)</td>
<td>132/530 (25)</td>
<td>398/530 (75)</td>
</tr>
<tr>
<td>PsA/PsO only</td>
<td>1085 (32)</td>
<td>249/1085 (23)</td>
<td>836/1085 (77)</td>
</tr>
<tr>
<td>Corticosteroids, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-biologic DMARDs, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery Year, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011-2013</td>
<td>1202 (36)</td>
<td>224/1202 (19)</td>
<td>978/1202 (81)</td>
</tr>
<tr>
<td>2014-2016</td>
<td>510 (15)</td>
<td>153/510 (30)</td>
<td>357/510 (68)</td>
</tr>
<tr>
<td>2017-2019</td>
<td>345 (9)</td>
<td>85/345 (25)</td>
<td>260/345 (75)</td>
</tr>
<tr>
<td>Corticosteroids, n (%)</td>
<td></td>
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<tr>
<td>Non-biologic DMARDs, n (%)</td>
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<tr>
<td>Summary</td>
<td>200 (6)</td>
<td>61/200 (30)</td>
<td>139/200 (70)</td>
</tr>
<tr>
<td>RA only</td>
<td>153 (5)</td>
<td>85/153 (55)</td>
<td>68/153 (45)</td>
</tr>
<tr>
<td>PsA/PsO only</td>
<td>132 (4)</td>
<td>85/132 (64)</td>
<td>47/132 (36)</td>
</tr>
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</table>

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POS0037

FACTORS ASSOCIATED WITH HOSPITAL ADMISSIONS DUE TO OPIOID-RELATED HARMs IN PATIENTS WITH RHEUMATIC AND MUSCULOSKELETAL DISEASES

Keywords: Osteoarthritis, Fibromyalgia, Prognostic factors

C. Ramirez Medina1, D. Jenkins2, N. Peek1,2, B. Birie Yimer1, J. Y. T. Huang1, M. Lunt1, W. Dixon1,3, M. Jani1,3, 1University of Manchester, Division of Musculoskeletal and Dermatological Sciences, Manchester, United Kingdom; 2The University of Manchester, Division of Informatics, Imaging and Data Science, Manchester, United Kingdom; 3NIHR Manchester Biomedical Research Centre, Manchester University NHS Foundation Trust, Manchester, United Kingdom

Background: Hospital admissions due to opioid-related toxicity have doubled in the United Kingdom over the last decade. Rheumatic and musculoskeletal diseases (RMDs) are some of the most common indications for prescribing opioids in primary care. Little is known about what individual factors are associated with serious opioid-related harms in this population. A better understanding of these risks is imperative for safe prescribing of opioids in patients with RMDs.

Objectives: To assess patient factors associated with opioid-related hospitalisations in new opioid users with the following RMDs: rheumatoid arthritis (RA), ankylosing spondylitis (AS), psoriatic arthritis (PsA), systemic lupus erythematosus (SLE), osteoarthritis (OA), and fibromyalgia.

Methods: This retrospective cohort study evaluated new adult opioid users without cancer between 01-Jan-2006 and 31-Aug-2021 using data from the Clinical Practice Research Datalink Aurum diagnosed with one or more of the six RMDs. Patient-level data were linked to Hospital Episodes Statistics (HES). The main outcome of opioid-related hospitalisations within five years of first opioid prescription, were defined using ICD-10 codes from HES. Logistic regression and random forest classification were used to assess patient characteristics associated with opioid-related hospitalisations. To identify the most relevant variables we used “Boruta” feature selection, a wrapper algorithm built around the random forest classifier that compares the importance of the real predictor variables with those of permuted copies of the original features using statistical testing and several iterations of random forests. Feature importance is ranked by the Boruta algorithm using mean Z-scores (the number of standard deviations from the mean a data point