Results: The included studies used three main outcome definitions: a state of disease activity, such as low disease activity or remission; the EULAR response criteria; or discontinuation due to adverse events (AEs). Some studies incorporated AEs into a composite outcome with disease activity and few accounted for potential competing risks, which are events that preclude the occurrence of the primary outcome of interest. Not handling competing risks may result in under-prediction, leading to potentially compromised risk stratification. There was a lack of internal validation using cross sampling techniques, which is critical for reducing overfitting, as well as external validation in new data, a process necessary to ensure reproducibility and generalisability of a prediction model to the larger patient population. Missing data was mostly handled using complete case analysis, leading to potentially biased risk estimates. The ROB assessment showed overall high ROB of the included studies.

Conclusion: This systematic review summarises current prediction models of MTX treatment outcomes in RA. It highlights several methodological shortcomings, such as poor handling of missing data and competing risks to the primary outcome, and a lack of internal and external validation. These should be addressed in future model development and validation to improve accuracy of predictions. Without tackling these issues, prediction of MTX treatment outcomes will remain at high risk of bias and should not be recommended for informing risk stratification for RA treatment decisions.

REFERENCES:

Disclosure of Interests: Celina Gehringer: None declared, Glen Martin: None declared, Kimme Hyrich Speakers bureau: Abbvie, Grant/research support from: BMS and Pfizer, Suzanne Verstappen: None declared, Jamie Sergeant: None declared


AB1436 INFECTIONS IN PATIENTS WITH RHEUMATIC DISEASES IN TREATMENT WITH BIOLOGIC THERAPY


Background: Patients with rheumatic diseases (RD) have a higher risk of developing infections due to disease and immunosuppressor treatment factors. Biologic disease-modifying antirheumatic drugs (bDMARD) have been associated with the development of opportunistic infections, nevertheless their impact on severe infections has not been consistent.

Objectives: To describe the sociodemographic and clinical characteristics of patients with RD on bDMARD treatment with and without infections, using data from the Mexican Adverse Events Registry (BIOBADAMEX), as well as to identify factors associated with the presence of infections.

Methods: BIOBADAMEX is a Mexican ongoing cohort of patients using bDMARDs. In this analysis we included all patients registered in BioBadameX from 2016 to 2021. We compared sociodemographic, clinical and treatment characteristics between patients who developed infections with to those who did not.

We used descriptive statistics, Chi square and Kruskal Wallis tests to analyze differences between the groups.

Results: A total of 780 patients registered in BioBadameX were included in this study, among them 42 (5%) patients presented infections and 738 (95%) did not. At baseline, patients had a median (IQR) age of 50 (40-58) years and median disease duration of 7 (3-15) years. The most common diagnosis was rheumatoid arthritis with 512 (66%) patients, followed by ankylosing spondylitis in 115 (15%), psoriatic arthritis in 44 (6%), systemic lupus erythematosus in 30 (4%) and idiopathic juvenile arthritis in 27 (3%) patients. Comorbidities were present in 351 (45%) of the patients. Conventional DMARD (cDMARD) in 30 (4%) and idiopathic juvenile arthritis in 27 (3%) patients. Comorbidities were present in 351 (45%) of the patients. Conventional DMARD (cDMARD) were used in 626 (80%) patients, and 290 (37%) used steroids. The most frequently used bDMARDs were adalimumab in 166 (21%) patients, certolizumab in 129 (16%), tocilizumab in 103 (13%) and abatacept 94 (12%). Table 1 shows baseline characteristics in the groups with and without infections. Patients with infections presented more severe adverse events 3 (7%) compared to those who did not 11 (2%), p=0.007, with a complete recovery without sequelas. Most common infection site was skin (21%) followed by superior airways (12%). Most common infectious agents were gram negative bacteria. Only 2 patients presented bacteremia.

Table 1. Patients baseline characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Infection n=42</th>
<th>Without infection n=738</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female, n(%)</td>
<td>33 (79)</td>
<td>595 (80)</td>
<td>0.74</td>
</tr>
<tr>
<td>Age, median(IQR)</td>
<td>50.9 (43-59)</td>
<td>49.8 (40-58)</td>
<td>0.58</td>
</tr>
<tr>
<td>Disease duration (years), median (RIC)</td>
<td>7.5 (2-16)</td>
<td>70 (3-15)</td>
<td>0.9</td>
</tr>
<tr>
<td>Diagnostic, n(%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rheumatoid arthritis</td>
<td>25 (59)</td>
<td>487 (66)</td>
<td>0.42</td>
</tr>
<tr>
<td>Iodopathic Juvenile Arthritis</td>
<td>0 (0)</td>
<td>27 (4)</td>
<td></td>
</tr>
<tr>
<td>Ankylosing Spondylitis</td>
<td>6 (14)</td>
<td>109 (15)</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>11 (26)</td>
<td>115 (15)</td>
<td></td>
</tr>
<tr>
<td>Comorbidities, n(%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 (52)</td>
<td>329 (44.6)</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Previous bDMARD, n(%)</td>
<td>15 (36)</td>
<td>271 (37)</td>
<td>0.89</td>
</tr>
<tr>
<td>Use of steroids, n(%)</td>
<td>16 (38)</td>
<td>274 (37)</td>
<td>0.9</td>
</tr>
<tr>
<td>cDMARD, n(%)</td>
<td>33 (79)</td>
<td>593 (80)</td>
<td>0.77</td>
</tr>
<tr>
<td>Severe Adverse Events, n(%)</td>
<td>3 (7)</td>
<td>11 (2)</td>
<td>0.007</td>
</tr>
<tr>
<td>Outcome, n(%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovered without sequelas</td>
<td>3 (100)</td>
<td>6 (65)</td>
<td>p=0.34*</td>
</tr>
<tr>
<td>Not recovered</td>
<td>0</td>
<td>3 (27)</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>2 (18)</td>
<td></td>
</tr>
<tr>
<td>Infection site, n(%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin</td>
<td>9 (21)</td>
<td>5 (12)</td>
<td></td>
</tr>
<tr>
<td>Superior airways</td>
<td>10</td>
<td>4 (10)</td>
<td></td>
</tr>
<tr>
<td>Urinary tract</td>
<td>4</td>
<td>4 (14)</td>
<td></td>
</tr>
</tbody>
</table>

*Chi2

Conclusion: The frequency of infections in patients using bDMARD in BioBadameX is low compared to the frequency reported in similar studies in other countries. The presence of infections was associated with more severe adverse events in general, which recovered completely without sequelas.

REFERENCES:

Disclosure of Interests: VIJAYA RIVERA TERAN: None declared, David Vega-Morales: None declared, Sandra Sicilán: None declared, Freda Irazoque-Palazuelos: None declared, Miguel A Saavedra: None declared, Julio Cesar Casasola: None declared, Sandra Carrillo: None declared, Angélica Peña: None declared, Angel Castillo Ortiz: None declared, Omar Eloy Muñoz-Monroy: None declared, Sergio Duran Barragan: None declared, Azucena Ramos: None declared, Luis Francisco Valdés Corona: None declared, Estefania Torres Valdés: None declared, Aleni Paz: None declared, ERICK ADRIAN ZAMORA-TEHOZOL: None declared, Alfonso Torres: None declared, Samara Mendieta: None declared, Daniel Xavier Xibille Friedman: None declared, Francisco Guerrero: None declared, Natalia Santana: None declared, Miguel Vazquez: None declared, Claudia Zepeda: None declared, Melalena Rivera: None declared, Kitzia Alvarado: None declared, Deshire Alpizar-Rodriguez Consultant of: Scientific advisor for GSK, unrelated to this study. Employee of: Scientific advisor for GSK, unrelated to this study.


AB1437 RHEUMATOLOGICAL IMMUNE-MEDIATED ADVERSE EVENTS OF IMMUNE CHECKPOINT INHIBITORS BASED ON THE FDA ADVERSE EVENTS REPORTING SYSTEM

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Background: Immune checkpoint inhibitors (ICIs) provide effective treatment for many cancers but, presumably due to persistent activation of the immune system, they cause a variety of immune-related adverse events (irAEs) in almost every organ. Rheumatological manifestations have been reported in ~5-10% of patients treated with ICIs.

Objectives: We aimed to analyze the rheumatological irAEs (rh-irAEs) reported to the FDA Adverse Event Reporting System (FAERS) from October 2012 through March 2021.

Methods: From October 1st, 2012, to March 31st, 2022, we studied all case reports found on the FAERS database when any of the following seven FDA-approved ICIs, nivolumab, pembrolizumab, ipilimumab, atezolizumab, durvalumab, avelumab, or cemiplimab was the primary suspect of the reported adverse event (AE). Of the 6,090 different AE reports for the ICIs, we selected 186 rh-irAEs, which were rheumatological manifestations, or were associated with rheumatological conditions. We calculated the frequencies of rh-irAEs for each ICI. RSstudio v1.4.1106 was used for general data analysis and the R package
openEBGM v0.8.3 was used for the calculation of disproportionality scores such as the Empirical Bayes Geometric Mean (EBGM) with its 90% two-sided credibility interval, frequently used in safety signal detection models. Drug-event combinations with an EBGM 5% lower limit credibility interval ≥ 1 were considered significant.

**Results:** During the study period, 90,974 individual case safety reports (ICSR) included 236,239 AEs with one ICI as the primary suspect of the AE. The highest frequency of AEs was reported for nivolumab (49.6%), followed by pembrolizumab (23.4%), ipilimumab (12.6%), atezolizumab (6.6%), durvalumab (4.8%), avelumab (0.9%), and cemiplimab (0.3%). The AEs were more frequent in males (62.7%) than in females (37.3%). Of the total ICRSs, 84.2% were expedited because they reported serious, unexpected AEs. Rh-irAEs were 11,203 (4.7%) out of the 236,239 AEs reported. These rh-irAEs were reported in 3,898 (4.3%) out of the 90,974 ICRSs. For the ICRSs containing rh-irAEs, 78.5% were expedited. Unspecific complaints, such as arthralgia, myalgia or muscle weakness, were among the most frequent rh-irAEs. Avelumab and atezolizumab were associated with Sjogren's syndrome and sarcoidosis. Durvalumab, avelumab, atezolizumab and cemiplimab were all associated with myositis. Twenty-one drug-event combinations were significant for EBGM. Of these, nivolumab and pembrolizumab were the two most frequent ICI, with 7 and 6 significant drug-event combinations, respectively.

**Conclusion:** Approximately 5% of the reported ICIs-associated AEs were rh-irAEs. The most frequent complaints were unspecified, such as arthralgia, myalgia, or muscle weakness. Arthritis, myositis, Sjogren's syndrome, and sarcoidosis were also relatively frequent. The improved understanding of the mechanism of action of the ICIs and the characteristics of the rh-irAEs may help to elucidate the pathogenesis of the rheumatological autoimmune diseases that they trigger.

**REFERENCES:**

**Disclosure of Interests:** None declared


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**AB1438**

CARDIOVASCULAR RISK STRATIFICATION FOR TOFACITINIB PATIENTS IN A LARGE TEACHING HOSPITAL

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**Background:** Tofacitinib is an oral JAK-Inhibitor often reserved for patients with treatment-resistant Rheumatoid Arthritis and Psoriatic Arthritis. Tofacitinib modulates cytokines crucial to the inflammatory response which characterises the above conditions, and inhibits certain pathways in the inflammatory response cascade. Rheumatoid and Psoriatic Arthritis are linked with an inherent increased risk for major cardiovascular events. Recent emerging data has evidenced increased cardiovascular risk associated with long-term use of tofacitinib.

**Objectives:** To identify all patients currently undergoing Tofacitinib treatment across all sites at King’s College Hospital NHS Foundation Trust. To risk-stratify all patients into three categories; low risk of developing major cardiovascular events, moderate risk of developing MACE (patients with modifiable risk factors, e.g. high cholesterol or a borderline blood pressure), and high risk of developing MACE (unmodifiable risk factors). To switch patients at high risk onto another treatment or alternative JAK-inhibitor.

**Methods:** Patient data was obtained through electronic patient records including age, blood pressure reading, full lipid profile, smoking status, and comorbidities (hypertension, diabetes, chronic kidney disease, previous cardiovascular history and history of malignancy). A QRISK3 score was calculated. Modifiable risk factors with a lower QRISK3 score were categorised as moderate risk. Patients were considered at high risk if they had a previous cardiovascular event, or a QRISK3 score of more than 10%.

**Results:** A total of 40 patients were on tofacitinib; 64% with RA, 31% with PsA, and 5% for other reasons (interstitial lung disease and colitis). Of the rheumatoid arthritis cohort, 36% of patients were at high risk, 40% at moderate risk, and 24% low risk. Of the psoriatic arthritis cohort, 67% at high risk, 25% at moderate risk, 8% at low risk.

**Conclusion:** During the study period, 90,974 individual case safety reports (ICSR) included 236,239 AEs with one ICI as the primary suspect of the AE. The highest frequency of AEs was reported for nivolumab (49.6%), followed by pembrolizumab (23.4%), ipilimumab (12.6%), atezolizumab (6.6%), durvalumab (4.8%), avelumab (0.9%), and cemiplimab (0.3%). The AEs were more frequent in males (62.7%) than in females (37.3%). Of the total ICRSs, 84.2% were expedited because they reported serious, unexpected irAEs. Rh-irAEs were 11,203 (4.7%) out of the 236,239 AEs reported. These rh-irAEs were reported in 3,898 (4.3%) out of the 90,974 ICRSs. For the ICRSs containing rh-irAEs, 78.5% were expedited. Unspecific complaints, such as arthralgia, myalgia or muscle weakness, were among the most frequent rh-irAEs. Avelumab and atezolizumab were associated with Sjogren's syndrome and sarcoidosis. Durvalumab, avelumab, atezolizumab and cemiplimab were all associated with myositis. Twenty-one drug-event combinations were significant for EBGM. Of these, nivolumab and pembrolizumab were the two most frequent ICI, with 7 and 6 significant drug-event combinations, respectively.

**Conclusion:** Approximately 5% of the reported ICIs-associated AEs were rh-irAEs. The most frequent complaints were unspecified, such as arthralgia, myalgia, or muscle weakness. Arthritis, myositis, Sjogren's syndrome, and sarcoidosis were also relatively frequent. The improved understanding of the mechanism of action of the ICIs and the characteristics of the rh-irAEs may help to elucidate the pathogenesis of the rheumatological autoimmune diseases that they trigger.

**REFERENCES:**
[1] MHRA/CHM advice: Tofacitinib: new measures to minimise risk of major adverse cardiovascular events and malignancies (October 2021)

**Disclosure of Interests:** None declared


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**AB1439**

IS THERE AN INCREASED PREVALENCE OF DIABETES MELLITUS IN THE AXIAL SPONDYLOARTHRITIS PATIENT GROUP: A REVIEW FROM A UK TEACHING HOSPITAL SPONDYLOARTHRITIS SERVICE

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**Background:** The prevalence of diabetes mellitus (DM) has often been found to be increased in patients with axial spondyloarthritis (axSpA) compared to the general population. However, studies conducted in the United Kingdom (UK) have found varying results with regards to prevalence. One study3 found that 5% of patients with axSpA had DM, compared to 4% of patients without axSpA and another UK study4 reported that although findings showed a 1.8% increase in DM in patients with axSpA compared to controls, this result was not significant. There is also the influence of ethnicity to consider as DM is more prevalent in the Asian and Afro-Caribbean population. Therefore, it is evident that more research is required into the relationship between DM and axSpA.

**Objectives:** This study aims to investigate the correlation between DM and axSpA, and also explore the influence of ethnicity on DM and axSpA.

**Methods:** Retrospective analysis was carried out for axSpA patients attending University Hospitals of Leicester axSpA services. Inclusion criteria entailed an axSpA diagnosis and a Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) within a year of MRI spine and sacroiliac joints before starting biological therapy. Patients were excluded if they had an active infection or malignancy. BASDAI was not documented before starting biological therapy or within a year of MRI, or if clinical information was not able to be obtained. Data was obtained from electronic medical records, including age, gender, ethnicity, date of diagnosis of axSpA and DM, and cardiovascular comorbidities.

**Results:** Of the 149 patients, 8 (5.37%) had a diagnosis of DM. 4 (50%) of these patients were diagnosed with DM prior to diagnosis of axSpA, and 4 (50%) were diagnosed with DM post diagnosis of axSpA. Differences in ethnicity were analysed. Of the 149 axSpA patients, 102 (68.46%) were Caucasian, 45 (30.20%) were Asian, and 2 (1.34%) were Afro-Caribbean. Of the 102 Caucasian patients, 3 (2.94%) had DM, of whom 1 was diagnosed with axSpA prior to diagnosis of DM. Of the 45 Asian patients, 5 (11.11%) had DM, of whom 3 were diagnosed with axSpA prior to diagnosis of DM. Looking at cardiovascular comorbidities, of the 8 patients with axSpA and DM, 2 (25%)