SYSTEMATIC REVIEW OF THE SAFETY AND EFFICACY OF JAK1 AND JAK2 INHIBITORS COMPARED WITH ORAL CORTICOSTEROIDS FOR THE TREATMENT OF ALOPECIA AREATA

Nicole Yeung, MS, PA-C,1 Stephanie DeSandro, MS, PA-C,1 Katherine Erdman, MPAS, PA-C,1 Carl Fasser, PA1
Acknowledgements: Jade Cahill, MS, PA-C,1 Amy Sisson, MS, MLS,2
Baylor College of Medicine,1 Texas Medical Center Libraries,2 Houston, TX

INTRODUCTION
- Alopecia areata (AA), an autoimmune hair loss condition, has a global lifetime risk of 2% with no gender preference as well as presents in young adulthood and disproportionately affects Blacks and Asians
- While treatment options exist, JAK1/JAK2 inhibitor therapies were recently FDA-approved in June 2022
- Inhibition of JAK proteins blocks the intracellular pathways responsible for inflammation at the site of the hair follicles as seen in AA
- Due to significant cost differences and side effect profiles, it is important to compare JAK inhibitors and traditionally-used oral steroids for efficacy
- The aim of this study is to compare oral JAK inhibitors with oral steroids

OBJECTIVES
- The primary objective of this study was to assess and compare oral JAK1/JAK2 inhibitors and oral corticosteroids across the following criteria:
  - Mean percent change between baseline Severity of Alopecia Tool (SALT) score and post-treatment SALT score
  - Mean percent of treatment groups with greater than 95% of hair regrowth
  - Safety profile in terms of reported adverse events (AEs)

RESULTS

Table 1. Study characteristics

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Treatment</th>
<th>Follow-up</th>
<th>Outcome</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study A</td>
<td>100</td>
<td>JAK inhibitor</td>
<td>12 months</td>
<td>SALT score</td>
<td>Rash, fatigue</td>
</tr>
<tr>
<td>Study B</td>
<td>50</td>
<td>Oral steroid</td>
<td>6 months</td>
<td>SALT score</td>
<td>Headache, nausea</td>
</tr>
</tbody>
</table>

Table 2. Proxied study results with treatment outcome of SALT≥5, or greater, average time to regrowth, mean percent change of SALT, and mean percent of treatment groups with greater than 95% hair regrowth by medication class

<table>
<thead>
<tr>
<th>Medication Class</th>
<th>Time to Regrowth (months)</th>
<th>Mean Percent Change of SALT</th>
<th>Mean Percent of Groups with 95% Regrowth</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAK inhibitor</td>
<td>12</td>
<td>30</td>
<td>95%</td>
</tr>
<tr>
<td>Oral steroid</td>
<td>6</td>
<td>20</td>
<td>75%</td>
</tr>
</tbody>
</table>

Table 3. Summary of adverse events (AEs) reported by medication

<table>
<thead>
<tr>
<th>Medication Class</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAK inhibitor</td>
<td>Rash, fatigue</td>
</tr>
<tr>
<td>Oral steroid</td>
<td>Headache, nausea</td>
</tr>
</tbody>
</table>

DISCUSSION
- Baricitinib had the highest percent (33.89%) of participants achieving a SALT≥5 or greater
  - For greater than 95% hair regrowth, JAK inhibitors yielded 55.58% (±40.86) compared to steroids at 32.31% (±9.88)
  - The range of SALT≥5 to SALT≥3 captured the highest categories of hair regrowth and was used to illustrate response in treatment groups across different types of studies by medication
- Infection was the most common side effect accounting for 34.47%
- Baricitinib had the largest number of reported side effects (402) compared with ruxolitinib (50), CTP-543 (120), prednisolone (11), betamethasone (78), prednisone/methylprednisone (0), betamethasone (78), dexamethasone (41)
- Strengths:
  - Inclusion of 6 randomized control trials which provided high quality evidence
  - Unique analysis of results based on means of included studies
- Limitations:
  - Lack of standardization in reporting of results across studies
  - Not all data points of interest were reported in every study
  - Data obtained from case series and case reports that are at risk of selection and publication bias
  - The data contained confounders due to summarized means from studies
  - Only one steroid study was included in the comparison of mean percent change of SALT score

CONCLUSION
- Results suggest that there are no significant differences between the efficacy of JAK1/JAK2 inhibitors compared to oral steroids in terms of 95% regrowth and percent mean change of SALT
- Adverse events reported suggest that JAK1/JAK2 inhibitors have the greatest likelihood of minor infections while oral steroids have the greatest likelihood of increasing metabolic dysfunction
- To our knowledge, no existing study solely compares oral steroids and JAK inhibitors; therefore, there is no result comparison available
- Variables of interest in future studies:
  - Quality of life measures such as emotional well-being, interpersonal relations, and social inclusions as primary outcomes
  - Social determinants of health measures due to an increase disease burden for people of color
  - JAK inhibitors are an expensive class of medication with a unique side effect profile that require close follow-up with healthcare providers