Efficacy of Mepolizumab in Patients With Severe Eosinophilic Asthma by Age of Asthma Onset: Meta-analysis of Two Phase III Trials

Poster No. P665 (A1274)

Background

- Late-onset asthma is a distinct phenotype associated with difficult to treat symptoms and poor disease management. Compared with early-onset asthma, patients with late-onset asthma have less severe asthma severity and lower eosinophil counts.
- A subset of patients with asthma also have severe eosinophilic asthma (SEA), characterized by persistent eosinophilic airway inflammation and frequent exacerbations, despite the use of high-dose inhaled corticosteroids and other controller therapy.
- Mepolizumab has been shown to reduce exacerbations and improve health-related quality of life (HRQoL) and asthma control, compared to placebo, in patients with SEA.

Objective

To assess the efficacy of the licensed dose of mepolizumab (100 mg subcutaneously) [SC] every 4 weeks on exacerbation rate, HRQOL, and asthma control in patients with SEA stratified by age of asthma onset.

Methods

This was a post hoc meta-analysis (GIS: ID: 20B115) of data from the Phase III MENDA (NEI:0111884NCT01015101) and MUSCA (NEI:0000636NCT02273131) trials. This meta-analysis presents data from patients who received ≥1 dose of mepolizumab 150 mg SC or placebo. Eligible patients were ≥12 years of age with SEA and a history of ≥5 exacerbations in the previous 12 months, using high-dose inhaled corticosteroids and ≥1 additional controller.

The primary endpoint was the annual rate of clinically significant exacerbations (asthma worsening requiring systemic corticosteroids and/or hospitalization and/or an emergency room [ER] visit).

Secondary endpoints included: rates of exacerbations requiring ER visit/hospitalization; the proportion of patients with no clinically significant exacerbations during the treatment period; changes from baseline in pre-bronchodilator baseline-expiratory volume in 1 second (FEV1); the proportion of patients achieving a minimal clinically important difference (MCID) from baseline in St George’s Respiratory Questionnaire (SGRQ) total score, and Asthma Control Questionnaire (ACQ)-5 score at study end.

Results

- Of the 936 patients included, 466 received mepolizumab (132 <18 years, 172 ≥18–<40 years, and 172 ≥40 years) at asthma onset; one patient was missing asthma duration data, and 468 received placebo (132 <18 years, 172 ≥18–<40 years, and 172 ≥40 years) at asthma onset.
- Patient baseline demographics and clinical characteristics are shown in Table 1.

Table 1. Baseline demographics and clinical characteristics by age of onset

<table>
<thead>
<tr>
<th>Age of asthma onset</th>
<th>n (%)</th>
<th>Median (IQR)</th>
<th>Mean (SD)</th>
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<tbody>
<tr>
<td>&lt;18 years</td>
<td>132</td>
<td>7,7 (1,0)</td>
<td>14.0 (3.9)</td>
</tr>
<tr>
<td>18–&lt;40 years</td>
<td>172</td>
<td>5,7 (0,9)</td>
<td>39.3 (18.5)</td>
</tr>
<tr>
<td>≥40 years</td>
<td>172</td>
<td>5,6 (0,9)</td>
<td>60.0 (18.5)</td>
</tr>
</tbody>
</table>

- Compared with placebo, mepolizumab reduced the rate of clinically significant exacerbations and exacerbations requiring ER visit/hospitalization in all age of onset categories (Figure 1).
- A greater proportion of patients receiving mepolizumab treatment reported no asthma exacerbations on treatment compared with those receiving placebo (Figure 1B).
- Improvements in pre-bronchodilator FEV1 were greater for patients receiving mepolizumab compared with those receiving placebo in all age of onset categories (Figure 2).
- Compared with placebo, a greater proportion of patients receiving mepolizumab in all age of onset categories achieved MCID in SGRQ total score and ACQ-5 score at study end (Figure 3).

Conclusions

- Consistent improvements in exacerbation rates, HRQoL, and asthma control were seen with mepolizumab versus placebo in both patients with late- (<40–49 years) and early- (<18 years) onset SEA.
- Overall, these findings suggest that mepolizumab has consistent benefits in patients with SEA, irrespective of the age of asthma onset.

References

- Favors placebo
- Favors mepolizumab

*MCID for SGRQ is a reduction from baseline of ≥4 points and MCID for ACQ is ≥0.5 points.

Figure 1. Rate ratio of clinically significant exacerbations and exacerbations requiring ER visit/hospitalization (A) and absolute rates of patients with no clinically significant exacerbations (B) by age of onset

Figure 2. Treatment difference in change from baseline pre-bronchodilator FEV1, by age of onset

Figure 3. Odds ratio of HRQoL and asthma control by age of onset

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