Real-World Benefits of Mepolizumab in Patients With Overlapping Allergic and Eosinophilic Endophenotypes: Post Hoc Analysis of REALITI-A by Omalizumab Eligibility

Poster No. 64

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Introduction

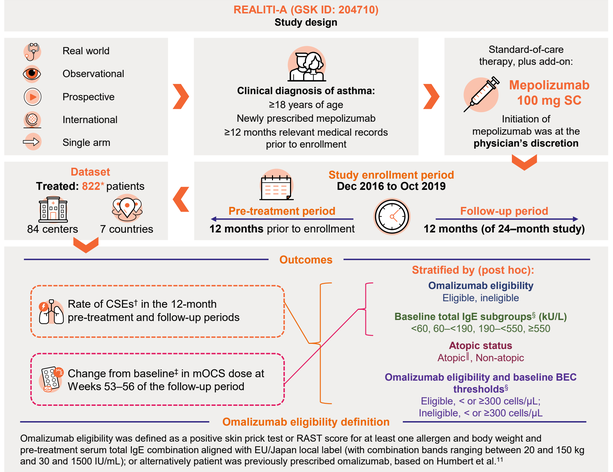
Severe asthma is a complex, heterogenous airway disease with multiple disease endophenotypes, involving distinct but interrelated immune-inflammatory pathways.[1–3]

It has been reported that between 70–80% of patients with severe asthma have overlapping allergic and eosinophilic endophenotypes,[3–4] and are therefore eligible for treatment with anti-eosinophilic (e.g., mepolizumab) or anti-IgE (omalizumab) biologics.[5–6]

Clinical and real-world studies, including the REALITI-A study, have shown that patients with SEA receiving mepolizumab had reductions in CSEs and mOCS use.[7–10] In a post hoc analysis of clinical trial data, mepolizumab improved outcomes in patients with SEA regardless of omalizumab eligibility, IgE level and atopic status; however, equivalent real-world data are lacking.[11]

In this post hoc analysis, we investigated the real-world effectiveness of mepolizumab in patients with SEA and overlapping allergic and eosinophilic phenotypes, using data from the full REALITI-A study population at 1 year, stratified by omalizumab treatment eligibility, baseline IgE level, atopic status and further split by baseline eosinophil level.

Methods



Omalizumab eligibility was defined as a positive skin prick test or RAST score for at least one allergen and body weight and pre-treatment serum total IgE combination aligned with EU/Japan local label (with combination bands ranging between 20 and 150 kg and 30 and 1500 IU/mL); or alternatively patient was previously prescribed omalizumab, based on Humbert et al.[11]

Data were collected as part of routine asthma healthcare visits; *one patient was excluded from the treated population after initiating mepolizumab 300 mg SC (approved dose for EGPA); †CSEs were defined as asthma deterioration requiring OCS for ≥3 days, or an SCS administration (or doubling the dose in patients on maintenance OCS), or an emergency room visit or hospitalization; ‡prednisone-equivalent dose in the 28 days prior to and including the mepolizumab initiation date; §latest record in the 90 days prior to mepolizumab initiation; ¶atopic status was defined as a positive skin prick test or RAST score for at least one allergen.

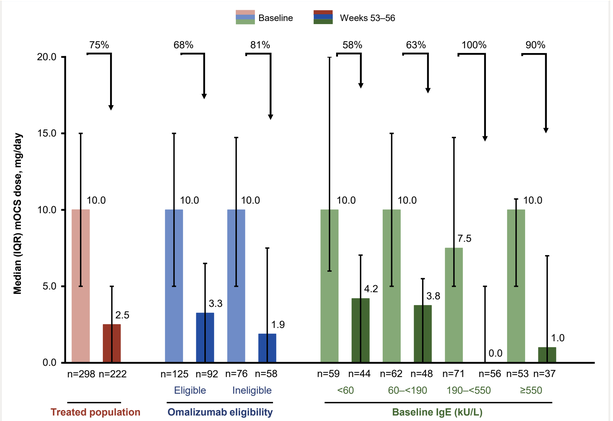
Results

Table 1. Patient demographics and clinical characteristics at enrollment

	Treated population (N=822)	Omalizumab eligibility* (n=540)	
		Eligible (n=349)	Ineligible (n=191)
Age, years, mean (SD)	54 (13.6)	52 (14.3)	54 (14.3)
Female, n (%)	521 (63)	220 (63)	119 (62)
Asthma duration, years, mean (SD)	n=801 19.7 (15.7)	n=341 19.8 (15.5)	n=185 19.5 (15.6)
Smoking history, n (%) Never smoked Former smoker Current smoker	n=815 489 (60) 301 (37) 25 (3)	n=346 209 (60) 130 (38) 7 (2)	n=188 113 (60) 66 (35) 9 (5)
Patients with mOCS use†, n (%) Dose, mg/day, median (IQR)	319 (39) n=298 10.0 (5.0, 15.0)	132 (38) n=125 10.0 (5.0, 15.0)	80 (42) n=76 10.0 (5.0, 14.7)
BEC‡, cells/μL, geometric mean (SD log)	n=614 353 (1.241)	n=257 352 (1.235)	n=135 303 (1.282)
IgE‡, kU/L, geometric mean (SD log)	n=674 181 (1.63)	n=327 213 (1.08)	n=186 131 (2.48)
Prior omalizumab treatment, n (%)	n=821 150 (18)	n=349 150 (43)	n=191 0 (0)
Rate of CSEs, events/year	n=821 4.28	n=348 4.42	n=191 4.85

Data taken at the time of enrollment, unless otherwise specified; *omalizumab eligibility unknown for 282 patients; †prednisone-equivalent dose in the 28 days prior to and including the mepolizumab initiation date; ‡latest record in the 90 days prior to mepolizumab initiation.

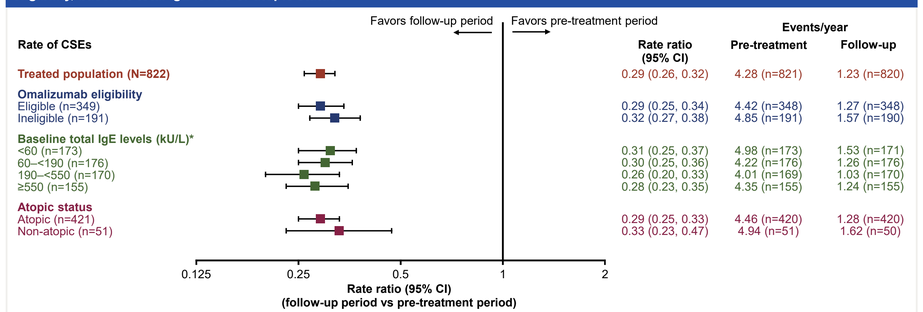
Figure 2. At Week 53–56, median mOCS daily dose decreased irrespective of omalizumab eligibility or baseline IgE levels; patients ineligible for omalizumab treatment and those with baseline IgE levels ≥190 KU/mL had the greatest reductions



Conclusions

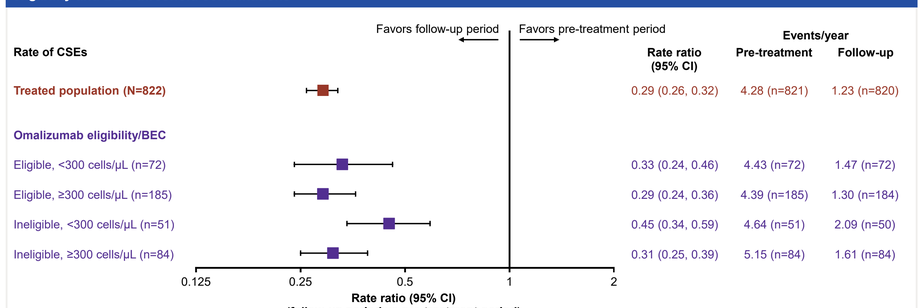
- Real-world mepolizumab treatment reduced the rate of CSEs in patients with severe asthma, irrespective of omalizumab eligibility, baseline total IgE levels, and atopy status; and reduced mOCS dose in patients irrespective of omalizumab eligibility or baseline total IgE levels.
  - Patients who were ineligible for omalizumab or patients who had baseline IgE levels ≥190 kU/L had the greatest reductions from baseline in mOCS dose by Week 53–56.
- A reduction in CSEs was also observed in patients irrespective of omalizumab eligibility and BEC threshold combinations.
- These results expand on the clinical trial data,[11] by demonstrating that real-world mepolizumab treatment benefits patient with severe asthma and overlapping allergic and eosinophilic endophenotypes, a criterion not currently recognized in treatment guidelines.[6]

Figure 1. During the 12–month follow-up period, versus the pre-treatment period, the rate of CSEs decreased, irrespective of omalizumab eligibility, baseline total IgE levels or atopic status



*Similar data previously presented, updated due to minor changes in categorization of baseline IgE value.[12]

Figure 3. The rate of CSEs decreased during the 12–month follow-up for all patients treated with mepolizumab, regardless of omalizumab eligibility and BEC threshold combinations



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Abbreviations

BEC, blood eosinophil count; CI, confidence interval; CSE, clinically significant asthma exacerbation; EGPA, eosinophilic granulomatosis with polyangiitis; EU, European Union; IgE, immunoglobulin E; IQR, interquartile range; KU, kilo unit; mOCS, maintenance oral corticosteroid; OCS, oral corticosteroid; RAST, radioallergosorbent test; SC, subcutaneous; SCS, systemic corticosteroids; SD, standard deviation; SEA, severe eosinophilic asthma.

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