Switch From Omalizumab to Mepolizumab in Severe Eosinophilic Asthma: Effect of Weight and BMI

Poster No. P205

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Aims

Mepolizumab and omalizumab are biologic therapies approved as add-on treatments for patients with severe eosinophilic asthma and severe allergic asthma, respectively.[1,2] However, owing to overlap in the clinical characteristics and possible underlying mechanisms (endotypes) associated with these two severe asthma phenotypes, some patients are eligible for both mepolizumab and omalizumab in clinical practice.[3]

In the OSMO study,[4] patients with severe eosinophilic asthma not optimally controlled despite receiving standard of care therapy plus omalizumab were switched to mepolizumab treatment. They experienced significant and clinically relevant improvements in asthma control, health-related quality of life, lung function, and asthma exacerbations with mepolizumab.[4]

Obesity is associated with a worsening of asthma symptoms and poor asthma control.[5] This post hoc analysis of the OSMO study therefore aimed to assess the impact of weight and body mass index (BMI) on the treatment response to mepolizumab.

Methods

OSMO
Study design

Switch study
Open-label
Single-arm
Multicenter
Phase IV study

145 patients (ITT population) ≥12 years of age

Severe eosinophilic asthma:
≥2 exacerbations in previous year
Uncontrolled* despite omalizumab treatment for ≥4 months (plus standard of care therapy)

Standard of care therapy plus:
Mepolizumab 100 mg SC
Every 4 weeks up to: 32 weeks

Post hoc analysis†

Endpoints
- Mean change from baseline in **ACQ-5 score** at Week 32‡
- Mean change from baseline in **SGRQ total score** at Week 32‡
- Mean change from baseline in **pre-bronchodilator FEV_1** at Week 32‡
- Annualized rate of clinically significant **exacerbations**§

Subgroup analysis

Weight (kg) quartiles:

<70	70–<80	80–<95	≥95
n=32 (22%)	n=32 (22%)	n=46 (32%)	n=35 (24%)

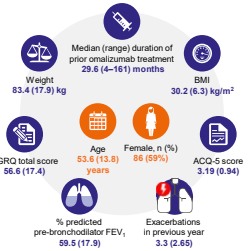
BMI (kg/m²) quartiles:

<25	25–<30	30–<35	≥35
n=31 (21%)	n=47 (32%)	n=38 (26%)	n=29 (20%)

*Uncontrolled asthma was defined as an ACQ-5 score ≥1.5; †GSK ID 204471, NCT02654145; ‡analysis performed using mixed model repeated measures with covariates of region, baseline maintenance OCS therapy (OCS vs no OCS), exacerbations in the year prior to the study (as an ordinal variable) and visit; §analyses of number of exacerbations performed using GEE model assuming a negative binomial distribution with a covariate of treatment period (either pre-treatment [during 12 months prior to screening visit] or on and off treatment [defined as between the first dose and study conclusion regardless of treatment discontinuation]) and logarithm of time as an offset variable.
ACQ-5, Asthma Control Questionnaire 5; BMI, body mass index; FEV_1, forced expiratory volume in 1 second; GEE, generalized estimating equation model; ITT, intent-to-treat; OCS, oral corticosteroids; SC, subcutaneous; SGRQ, St George's Respiratory Questionnaire

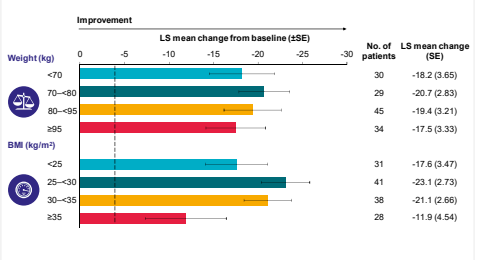
Results

Baseline demographics and clinical characteristics of the OSMO ITT population (N=145)



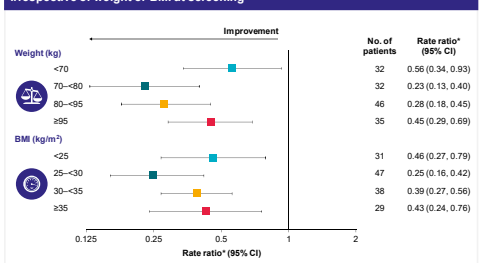
Data are reported for the entire intent-to-treat population of the OSMO study; all values are mean (SD) unless otherwise stated. SD, standard deviation

Mepolizumab was associated with improvements from baseline to Week 32 in SGRQ total score, irrespective of weight or BMI at screening



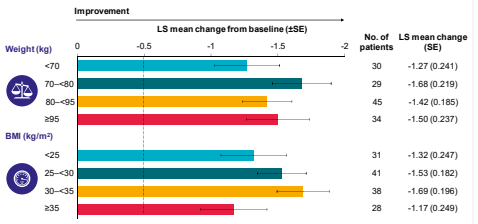
Higher SGRQ scores indicate worse health status; the MCID for SGRQ total score is a change of 4.0 points,[7] represented by the dashed line. Error bars represent SE.

Patients receiving mepolizumab experienced a lower rate of clinically significant exacerbations over the study period compared with the previous 12 months, irrespective of weight or BMI at screening



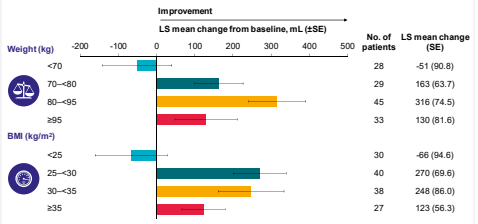
*Rate ratio (mepolizumab/pre-treatment). CI, confidence interval

Mepolizumab was associated with improvements from baseline to Week 32 in ACQ-5 score, irrespective of weight or BMI at screening



Higher ACQ-5 scores indicate worse asthma control; the MCID for ACQ-5 is a change of 0.5 points,[6] represented by the dashed line. Error bars represent SE. LS, least squares; MCID, minimal clinically important difference; SE, standard error

Mepolizumab was associated with improvements from baseline to Week 32 in FEV_1, for patients with a weight ≥70 kg or a BMI ≥25 kg/m²



Higher FEV_1 values indicate greater lung function. Error bars represent SE.

Conclusions

- In this hypothesis-generating, post hoc analysis, weight and BMI did not affect the improvements in asthma control, health status, and exacerbation rates seen with mepolizumab treatment in patients with severe eosinophilic asthma previously uncontrolled by omalizumab.
- Improvements in FEV_1 were observed with mepolizumab in all weight subgroups ≥70 kg and all BMI subgroups ≥25 kg/m².
- These data suggest that patients with severe eosinophilic asthma who are not optimally controlled with omalizumab may receive clinical benefit from mepolizumab treatment, irrespective of their weight or BMI.

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