Real-world Effectiveness of Mepolizumab in Patients with Respiratory Comorbidities and Severe Asthma

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Aims

- Mepolizumab has been shown to improve severe asthma control in clinical trials[1-3] and real-world studies. However, the potential benefits of mepolizumab in patients with respiratory comorbidities that can complicate asthma management are not well defined.
- The objective of this real-world study was to assess effectiveness of mepolizumab in patients with severe asthma and common respiratory comorbidities: nasal polyps, chronic sinusitis, respiratory infection and/or COPD.

Methods

- This was a retrospective analysis of US patients from November 1, 2014 – December 31, 2018 using the MarketScan® Commercial and Medicare Supplemental Database.

Key Inclusion Criteria

- ≥ 12 years of age during baseline
- Continuous enrolment with medical and pharmacy coverage during 12-month baseline and follow-up period
- ≥ 1 asthma diagnosis during baseline
- ≥ 1 non-diagnostic medical claim for pre-specified comorbidities during baseline*
- ≥ 2 mepolizumab administrations over 6-months from the index date

Key Exclusion Criteria

- Evidence of mepolizumab use during the baseline period
- Evidence of a biologic other than mepolizumab during the follow-up period

*Pre-specified comorbidities included: nasal polyps (NP), chronic sinusitis (CS), respiratory infections (RI), and chronic obstructive pulmonary disease (COPD)

Outcomes of Interest

- Exacerbation definition: asthma-related outpatient/emergency department (ED) claim with a claim for systemic corticosteroids 4 days +/-event OR an inpatient hospital admission with an asthma diagnosis code in the primary position
- Oral corticosteroid (OCS) bursts definition: pharmacy claim with ≥20 mg/day prednisone equivalent for 3–28 days AND an asthma-related outpatient/ED claim 7 days pre- to 6 days post- pharmacy claim
- 639 patients met study eligibility. Patients were stratified into non-mutually exclusive subgroups based on the comorbidities of interest. The average number of mepolizumab injections over follow-up ranged from 10.1-10.9 injections for all patient subgroups.

Results

Table 1. Baseline demographics and clinical characteristics

Characteristics, N = 639 eligible patients	Nasal Polyps (n = 143; 22%)	Chronic Sinusitis (n = 288; 45%)	Respiratory Infection[1] (n = 355; 56%)	COPD (n = 221; 35%)
Age, mean (SD)	50.2 (12.3)	51.4 (12.3)	51.3 (13.3)	55.9 (11.7)
Female, n (%)	71 (50.0)	179 (62.0)	229 (65.0)	141 (64.0)
Payer type, n (%)				
Commercial	133 (93.0)	263 (91.0)	319 (90.0)	186 (84.0)
Medicare	10 (7.0)	25 (9.0)	36 (10.0)	35 (16.0)
CCI score, mean (SD)	1.4 (1.2)	1.5 (1.2)	1.6 (1.2)	1.9 (1.4)
Medications[2], n (%)				
ICS	83 (58.0)	158 (54.9)	166 (46.8)	103 (46.6)
ICS/LABA	87 (60.8)	176 (61.1)	226 (63.7)	136 (61.5)
LABA/LAMA	4 (2.8)	8 (2.8)	10 (2.8)	10 (4.5)
ICS/LABA/LAMA[3]	22 (15.4)	65 (22.6)	68 (19.2)	65 (29.4)
SABA	111 (77.6)	247 (85.8)	308 (86.8)	199 (90.0)
LAMA	32 (22.4)	93 (32.3)	120 (33.8)	108 (48.9)
LTRA	113 (79.0)	230 (79.9)	279 (76.8)	170 (76.9)

Abbreviations: CCI, Charlson Comorbidity Index; ICS, inhaled corticosteroids; LABA, long-acting β2-agonist; LAMA, long-acting muscarinic antagonist; LTRA, leukotriene receptor antagonist; SABA, short-acting β2-agonist; SD, standard deviation.
1. Respiratory infection included respiratory infections and pneumonia; 2. Non-mutually exclusive groups; 3. Overlapping claims.

Figure 1. Overlap between comorbidity subgroups

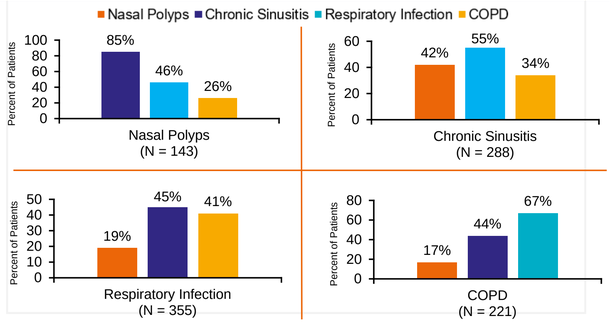


Figure 2. Decrease in the mean number of exacerbations was similar among groups

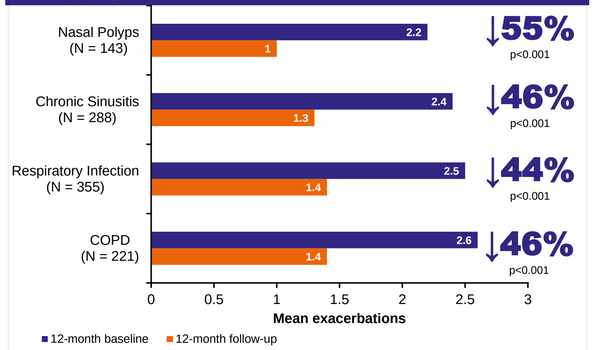
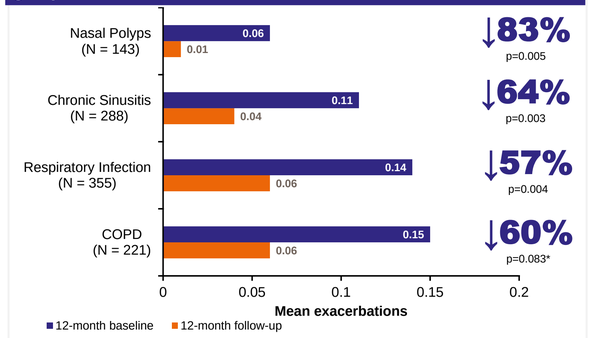


Figure 3. Significant reductions in hospitalization were seen across groups



*Statistical insignificance of NP (p = 0.083), most likely due to small sample and lower baseline rate

Figure 4. Mean number of OCS claims and bursts per patient were reduced

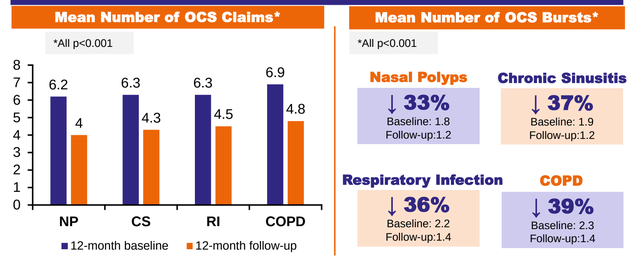
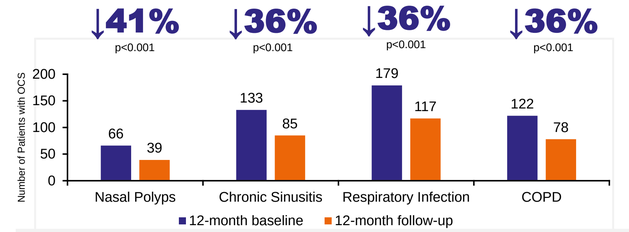


Figure 5. Relative % decrease in number of patients with chronic OCS*



*Chronic OCS use defined as ≥ 5 mg/day during follow-up period

Conclusions

- These real-world data reveal that mepolizumab offers considerable efficacy in patients also experiencing a variety of common and significant medical comorbidities, which often complicate the ongoing management of severe asthma.

References
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2. Ortega HG, et al. *N Eng J Med* 2014;371:1198-207
3. Pavord ID, et al. *Lancet* 2012;380:651-9

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