
Baseline characteristics of patients enrolled in EXCELS: a cohort study

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Background: The Epidemiologic Study of Xolair (omalizumab): Evaluating Clinical Effectiveness and Long-term Safety in Patients with Moderate-to-Severe Asthma (EXCELS) is a unique opportunity to evaluate the prospective, long-term clinical safety and effectiveness of the anti-IgE antibody omalizumab (Xolair) in real-world clinical practice.

Objectives: To describe the study design and study cohorts of EXCELS at baseline and to compare the characteristics of this population with other large asthma cohorts.

Methods: Patients with moderate-to-severe persistent asthma and a positive skin test result or in vitro reactivity to a perennial aeroallergen were eligible for EXCELS. Two cohorts of patients with asthma were enrolled: those treated with omalizumab and those not treated with omalizumab. We analyzed baseline demographic and clinical characteristics, including asthma history and control and allergy history.

Results: Large proportions of patients enrolled in EXCELS had historically severe and poorly or not well-controlled asthma at the time of enrollment, objective evidence of airway obstruction, a history of long-term oral corticosteroid use, and/or other allergic disorders. Minor differences were observed between the omalizumab and nonomalizumab cohorts. Our total patient cohort was generally similar to other large cohorts. In a subgroup analysis, patients who had received omalizumab within 7 days before enrollment had more severe asthma and greater degrees of impairment at baseline than nonomalizumab patients.

Conclusions: This study of baseline characteristics in EXCELS offers a unique opportunity to better understand the history of allergic patients with moderate-to-severe asthma in a real-world treatment setting. This analysis of EXCELS baseline data sets the foundation for long-term assessment of the safety and effectiveness of omalizumab.

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INTRODUCTION

Asthma causes disability in an estimated 7% to 8% of the world population.^{1–4} For patients with moderate-to-severe persistent asthma, a large percentage have ongoing and poorly controlled disease that remains inadequately managed even with the use of systemic corticosteroids.^{2,5–8} Omalizumab (Xolair; Genentech Inc, South San Francisco, California) is a recombinant, humanized monoclonal antibody that selectively binds to human IgE.^{9,10} Omalizumab is approved by the Food and Drug Administration (FDA) for the treatment of adults and adolescents with moderate-to-severe persistent allergic asthma whose symptoms are inadequately controlled with inhaled corticosteroids and who have a positive skin test result or in vitro reactivity to an aeroallergen.

Omalizumab has been shown in clinical studies to reduce asthma exacerbations,^{11–15} decrease inhaled corticosteroid and rescue medication use,^{11,12,16} and improve symptom control and quality of life.^{16–19}

In addition, in previous clinical studies, a small number of patients reported malignancies and anaphylaxis events. The observed incidence of malignant neoplasms among omalizumab-treated patients (0.5%) was numerically higher than that observed in patients in the control groups (0.2%). Observed types of malignant neoplasms included, but were not limited to, breast, prostate, nonmelanoma skin carcinoma, and melanoma. The clinical significance of this finding was unclear given the small number of cases, the relatively short latency between exposure to omalizumab and cancer diagnosis, and the wide variety of tumor types. Most patients with a new diagnosis of cancer were in the study for less than 1 year before diagnosis, and the impact of longer exposure to omalizumab or use in patients at higher risk for malignant neoplasms is not known.

The Epidemiologic Study of Xolair (omalizumab): Evaluating Clinical Effectiveness and Long-term Safety in Patients with Moderate-to-Severe Asthma (EXCELS) is a prospective study of the long-term clinical safety, specifically of all malignant tumors and other serious adverse events, and effectiveness of omalizumab in patients with moderate-to-severe persistent asthma in a real-world clinical practice setting.

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More than 5,000 omalizumab-treated and 2,800 non-omalizumab-treated patients with persistent moderate-to-severe asthma are enrolled and followed up for 5 years or less in this observational, FDA postmarketing study. This report describes the study design of EXCELS, compares the 2 study cohorts at baseline, and compares the characteristics of this population with other large asthma cohorts.

METHODS

Study Design

EXCELS is an ongoing, multicenter, prospective, observational cohort study. Patients were enrolled by asthma specialists in a variety of US-based practice settings, including managed care organizations, community practices, and academic centers. There was no protocol-mandated treatment assignment, and physicians and patients use their own discretion in determining a patient's asthma treatment regimen, including omalizumab. The EXCELS protocol was approved by a local or central institutional review board at each study site. Enrollment began in June 2004 and ended in November 2006.

Study Participants

Patients were eligible to be enrolled in EXCELS if they were 12 years or older, had received a physician diagnosis of moderate-to-severe persistent asthma, and had a history of a positive response to allergy skin testing or in vitro serum specific IgE (radioallergosorbent test [RAST]) reactivity to a aeroallergen. Key exclusion criteria included the following: a known contraindication to omalizumab therapy (eg, patients who have experienced a severe hypersensitivity reaction to omalizumab per the package insert),²⁰ acute asthma exacerbation within the 2 weeks before screening, acute flare-up of significant disease or hospitalization occurring within 2 months before screening, diagnosis of cystic fibrosis, and, for those patients enrolled in the nonomalizumab cohort, any previous treatment with omalizumab. Patients with prior malignant neoplasm were excluded during the 2003 to 2005 enrollment period but not thereafter, when the protocol was amended to allow patients with a personal cancer history into the study.

In the current report we describe all enrolled patients and compare 2 cohorts: omalizumab and nonomalizumab patients. The omalizumab cohort of patients included those who were already taking omalizumab before enrollment and those who were to be prescribed omalizumab at the time of enrollment. Nonomalizumab patients included those who were never treated with omalizumab at the time of their enrollment. We also selected a subgroup for analysis composed of new omalizumab users, which included patients who had started omalizumab treatment within 7 days before and up to 30 days after enrollment into the study. In all cases, patients continued their management under the care of their prescribing physician, including the initiation, cessation, or continuation of omalizumab therapy.

Study Evaluations

A baseline evaluation was conducted for each enrolled patient to collect the following demographic and clinical information: age, sex, race, education level, household income, height, weight, current asthma symptoms and medications, asthma and allergy history, non-asthma-related medical history, asthma-specific health care use, smoking history, cancer history, physical examination, and total serum IgE level (before the initial dose for omalizumab patients). Asthma severity was based on physician subjective evaluation. Information collected regarding asthma control, work productivity, and health care use was patient reported. Baseline spirometry was measured and evaluated in accordance with American Thoracic Society guidelines²¹ and included forced vital capacity, forced expiratory volume in 1 second (FEV₁), maximal mid-expiratory flow, and peak expiratory flow rate. Baseline serum total IgE level was measured at sites' local laboratories using quantitative immunoassays (RAST). Serious adverse events and all malignant neoplasms are reported continuously throughout the study. During the study, clinic visits occur every 6 months, for 5 years, and all patient data are collected using an electronic data capture system. Patients missing study visits are contacted by telephone to collect key data.

Patient Self-reported Assessments

Multidimensional factors associated with asthma control were collected with the Asthma Control Test (ACT). The ACT is a validated, 5-item, patient-reported outcome questionnaire that measures the impact of asthma on home and work activities, shortness of breath and other symptoms, rescue medication use, and overall asthma control.²²⁻²⁴ The Work Productivity/Activity Impairment (WPAI-Asthma) questionnaire is used to evaluate the effects of asthma on work activities.²⁵⁻²⁷

Outcome Measures

In this report, select baseline characteristics of participating patients are described; however, treatment-related outcome measures are not reported herein. Outcome measures that are being evaluated but not reported include the incidence of serious adverse events and all malignant neoplasms, including nonmelanoma skin carcinomas. Malignant neoplasms are confirmed by review of medical records and histopathology reports, including review by an independent oncologist to evaluate whether the event is an actual malignant condition, whether it is study emergent, and/or whether it is a primary malignant tumor (not progression or metastasis of a preexisting malignant tumor).

Secondary outcomes collected are ACT score, WPAI-A score, and asthma-related health care use. Patient-reported asthma-related health care use measures include number of asthma-related visits to the emergency department, number of asthma-related overnight hospitalizations, number of asthma-related unscheduled office visits, number of intubations or need for mechanical ventilator assistance, and number of asthma-related oral or intravenous corticosteroid bursts.

Statistical Analysis

Because of the observational nature of this study and the nature of this report, the analyses are focused on descriptive statistics rather than formal hypothesis testing of the baseline data. Statistical analyses were performed using SAS statistical software (version 9.1 or above; SAS Institute Inc, Cary, North Carolina).

RESULTS

Baseline Demographics

A total of 7,951 participants were enrolled in the study. Cohort membership was uncertain for a small number ($n = 24$) of patients either because of incomplete baseline information or because the patient had previous exposure to omalizumab but was not receiving treatment at the time of enrollment. However, for completeness their data are included in the description of all enrolled patients but not in any other summaries or comparisons.

Baseline demographics for the omalizumab patients ($n = 5,041$), nonomalizumab patients ($n = 2,886$), and total cohort ($n = 7,951$) are presented in Table 1. For the total cohort, at baseline, the average age was 45 years (range, 11–90 years), and most patients were female (65%). The mean time since asthma diagnosis was 22 years. Most patients were white

(80%) and had private health insurance (55%) or Medicare/Medicaid (19%). Nineteen percent had health maintenance organization coverage.

Between the omalizumab and nonomalizumab cohorts, predose/baseline geometric mean total serum IgE levels were 196 vs 104 IU/mL, respectively. The proportion of patients with dosing weight (30 to 150 kg) and total serum IgE levels (30 to 700 IU/mL) decreasing within the parameters of the approved dosing table was also different (70% for omalizumab vs 58% for nonomalizumab). The proportion of patients with IgE levels less than 30 IU/mL was greater in the nonomalizumab cohort (22%) than in the omalizumab cohort (5%).

Asthma History and Control

All enrolled patients had asthma that was considered to be moderate or severe by physician evaluation (Table 2). Sixty percent of patients had asthma that was considered by their physician to be moderate and 40% to be severe. Patients with more severe asthma were observed in the omalizumab cohort (50%) than in the nonomalizumab cohort (23%). Similarly, the occurrence of daily asthma symptoms was reported more frequently in the omalizumab cohort (17%) than in the nonomalizumab cohort (11%). Furthermore, a greater proportion

Table 1. Baseline Demographics of EXCELS Patients

Demographics	Omalizumab ($n = 5,041$)	Nonomalizumab ($n = 2,886$)	All patients ($N = 7,951$)
Age, mean (SD), y	45 (17)	46 (17)	45 (17)
Female, No. (%)	3,224 (64)	1,915 (66)	5,153 (65)
BMI, mean (SD)	31 (13)	31 (15)	31 (13)
Hispanic, No. (%)	413 (8)	190 (7)	605 (8)
Race, No. (%)			
White	3,968 (79)	2,365 (82)	6,352 (80)
Black	722 (14)	368 (13)	1,091 (14)
Asian	95 (2)	47 (2)	143 (2)
Baseline dosing IgE, geometric mean, IU/mL ^a	196	104	157
Patients with baseline dosing IgE level <30 IU/mL, No. (%)	232 (5)	621 (22)	853 (11)
Patient weight and IgE level within dosing table, No. (%)	3,482 (70)	1,595 (58)	5,094 (66)
Primary health care plan, No. (%)			
Commercial or PPO	2,775 (55)	1,555 (54)	4,341 (55)
HMO	1,011 (20)	454 (16)	1,469 (19)
Medicare or Medicaid	942 (19)	591 (21)	1,535 (19)
Self-pay	45 (1)	126 (4)	172 (2)
Prescription drug coverage, No. (%)	4,886 (97)	2,628 (91)	7,532 (95)
Household income >\$75,000, No. (%)	1,263 (25)	618 (21)	1,887 (24)
Investigator specialty, No. (%)			
Allergist	3,757 (75)	2,152 (75)	5,925 (75)
Pulmonologist	1,146 (23)	612 (21)	1,764 (22)
Allergist/pulmonologist	21 (0)	10 (0)	31 (0)
Pediatrician	70 (1)	35 (1)	106 (1)

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); EXCELS, Epidemiologic Study of Xolair (omalizumab); Evaluating Clinical Effectiveness and Long-term Safety in Patients with Moderate-to-Severe Asthma; HMO, health maintenance organization; PPO, preferred provider organization.

^a For nonomalizumab patients, reported values are at the time of the baseline visit; for omalizumab patients, reported values are at the time of or before initial dosing.

Table 2. Asthma History and Control

Variable	Omalizumab (n = 5,041)	Nonomalizumab (n = 2,886)	All patients (N = 7,951)
Smoking, No. (%)			
Current	247 (5)	161 (6)	409 (5)
Former	1,491 (30)	833 (29)	2,328 (29)
Never	3,302 (66)	1,890 (66)	5,207 (66)
Asthma severity, No. (%) ^a			
Moderate	2,537 (50)	2,219 (77)	4,766 (60)
Severe	2,498 (50)	659 (23)	3,167 (40)
Time since asthma diagnosis, mean (SD), y	22 (17)	21 (17)	22 (17)
Frequency of asthma symptoms, No. (%)			
Less than once per week	1,853 (37)	1,109 (39)	2,970 (38)
More than once per week but less than once per day	1,625 (32)	1,020 (36)	2,651 (34)
Daily	858 (17)	328 (11)	1,192 (15)
Asthma exacerbations, No. (%)			
None	1,567 (31)	998 (35)	2,570 (32)
Rare	684 (14)	563 (20)	1,247 (16)
Brief	1,075 (21)	519 (18)	1,599 (20)
May affect activity and sleep	893 (18)	417 (15)	1,315 (17)
Frequent	808 (16)	377 (13)	1,190 (15)
ACT score			
Median (interquartile range)	19 (14–22)	19 (15–22)	19 (15–22)
Mean (SD)	18 (5)	18 (5)	18 (5)
≥20 (well controlled), No. (%)	2,271 (45)	1,382 (48)	3,660 (46)
16–19 (not well controlled), No. (%)	1,178 (23)	712 (25)	1,897 (24)
≤15 (poorly controlled), No. (%)	1,579 (31)	783 (27)	2,369 (30)
Oral steroid use, No. (%)	3,626 (72)	1,501 (52)	5,143 (65)
Long-term ^b	1,219 (24)	311 (11)	1,534 (19)
Periodic ^c	2,407 (48)	1,190 (41)	3,609 (46)
FEV ₁ , mean (SD)			
Prebronchodilator	2.4 (2.0)	2.3 (0.7)	2.4 (0.7)
Postbronchodilator	2.5 (0.9)	2.4 (0.9)	2.6 (0.8)
FEV ₁ % predicted, mean (SD)			
Prebronchodilator	77 (27)	81 (51)	79 (38)
Postbronchodilator	81 (24)	84 (25)	82 (24)
FEV ₁ /FVC, mean (SD)			
Prebronchodilator	0.7 (0.1)	0.7 (0.1)	0.7 (0.1)
Postbronchodilator	0.7 (0.1)	0.8 (0.1)	0.7 (0.1)

Abbreviations: ACT, Asthma Control Test; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity.

^a Investigator determined.

^b Patient used oral corticosteroids for more than half the time in the previous 12 months or 4 times or more during the previous 12 months.

^c Patient did not use oral corticosteroids for more than half the time in the previous 12 months or 4 times or more during the previous 12 months.

of nonomalizumab patients reported no exacerbations than did omalizumab patients (35% vs 31%). Systemic or oral corticosteroid use was also greater in the omalizumab group than the nonomalizumab cohort, regardless of whether it was long-term (24% vs 11%) or periodic use (48% vs 42%). At enrollment, asthma control by ACT score was similar in both cohorts. No clinically relevant differences were found in lung function.

Allergy History

There was a high reported frequency of other allergic conditions in the overall cohort (Table 3); nearly all patients (96%) had been previously diagnosed as having allergic rhinitis or allergies. A smaller proportion had previous diagnoses of

urticaria or hives (47%), food allergies (36%), and atopic dermatitis or eczema (25%). Nearly 98% of patients reported either a positive skin test or RAST result. History of skin test reactivity to both indoor and outdoor allergens was reported at a high frequency, including, by order of prevalence, reactivity to dust mites, tree pollens, weed pollens, grass pollens, molds, cat, dog, and cockroach. Most patients had a history of treatment with immunotherapy (67%), although fewer were receiving immunotherapy (34%) at the time of the baseline visit. Aspirin sensitivity was reported in 16% of patients.

Differences with respect to allergy history between the treatment cohorts were minor, both exhibiting features of atopy. A slightly higher proportion of those treated with

Table 3. Allergy History^a

Variable	Omalizumab (n = 5,041)	Nonomalizumab (n = 2,886)	All patients (n = 7,951)
Diagnosed as having allergic rhinitis or allergies	4,872 (97)	2,721 (94)	7,613 (96)
Diagnosed as having atopic dermatitis or eczema	1,366 (27)	649 (23)	2,019 (25)
Diagnosed as having food allergies	1,934 (38)	910 (32)	2,856 (36)
Diagnosed as having urticaria or hives	2,498 (50)	1,252 (43)	3,762 (47)
Sensitivity to aspirin	904 (18)	382 (13)	1,291 (16)
Positive skin test results	4,663 (93)	2,666 (93)	7,347 (93)
Dust mites	3,840 (82)	2,132 (80)	5,984 (82)
Trees	3,583 (77)	1,957 (73)	5,556 (76)
Weeds	3,558 (76)	1,944 (73)	5,517 (75)
Grass	3,553 (76)	1,935 (73)	5,501 (75)
Mold	3,387 (72)	1,833 (69)	5,234 (71)
Cats	3,351 (72)	1,812 (68)	5,175 (70)
Dogs	2,750 (59)	1,412 (53)	4,176 (57)
Cockroaches	1,545 (33)	742 (28)	2,290 (31)
Food	1,293 (28)	600 (23)	1,902 (26)
Other animals	1,032 (22)	530 (20)	1,566 (21)
History of immunotherapy	3,426 (68)	1,841 (64)	5,280 (67)
Currently receiving immunotherapy	1,656 (33)	996 (35)	2,659 (34)
Patient-reported history of anaphylaxis	1,214 (24)	528 (18)	1,748 (22)
Food	456 (38)	199 (38)	658 (38)
Medications	446 (37)	184 (35)	632 (36)
Other	391 (32)	160 (30)	553 (32)
Insect bites	178 (15)	83 (16)	261 (15)
Exercise	35 (3)	16 (3)	51 (3)
History of allergic reactions after an injection	984 (20)	480 (17)	1,470 (19)
Other	369 (38)	188 (40)	558 (38)
Urticaria/hives	371 (38)	171 (35)	547 (37)
Anaphylaxis	313 (32)	111 (23)	426 (29)
Rash	268 (27)	130 (27)	401 (27)

^a Data are presented as number (percentage) of patients.

omalizumab (97%) had been diagnosed as having allergic rhinitis than non-omalizumab-treated patients (94%), and in general the omalizumab cohort reported a greater frequency of positive skin test results than those in the nonomalizumab cohort. More patients in the omalizumab cohort had a history of treatment with immunotherapy (68% vs 64%). More patients in the omalizumab cohort reported a history of anaphylaxis than in the nonomalizumab cohort (24% vs 18%). In both groups approximately one-third of anaphylactic reactions were reported to be medication related.

Analysis of New Omalizumab Users Subgroup

Demographic characteristics and lung function values in the new omalizumab users subgroup were comparable to those observed in the overall omalizumab cohort (Tables 1 and 2). However, analysis of characteristics of asthma-related impairment revealed striking differences between the new users cohort and the nonomalizumab cohort (Table 4). Similar to what was observed in the 2 primary cohorts, 51% of the new users subgroup were diagnosed as having moderate asthma at baseline and 49% were diagnosed as having severe asthma, compared with the nonomalizumab cohort (77% and 23%, respectively). However, frequent asthma exacerbations were

more than 2-fold higher in new users (31%) vs the nonomalizumab cohort (13%). Furthermore, in the new users subgroup, mean ACT scores were also lower¹⁵ at the baseline visit compared with nonomalizumab patients.¹⁸ In particular, a higher proportion of new users was evaluated as having poorly controlled asthma by ACT score compared with the nonomalizumab patients (51% vs 27%). Long-term steroid use was also more than twice as frequent in the new users subgroup. Similarly, frequency of asthma symptoms was greater in new users compared with the nonomalizumab cohort, with 23% of new omalizumab users reporting “daily” asthma symptoms compared with 11% of nonomalizumab patients. Spirometry measures were equivalent in both cohorts.

DISCUSSION

EXCELS represents a unique opportunity to define the long-term clinical safety and effectiveness profile of omalizumab in patients with moderate-to-severe persistent asthma. We present the EXCELS methods and describe the baseline demographic and clinical characteristics of the omalizumab and nonomalizumab cohorts with an additional focus on patients

Table 4. New Omalizumab Users

Variable	New omalizumab users (n = 569) ^a	Nonomalizumab (n = 2,886)
Asthma exacerbations, No. (%)		
None	102 (18)	998 (35)
Rare	79 (14)	563 (20)
Brief	96 (17)	519 (18)
May affect activity and sleep	115 (20)	417 (15)
Frequently	175 (31)	377 (13)
ACT sum score		
Median (interquartile range)	15 (5–25)	19 (5–25)
Mean (SD)	15 (5)	18 (5)
≥20 (well controlled), No. (%)	146 (26)	1,382 (48)
16–19 (not well controlled), No. (%)	133 (24)	712 (25)
≤15 (poorly controlled), No. (%)	286 (51)	783 (27)
Oral steroid use, No. (%)	421 (75)	1,501 (52)
Long-term ^b	152 (27)	311 (11)
Periodic ^c	269 (48)	1,190 (41)
Frequency of asthma symptoms, No. (%)		
Less than once a week	113 (20)	1,109 (39)
More than weekly but less than once a day	202 (36)	1,020 (36)
Daily but not continuous	89 (16)	317 (11)
Daily and continuous	32 (6)	101 (4)
Daily	131 (23)	328 (11)
FEV ₁ , mean (SD)		
Prebronchodilator	2.4 (2.0)	2.3 (0.8)
Postbronchodilator	2.5 (0.9)	2.4 (0.8)
FEV ₁ % predicted, mean (SD)		
Prebronchodilator	77 (25)	81 (51)
Postbronchodilator	81 (25)	84 (25)
FEV ₁ /FVC, mean (SD)		
Prebronchodilator	0.7 (0.1)	0.7 (0.1)
Postbronchodilator	0.7 (0.1)	0.8 (0.1)

Abbreviations: ACT, Asthma Control Test; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity.

^a New omalizumab users began treatment between 7 days before and 30 days after study enrollment.

^b Patients used oral corticosteroids for more than half the time in the previous 12 months or 4 times or more during the previous 12 months.

^c Patients did not use oral corticosteroids for more than half the time in the previous 12 months or 4 times or more during the previous 12 months.

newly prescribed omalizumab at the time of enrollment. Although the study was initiated as an FDA postmarketing study to prospectively evaluate the long-term clinical safety of omalizumab with particular emphasis on determining the incidence of malignant neoplasms and other serious adverse events, such data are not presented in this article. Future analyses will include summation of the long-term clinical safety of omalizumab for these targeted safety outcomes and assessments of the effectiveness of asthma treatment in EXCELS.

In general, the 2 primary cohorts (omalizumab and non-omalizumab) were similar. The disproportionate number of women is consistent with the prevalence of asthma in women in the general US population.^{28–30} Generally, patients had asthma that was not well controlled or poorly controlled according to the ACT, had airway obstruction, and tended to use oral corticosteroids on a periodic or long-term basis for asthma. We observed a mean body mass index (calculated as weight in kilograms divided by height in meters squared) consistent with obesity (≥30), which is a risk factor strongly

associated with asthma severity.³¹ Clinically important differences were observed between these cohorts in baseline IgE, asthma severity, and corticosteroid use.

As an enrollment requirement, patients had to have objective evidence of allergic asthma. We observed that all enrolled patients had evidence of allergic disease and that the omalizumab-treated patients were as allergic as those not treated with omalizumab. The reported frequencies of allergic rhinitis, eczema, and chronic urticaria and allergic sensitivities were similar in the 2 cohorts. A relatively high proportion (approximately 20%) of prior allergic reactions to injection therapy was observed in both cohorts, with one-third of these being anaphylactic in nature. These data are patient reported, and a standard definition of this event was not used. In addition, the obligate allergic status of these patients likely influences the proportion of patients reporting a history of anaphylaxis.

Most patients in the omalizumab cohort had been receiving omalizumab treatment for more than 2 months at the time of enrollment. It is therefore possible that differences in asthma

severity and/or control between the omalizumab and nonomalizumab cohorts were masked or potentially reduced because of a potential benefit of omalizumab therapy. For this reason we performed a subgroup analysis of patients newly prescribed omalizumab (initiation of omalizumab within 7 days before and up to 30 days after enrollment) and compared these patients with the nonomalizumab cohort. New users were relatively more impaired at the time of enrollment compared with nonomalizumab patients as indicated by ACT scores that, on average, reflected poor control compared with not well controlled. New users also reported more exacerbations, greater steroid use, and a higher frequency of asthma symptoms. Despite the difference in ACT scores and symptoms, there were minimal differences in FEV₁ values between the groups. This observation supports the thesis that lung function, by itself, may underestimate asthma control. Overall, these results suggest that patients given omalizumab are characterized by having a greater degree of impairment and risk of exacerbations.

Our combined dataset of exclusively allergic asthmatic patients (7,951 patients) is similar to other large cohorts of patients with moderate-to-severe asthma. In general, the baseline demographic characteristics of our overall cohort are consistent with those observed in The Epidemiology and Natural History of Asthma: Outcomes and Treatment Regimens (TENOR) study, a multicenter, observational study of patients with severe or difficult-to-treat asthma.^{32–34} Our cohort was of similar age (49 years for adults enrolled in the TENOR study) and smoking history (4% current, 32% past, 64% never smoked). Compared with the TENOR study, however, EXCELS participants had a greater percentage of moderate asthma (60% vs 48%), were more often female (65% vs 62%), and had differential IgE levels (157 vs 85 IU/mL for adults and 223 IU/mL for 13- to 17-year-olds); the different IgE levels were likely related to study entry criteria. Lung function was relatively similar between the 2 study populations.

Compared with the large cohorts,³⁵ our population had a slightly higher use of corticosteroids (19% vs 17%). ACT scores in another large study²⁴ were equivalent to our total population (median, 19; interquartile range, 15–22). In our study, the duration of asthma (22 years) was greater than in the Salmeterol Multicenter Asthma Research Trial (16 years).³⁶

In conclusion, this descriptive summary of baseline data collected from patients enrolled in EXCELS reveals that those taking omalizumab in a real-world setting represent a population of patients with persistent pulmonary and allergic morbidity and persistent impairment despite specialist-defined therapy. Further longitudinal data from EXCELS should provide useful information regarding the natural history of moderate-to-severe asthma and the long-term clinical safety and effectiveness profile of omalizumab.

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