SHORT COMMUNICATION

Prevalence of Asthma and Asthma Severity Among Patients with Moderate–Severe Atopic Dermatitis Treated with Advanced Systemics

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Submitted Mar 19, 2025. Accepted after revision Jun 5, 2025
Published Jun 25, 2025. DOI: 10.2340/actadv.v105.43415. Acta Derm Venereol 2025; 105: adv43415.

Atopic dermatitis (AD) is characterized by type 2 inflammation dominated by interleukin (IL)-13, IL-4, and IL-31 in the skin (1) and is associated with type 2 inflammatory comorbidities, including allergic asthma, food allergies, and allergic and non-allergic rhinitis (2, 3). Over the past decade, the treatment landscape for AD has significantly evolved with the introduction of biologics and Janus kinase inhibitors (4). The coexistence of severe refractory asthma and AD may influence the choice of advanced systemic treatment for the skin, thus it is important to investigate the prevalence of asthma and asthma severity among patients with moderate-to-severe AD. Here we present data on the prevalence and severity of asthma among patients with moderate-to-severe AD, derived from SCRATCH, a nationwide Danish registry on AD patients undergoing advanced systemic treatment (5).

MATERIALS AND METHODS

Clinical observational data in SCRATCH were linked to the Danish national registries by a unique personal identification number assigned to all Danish residents. The index date was 31 December 2022. Asthma was defined as (*i*) an International Classification of Disease, 10th revision (ICD-10) diagnostic code for asthma (J45 and J46) received at a hospital and registered in the Danish National Patient registry (DNPR) prior to index date or (*ii*) self-reported asthma, defined by a "Yes, currently" or "Yes, previously" response to the question "Has a doctor ever told you that you have asthma?" in SCRATCH. Patients who received asthma treatment before index date were classified as group I: systemic asthma medication, including conventional treatment (montelukast and theophylline) and biologics (omalizumab, reslizumab, mepolizumab, benralizumab, and dupilumab) (6). Patients who did not receive asthma treatment before index date were classified as group II: no systemic asthma medication. Patients prescribed biologic therapy were classified as having severe, refractory asthma in accordance with the Global Initiative for Asthma (GINA) 2025 guidelines stating that severe asthma is defined as asthma that requires high-dose inhaled corticosteroid-long-acting beta-agonist (ICS-LABA) therapy or biologic therapy to maintain adequate asthma control (7). Patients prescribed omalizumab, reslizumab, mepolizumab, benralizumab, or dupilumab due to chronic obstructive pulmonary disease were excluded from group I. Additionally, patients prescribed dupilumab or omalizumab in dermatology hospital departments were also excluded from group I as they were most likely prescribed these treatments for skin conditions rather than asthma. For those reporting current asthma in SCRATCH, asthma control was assessed using the 5-item Asthma Control Questionnaire (ACQ5). AD severity was assessed using the Eczema Area and Severity Index (EASI) and Patient Oriented Eczema Measure (POEM), while disease burden was assessed using the Dermatology Life Quality Index (DLQI). Itch, sleep disturbance, and pain were measured using a numeric rating scale (NRS). For patients with multiple observations, the highest score before index date was used.

RESULTS

A total of 668 observations were retrieved from SCRATCH; 19 observations were excluded due to duplicate registrations or erroneous personal identification numbers. Ultimately, 649 patients (56.1% male; median age 31.4 years [interquartile range (IQR): 26.3–54.1]) were included and linked to national registry data. Of these, 288 (44.4%) had an ICD-10 diagnostic code for asthma. From self-reported asthma data in SCRATCH, 405/607 (66.7%) reported ever having asthma whereas 286 (47.1%) indicated current asthma. The median NRS scores for itch, sleep disturbance, and pain were 8.0 (6.0–9.0), 6.0 (3.0–8.0), and 2.0 (1.0–6.0), respectively for patients reporting ever asthma. Patients with ever asthma were generally older, more frequently male, and exhibited higher AD severity (EASI scores) compared with those without asthma, while patient-reported outcomes (PROs) were similar between the groups. Among 649 patients with moderate-to-severe AD, 288 (44.4%) patients had hospital-registered asthma and 143 (22.0%) had prescriptions for systemic asthma treatment, all of whom also had hospital-registered asthma. Of the 143 patients with a prescription for systemic asthma medication, 142 (21.9%) had received conventional treatments and 16 (2.5%) were prescribed biologics indicating severe, refractory asthma according to the GINA 2025 guidelines and the European labels/treatment recommendations (7, 8). In detail, of the 142 prescribed conventional treatments for their asthma, 96.5% had been treated with montelukast and 9.9% with theophylline. Furthermore, of the 16 patients prescribed biologics, 93.8% received omalizumab, 31.3% received dupilumab, and $\leq$3 patients were prescribed mepolizumab. No patients were prescribed reslizumab or benralizumab and the remaining 145 patients received no systemic asthma medication.

Among 185 patients with moderate-to-severe AD and current asthma who had completed the ACQ5, 38.9% had well-controlled asthma, 30.8% had not well-controlled asthma, and 30.3% had uncontrolled asthma (**Table I**). There was a tendency for increasing AD severity with worse asthma control.

DISCUSSION

This study presents data on the prevalence and severity of asthma among patients with moderate-to-severe AD derived from the SCRATCH database and the DNPR. However, a discrepancy in the number of patients with "ever asthma" was observed between the 2 databases. In Denmark, general practitioners typically manage treatment and follow-up of asthma, thus many patients are never recorded in hospital-based registries as a part of the DNPR, which may be a major limitation of this study. This may explain why more patients reported a history of asthma in SCRATCH compared with the DNPR. Another explanation could be asthmatic bronchitis in childhood. Moreover, the population size of group I may have been underestimated as patients treated with dupilumab for both their AD and asthma were excluded from this study, if their dupilumab treatment was prescribed at a dermatology department.

Finally, a limitation of this study is the lack of objective diagnostic assessments for asthma such as pulmonary function testing, fractional exhaled nitric oxide (FeNO) test, and airway hyperresponsiveness (AHR) test. Also, the long-term course and control of asthma in the patients remain unknown. In summary, these data indicate that AD patients with asthma tend to have more severe AD compared with those without asthma, although PROs were similar. Less than one-third of patients with current asthma who answered the ACQ5 had uncontrolled asthma, yet this group exhibited the highest median EASI scores, and PROs, potentially reflecting increased disease complexity or a lack of treatment adherence. In total, 44.4% of patients with moderate-to-severe AD had ever received a diagnosis of asthma in a hospital-based setting. Of those, 22.0% received systemic treatment for their asthma, while only 2.5% presented with severe, treatment-refractory asthma in need of biological treatment, highlighting the need for careful consideration when selecting therapy for moderate-to-severe AD.

ACKNOWLEDGEMENTS

Funding sources: This study was funded by an unrestricted grant from Almirall.

Conflict of interest disclosures: MOC, with no relation to this manuscript; Dr Christensen has been a sub-investigator for LEO Pharma, paid consultant for LEO Pharma and paid speaker for Pierre Fabre. IV has received financial research support from Sanofi/Regeneron Pharmaceuticals, Pfizer, Eli Lilly, Almirall, and Abbvie, and personal honoraria for lecturing and/or consulting from Pfizer, Almirall, and Abbvie and has been a sub-investigator for LEO Pharma. At the time of the study design and study conduct IV was employed at the department of Dermatology, Copenhagen University Hospital – Bispebjerg and Frederiksberg. Currently, she is a full-time employee of LEO Pharma. JE has been a speaker and/or has served on advisory boards for Sanofi, Pfizer, Leo Pharma, Novartis, AstraZeneca, Almirall, AbbVie, Eli Lilly, Galderma, Takeda, CSL Vifor, and GSK and received research support from Almirall. LS has received research funding from Novartis, Bristol-Myers Squibb, AbbVie, Janssen Pharmaceuticals, the Danish National Psoriasis Foundation, the LEO Foundation, and the Kgl. Hofbundtmager Aage Bang Foundation and honoraria as consultant and/or speaker for AbbVie, Eli Lilly, Novartis, Pfizer, LEO Pharma, Janssen, UCB, Almirall, Galderma, Stada, Myers Squibb, and Sanofi. LS has served as an investigator for AbbVie, Pfizer, Sanofi, Janssen, Boehringer Ingelheim, AstraZeneca, Eli Lilly, Novartis, Regeneron, Galderma, and LEO Pharma. CGM Mortz: with no relation to this manuscript, Dr Mortz has received research grant from Novartis. LT has no conflicts of interests. MGD: With

Table I. Characteristics of patients with atopic dermatitis from the SCRATCH population and the Danish National Patient Registry population categorized by asthma status and treatment status. SCRATCH data are self-reported data and DNPR data is registry data from the Danish National Patient Registry.

	Patients with moderate-to-severe AD, *n* = 649				SCRATCH population Current asthma, *n* = 286 ACQ5 data available, *n* = 185		
	SCRATCH population, *n* = 607		DNPR population, *n* = 649				
Item	Ever asthma, *n* = 405	No asthma, *n* = 202	Ever asthma, *n* = 288	No asthma, *n* = 361	Well-controlled asthma, ACQ5 < 0.75 *n* = 72	Not-well controlled asthma, ACQ5 ≥0.75 and < 1.5 *n* = 57	Uncontrolled asthma, ACQ5 ≥1.5 *n* = 56
Gender, female, *n* (%)	159 (39.3)	106 (52.5)	109 (37.8)	176 (48.8)	26 (36.1)	20 (35.1)	23 (41.1)
Age, median (IQR)	43.3 (28.2–55.0)	35.7 (25.9–51.8)	41.28 (26.1–54.3)	37.9 (26.6–54.1)	47.7 (36.8–56.4)	42.4 (29.8–54.6)	49.8 (31.2–59.7)
Age < 18, *n* (%)	19 (4.7)	16 (7.9)	27 (9.4)	29 (8.0)	20 (27.8)	25 (43.9)	17 (30.4)
Age 18–40, *n* (%)	164 (40.5)	104 (51.5)	114 (39.6)	163 (45.2)			
Age 40–65, *n* (%)	185 (45.7)	61 (30.2)	121 (42.0)	133 (36.8)	45 (62.5)	28 (49.1)	32 (57.1)
Age >65, *n* (%)	37 (9.1)	21 (10.4)	26 (9.0)	36 (10.0)	7 (36.1)	4 (7.0)	7 (12.5)
EASI score, median (IQR)	16.0 (7.3–24.6)	12.9 (4.8–19.5)	16.3 (7.8–24.8)	12.6 (5.0–21.5)	15.2 (4.7–28.5)	15.4 (6.0–21.4)	18.2 (9.7–24.9)
POEM score, median (IQR)	20.0 (14.0–24.0)	18.0 (13.0–23.0)	19.0 (13.0–24.0)	18.0 (13.0–24.0)	18.5 (13.0–23.5)	19.0 (13.0–24.0)	22.0 (17.0–26.0)
DLQI score, median (IQR)	12.5 (6.0–18.0)	11.0 (7.0–17.0)	12.0 (6.0–18.0)	11.0 (7.0–17.0)	9.5 (4.0–16.5)	12.0 (8.0–16.0)	15.5 (10.0–24.0)
Itch score[a], median (IQR)	8.0 (6.0–9.0)	8.0 (5.0–9.0)	8.0 (5.0–9.0)	8.0 (6.0–9.0)	8.0 (6.0–9.0)	8.0 (6.0–9.0)	9.0 (7.0–10.0)
Degree of sleep loss score[a], median (IQR)	7.0 (4.0–9.0)	6.00 (2.0–8.0)	6.0 (3.0–8.0)	6.0 (3.0–8.0)	5.0 (3.0–8.0)	6.0 (3.0–8.0)	8.0 (5.0–10.0)
Skin pain score[a], median (IQR)	2.0 (1.0–5.0)	4.00 (1.0–7.0)	2.0 (1.0–5.0)	3.0 (1.0–7.0)	1. 0 (0.0–3.5)	2.0 (1.0–6.0)	4.0 (1.0–8.0)

ACQ5: 5-item Asthma Control Questionnaire; AD: atopic dermatitis; DLQI: Dermatology Life Quality Index; DNPR: Danish National Patient Registry; EASI: Eczema Area and Severity Index; IQR: interquartile range; POEM: Patient Oriented Eczema Measure.

no relation to the present manuscript, MGD has been a speaker or has served on advisory boards for Sanofi, AbbVie, LEO Pharma, Pfizer, Eli Lilly, Novartis, UCB Pharma, Almirall, Bristol Meyers Squibb, Boehringer Ingelheim, and Astra Zeneca, and has been an sub-investigator in clinical trials for Sanofi, Almirall, Johnson & Johnson, and UCB. KSI: Unrelated to the present study, KSI has been a speaker or has served on advisory boards for Sanofi, AbbVie, LEO Pharma, Pfizer, Eli Lilly, and Almirall, and has been primary investigator or sub-invastigator in clinical studies for Almirall, Leo Pharma, Abbvie, and Sanofi. AH: Unrelated to the present study, Dr Haerskjold has served on advisory boards for Almirall. SFT: With no relation to the present manuscript, SFT has been a speaker or has served on advisory boards for Sanofi, AbbVie, LEO Pharma, Pfizer, Eli Lilly, Novartis, UCB Pharma, Union Therapeutics, Almirall, and Janssen Pharmaceuticals, and has received research support from Sanofi, Almirall, AbbVie, LEO Pharma, Novartis, UCB Pharma, and Janssen Pharmaceuticals. CV: With no relation to the present manuscript, CV has been a speaker or has served on advisory boards for Sanofi, AbbVie, LEO Pharma, Pfizer, Eli Lilly, Novartis, Almirall, Galderma,, and Janssen Pharmaceuticals, and has received research support from Sanofi, Almirall, AbbVie, LEO Pharma, and Novartis.

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