KoSAR
Korean Severe Asthma Registry

Lessons from the **Korean Severe Asthma Registry** (KoSAR)

대한천식알레르기학회 중증천식 워크그룹
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김 상 헌

Real-World Data (RWD) and **Real-World Evidence (RWE)**

RCT vs. **Real-World Study**

ERJ OPEN RESEARCH
REVIEW
Y. LEE ET AL.

Roles of real-world evidence in severe asthma treatment: challenges and opportunities

Youngsoo Lee[1], Ji-Hyang Lee[2], So Young Park[3], Ji-Ho Lee[4], Joo-Hee Kim[5], Hyun Jung Kim[6], Sang-Heon Kim[7], Kian Fan Chung[8] and Woo-Jung Song[2]

	Randomised controlled trial	Real-world study
Strength	Internal validity	External validity
Design	Prospective	Retrospective or prospective
Inclusion criteria	Strict	Generous
Study population	Usually homogeneous	Heterogeneous
Comparator	Present (usually placebo controls)	Usually absent (or historical controls)
Outcomes	Focused and pre-determined	Various (depending on type of study or database)
Treatment regimen	Fixed	Variable (based on clinical practice and patient–physician decision)
Treatment adherence	Controlled (as planned)	Uncontrolled (resulting from various factors that patients and physicians experience, including efficacy, adverse effects, ease of use and costs)
Risk of bias and confounder	Usually controlled	Usually uncontrolled
Long-term follow-up	Relatively short (<1 year)	Follow-up for years is relatively common

Lee Y et al., ERJ Open Res 2023; 9.

중증천식: Registries and Study Groups

Name	Country	Organization
National: Europe		
UK Severe Asthma Registry (UKSAR)	United Kingdom	BTS
Severe Asthma Network in Italy (SANI) registry	Italy	SANI
COhort of BRonchial obstruction and Asthma (COBRA)	France	
Belgian Severe Asthma Registry (BSAR)	Belgium	Belgian Thoracic Society
Spanish Registry of Severe Asthma	Spain	
Portuguese Severe Asthma Registry	Portugal	REAG
Austrian Severe Asthma Registry	Austria	Austrian Severe Asthma Net (ASA-Net)
German Severe Asthma Registry	Germany	German Asthma Net
Russian Severe Asthma Registry (RSAR)	Russia	Russian Respiratory Society
National: North America		
CHRONICLE	United States	
Severe Asthma Research Program (SARP)	United States	
National: Asia-Pacific		
Korean Severe Asthma Registry (KoSAR)	Korea	KAAACI
Australian Severe Asthma Registry (ASAR)	Australia	Australian Severe Asthma Network (ASAN), TSANZ
International		
Severe Heterogeneous Asthma Research collaboration, Patient-centred (SHARP)	Europe	ERS
African Severe Asthma Project (ASAP)	Africa	
International Severe Asthma Registry (ISAR)	World	
Unbiased Biomarkers for the Prediction of Respiratory Disease Outcomes (U-BIOPRED)	Europe	

중증천식 워크그룹(연구팀): 연혁과 활동(1)

2010

대한천식알레르기학회 중증천식 워크그룹(연구팀) 설립

초대 팀장 윤호주 교수(한양대학교병원) 취임

2011

KoSAR-1 레지스트리 구축 운영

2016

2대 팀장 조유숙 교수(서울아산병원) 취임

2019 - 2020

[연구과제]

· 국내 대학병원에서 천식 환자에 대한 경구스테로이드 처방 특성 조사 (AstraZeneca)

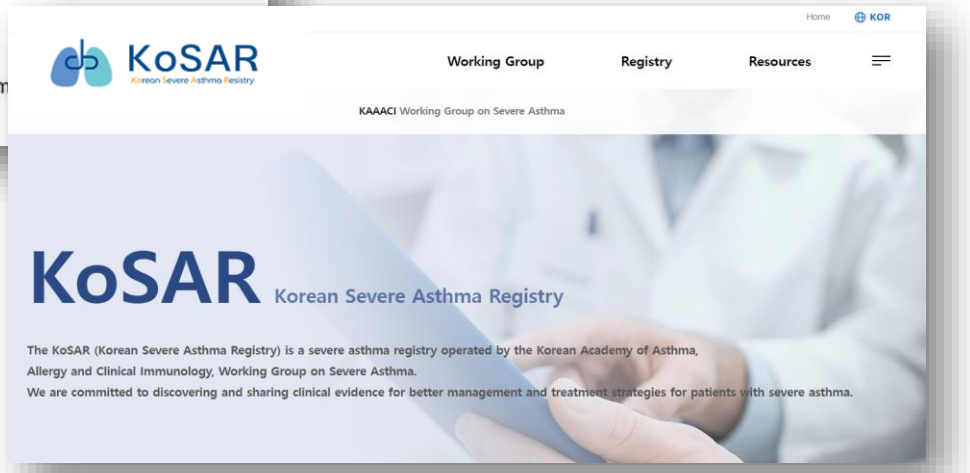
2020 - 2021

[연구과제]

· 중증천식에서 생물학적 제제간 비교평가 후향 연구 (보건복지부)

Korean Severe Asthma Registry (KoSAR): 목표

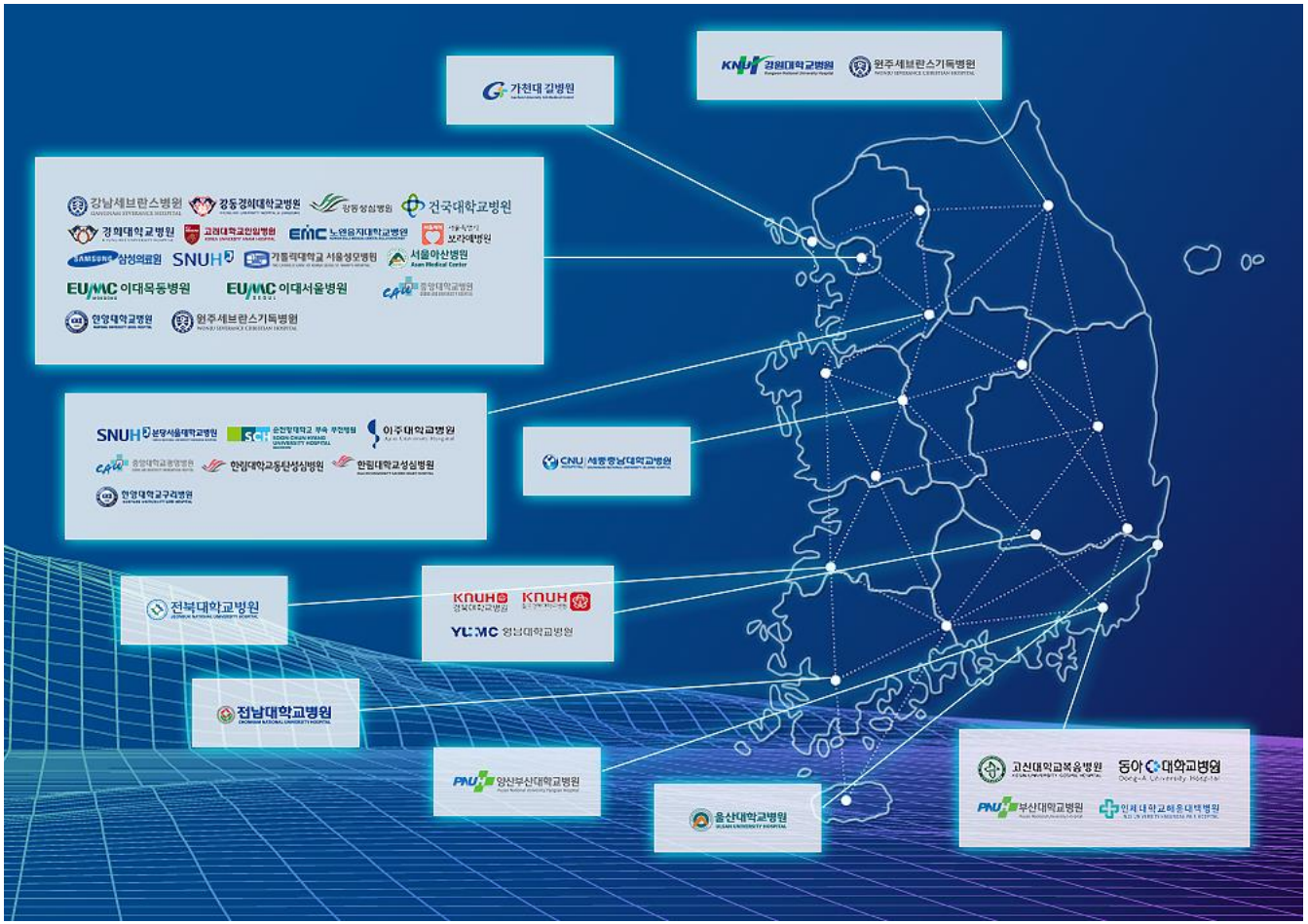
- To assess the demographics, clinical characteristics, and heterogeneous phenotypes of severe asthma
- To understand the natural course and progression of severe asthma and the responses and adverse reactions to medications through long-term regular follow-ups
- To estimate the burden and treatment status of severe asthma
- To develop better strategies for management of severe asthma in Korea



Kim SH et al., Korean J Intern Med 2022; 37:249-60.
https://www.severeasthmawg.com

다기관 연구 네트워크: 참여기관

지역별 참여기관과 연구자(총 41기관)

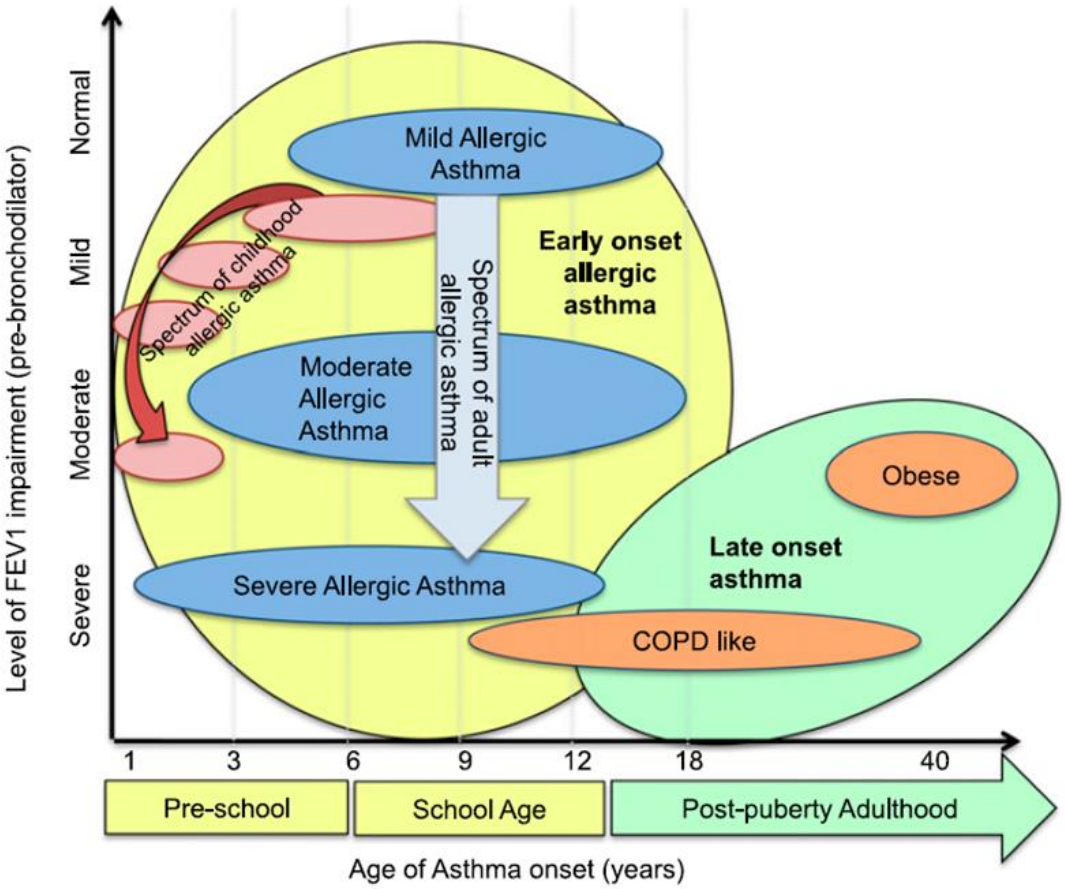


조직 / 위원회: 구성 및 운영


KoSAR
자문위원회
운영위원회
윤리위원회
학술위원회
· 연구계획서 검토 (학술적가치, 윤리성, 중복성, 실현가능성)
· 최신 연구 동향 조사
· 연구 주제 개발 및 관리
· 연구 심포지움 개최
데이터관리위원회
· 연구조사자 교육
· 조사지침서 개발
· 쿼리 정도 관리 및 수정
· 연구분석 원시데이터 생성 및 관리
인체자원/영상위원회
· 중증천식 환자 DNA와 혈장 수집
· 인체유래물 수집, 보관, 운송 및 정도관리
· CT 영상 수집 및 분석
자료연계위원회
· 관련부처 협의체계 구축
· 공공자료 연계를 통한 임상 역학정보 수집
· 빅데이터 연계 DB 구축

중증천식의 이질성(heterogeneity)

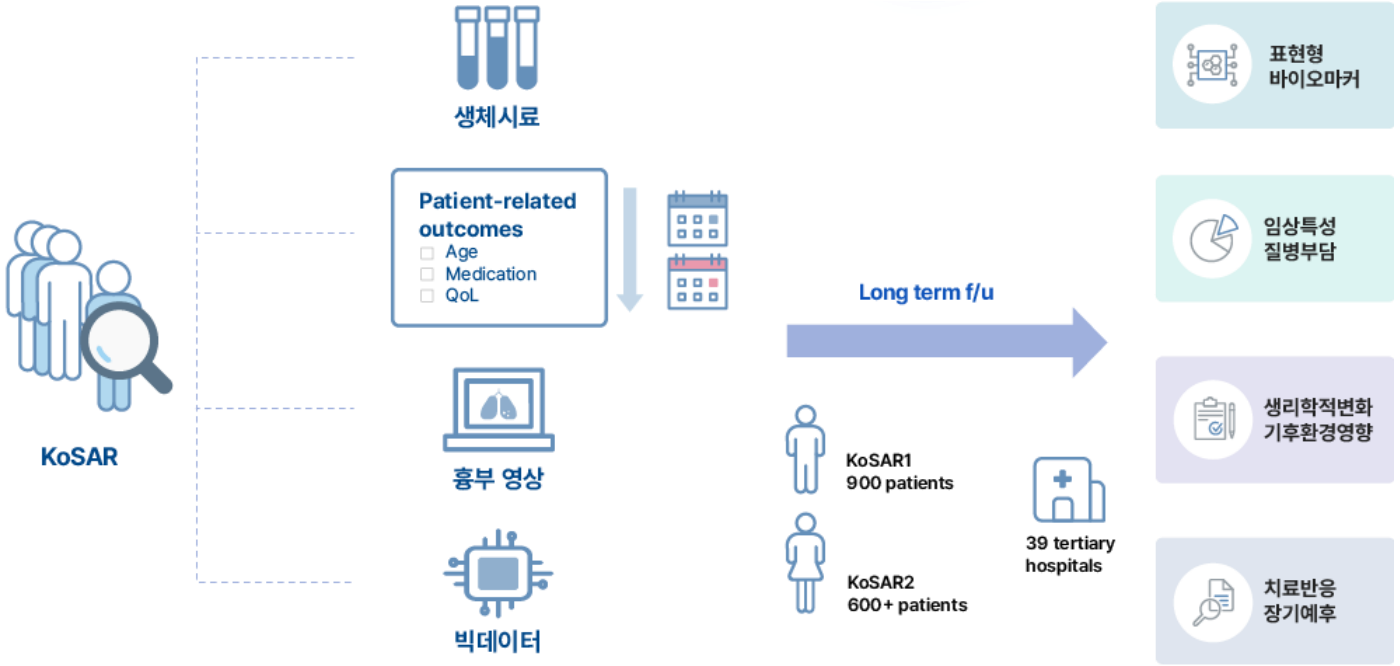
- A proposed combination of the adult and pediatric SARP clinical clusters



Moore WC et al., Ann Am Thorac Soc 2013; 10 Suppl:S118-24.

중증천식: 등록과 장기추적

- 등록기준
  - adult asthma with treatment history of ≥12 months on regular follow-up
  - uncontrolled asthma despite GINA step 4-5 treatment
  - irrespective of smoking history or COPD features
- 정기적 장기추적



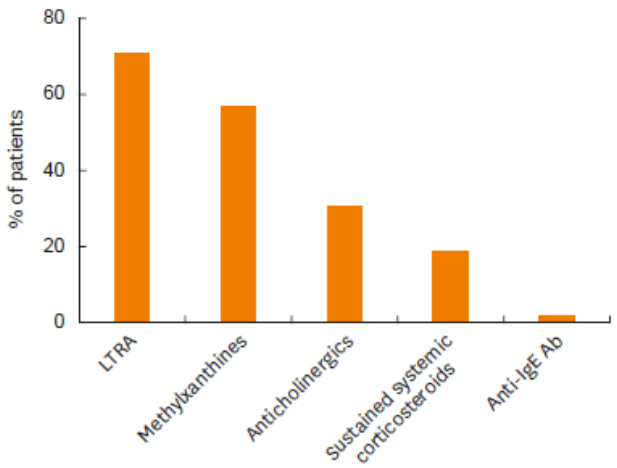
중증천식: **등록환자 특성**

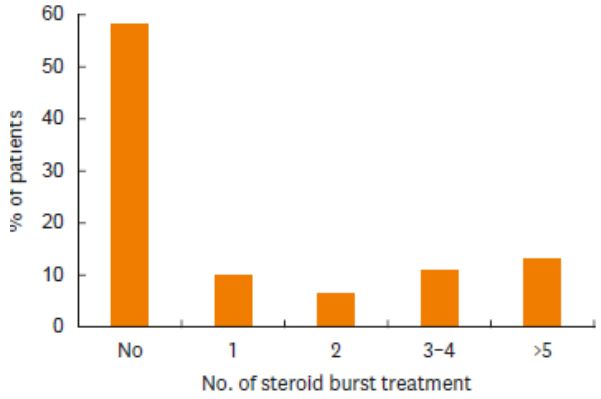
- 등록환자 인구학적, 임상적 특성 분석(KoSAR-1, n= 489)

Table 1. Comparison of baseline characteristics according to GINA guideline treatment step

Characteristics	Severe asthma (n = 489)	GINA step 4 (n = 293)	GINA step 5 (n = 153)	*P* value
Age (yr)	62.3 ± 14.0	62.7 ± 14.0	62.3 ± 14.1	0.737
Sex (male)	220 (45.1)	129 (44.2)	74 (48.4)	0.424
BMI (kg/m^2)	24.0 ± 3.8	24.0 ± 3.9	23.9 ± 3.5	0.618
Onset of asthmatic symptoms (yr)	40.8 ± 17.4	40.6 ± 18.0	42.0 ± 15.1	0.382
Asthma diagnosis (yr)	44.8 ± 16.3	45.2 ± 16.9	44.4 ± 14.8	0.592
Asthma treatment (yr)	46.5 ± 15.8	47.1 ± 16.5	45.3 ± 14.6	0.278
Duration of asthma treatment	10.5 ± 9.8	10.6 ± 11.1	10.9 ± 8.2	0.824
Aspirin hypersensitivity (AERD)	62/444 (14.0)	40 (15.3)	21 (14.5)	0.885
Pet owners	69 (14.1)	43 (15.0)	18 (11.8)	0.388
Smoking history	-	12.1 ± 26.7	13.1 ± 24.0	0.679
Never smoker	262 (53.9)	156 (53.6)	84 (54.9)	0.255
Ex-smoker	164 (33.7)	95 (32.6)	56 (36.6)	-
Current smoker	60 (12.3)	40 (13.7)	13 (8.5)	-
Family history of allergic disease	224/472 (47.5)	143 (50.9)	58 (38.4)	0.015
Atopy	104/270 (38.5)	68 (40.7)	20 (27.8)	0.059
Sensitization to house dust mite	91 (33.7)	59 (20.1)	25 (16.3)	0.373
Sensitization to pollen	44 (16.3)	36 (12.3)	9 (5.9)	0.046
Sensitization to animal	37 (13.7)	25 (8.5)	10 (6.5)	0.674
Sensitization to mold	9 (3.3)	8 (2.7)	2 (1.3)	0.505

Data are presented as mean ± standard deviation or number (%).
GINA, Global Initiative for Asthma; BMI, body mass index; AERD, aspirin exacerbated respiratory disease.





Kim MH et al., Allergy Asthma Immunol Res 2019; 11:43-54

한국 중증천식 환자들의 특징: 다른 나라와 비교

- International Severe Asthma Registry (ISAR)

Patients With Uncontrolled Asthma at GINA Step 4 or at GINA Step 5							
Country or Registry	Age, Mean (SD), y	Overweight or obese, % (95% CI)	Age at Onset, Mean (SD), y	Exacerbations per Year, Mean (SD)	Receiving Repeated Intermittent OCS, % (95% CI)	Receiving Regular OCS, % (95% CI)	Receiving Biologics (Anti-IgE or Anti-IL-5), % (95% CI)
All (N = 4,990)	55.0 (15.9)	70.4 (69.1-71.7)	30.7 (17.7)	1.7 (2.7)	51.1 (49.8-52.5)	30.1 (24.5-35.7)	25.4 (24.2-26.6)
United States (n = 3,286)	55.5 (16.7)	74.2 (70.0-78.3)	...[b]	0.8 (1.6)[c]	26.8 (25.3-28.4)	23.3 (21.8-24.7)	16.2 (15.0-17.5)
United Kingdom (n = 696)	48.3 (14.1)	78.2 (74.3-82.1)	25.4 (18.7)	5.0 (4.0)	100.0 (0-0)	59.6 (56.0-63.3)	67.3 (63.8-70.8)
South Korea (n = 439)	62.4 (14.1)	35.1 (30.6-39.6)	41.0 (17.1)	1.1 (1.5)	48.3 (43.6-53.0)	20.7 (16.9-24.5)	1.4 (0.3-2.4)
Italy (n = 310)	54.5 (13.8)	54.6 (49.9-59.3)	34.4 (17.1)	3.7 (7.2)	92.3 (89.3-95.2)	63.1 (56.5-69.1)	69.3 (64.2-74.5)
SAWD (n = 259)[d]	55.1 (15.3)	80.6 (76.9-84.3)	22.7 (17.1)	3.3 (2.9)	85.3 (81.0-89.6)	24.7 (19.5-30.0)	17.0 (12.4-21.6)

- ERS, Severe Heterogeneous Asthma Research collaboration, Patient-centred (SHARP)

	UK	Belgium	Italy	Spain	Netherlands	Germany	Poland	Slovenia	Hungary	Denmark	Sweden
Patients	765	629	437	410	237	209	193	140	130	59	27
Age years	47.6±14.5	56.9±14.7	54.1±13.7	56.4±14.8	52.8±14.2	44.4±20.4	48.4±14.6	53.5±12.8	58.3±12.9	51.9±16.1	50.0±8.6
Male	285 (37.3)	265 (42.1)	183 (41.9)	133 (32.4)	112 (47.3)	98 (46.9)	76 (39.4)	42 (30.0)	42 (32.3)	28 (47.5)	14 (51.9)
Smoking status											
Current smoker	30 (4.1)	60 (9.5)	12 (2.7)	29 (7.1)	2 (0.9)	5 (2.4)	0 (0)	1 (0.7)	8 (6.2)	2 (4.0)	0 (0)
Never-smoker	526 (71.7)	368 (58.5)	352 (80.5)	281 (68.5)	136 (57.9)	125 (59.8)	171 (88.6)	92 (65.7)	108 (83.1)	24 (48.0)	16 (59.3)
Ex-smoker	178 (24.3)	201 (32.0)	73 (16.7)	100 (24.4)	97 (41.3)	79 (37.8)	22 (11.4)	47 (33.5)	14 (10.8)	19 (38.0)	11 (40.7)
Pack-years	15 (5–20)	15 (6–27)	9 (4–15)	19 (10–23)	10 (4–19)	8 (2–15)	12.5 (15)	10 (3–20)	<5	8.5 (2.2–15)	5 (4–9)
BMI kg·m^{-2}	30.6±7.4	27.7±12.6	26.2±5.0	28.2±6.0	28.3±5.4	27.4±10.8	28.1	27.1±5.8	26.9±5.4	27.1±5.4	27.7±5.3
FEV_1 % pred	67.8±22.8	67.9±21.6	71.4±20.2	68.1±36.1	76.9±22.2	70.3±23.0	63.2±23.5	69.6±19.8	56.0±16.8	72.0±19.1	66.0±19.9

Wang E et al., Chest 2020; 157:790-804.
van Bragt J et al., Eur Respir J 2020; 55.

노인에서 중증천식

- Severe asthma (SA) in the elderly (30%)
- characterized by lower lung function, less type 2-low airway inflammation, and comorbidity with COPD

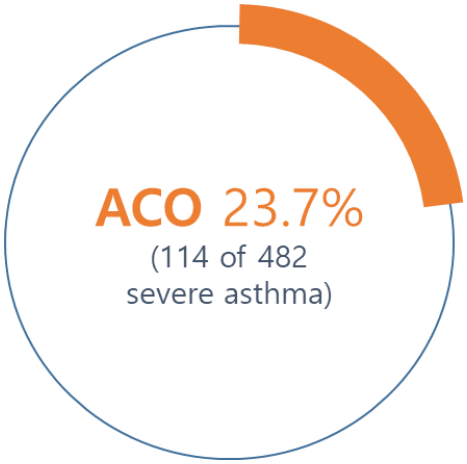
Variables	Total (n = 864)	Elderly (n = 260)	Nonelderly (n = 604)	*P* value
Laboratory tests				
WBC (/μL) (n = 785)	7.8 (6.4–9.6)	7.9 (6.4–10.0)	7.7 (6.4–9.5)	0.483
Blood eosinophils (/mL) (n = 777)	241.4 (98.8–540.2)	172 (72.0–389.2)	283.1 (110.2–585.3)	< 0.001
Blood eosinophils (%) (n = 777)	3.2 (1.2–7.2)	2.3 (1.0–5.3)	3.8 (1.4–8.0)	< 0.001
Sputum Neutrophils (%) (n = 239)	50.0 (15.3–85)	56.5 (18.0–82.0)	44 (14.7–85.0)	0.822
Sputum Eosinophils (%) (n = 232)	4.8 (1.0–27.5)	3.0 (0–13.0)	5.0 (1.0–45.0)	0.004
FeNO (ppb) (n = 318)	35.0 (20.0–62.0)	28.0 (15.0–49.0)	40.0 (22.0–66.0)	0.006
Total IgE (IU/mL) (n = 251)	199.7 (81.3–547.9)	134.0 (45.3–312.6)	242.9 (93.6–667.0)	0.005
Pulmonary function test				
FVC (% predicted) (n = 835)	79.5 (69.8–89.0)	76.0 (65.0–87.5)	80.9 (71.0–89.8)	< 0.001
FEV1 (% predicted) (n = 836)	67.8 (55.3–78.0)	65.1 (50.8–77.0)	68.4 (57.0–78.5)	0.013
FEV1/FVC (n = 841)	68.2 (59.3–76.5)	64.7 (55.1–73.4)	69.3 (61.1–78.3)	< 0.001
Type 2 inflammation	656 (75.9)	168 (64.6)	488 (80.8)	< 0.001
Blood eosinophils ≥ 150 cells/μL	498 (64.1)	131 (56.7)	367 (67.2)	0.005
FeNO ≥ 20 ppb	241 (75.8)	50 (64.9)	191 (79.3)	0.011
Sputum eosinophil ≥ 2%	154 (66.4)	42 (58.3)	112 (70.0)	0.082
Skin test positivity	196 (46.9)	28 (28.9)	168 (52.3)	< 0.001

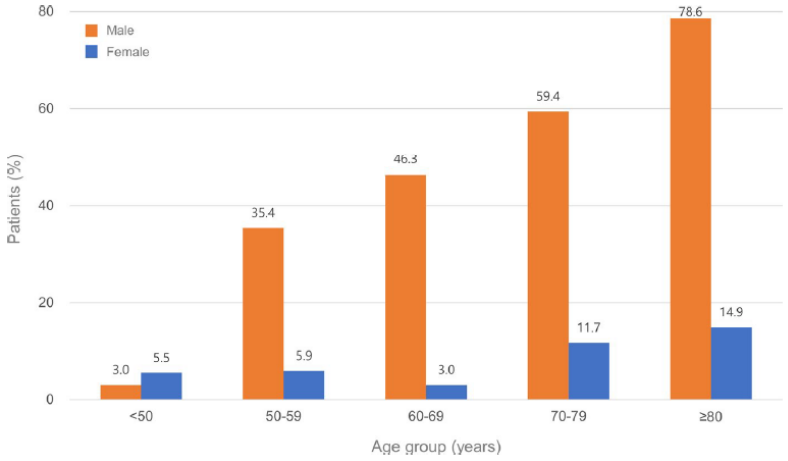
Type 2 inflammation was defined when the patients were either eosinophilic phenotype (blood eosinophils ≥ 150 cells/μL, FeNO ≥ 20 ppb, or sputum eosinophil ≥ 2%) or allergic (positive skin test to aeroallergens). Values are presented as median (interquartile range) or number (%).
WBC, white blood cell; FeNO, fractional exhaled nitric oxide; IgE, immunoglobulin E; FVC, forced vital capacity; FEV1, forced expiratory volume in 1 second.

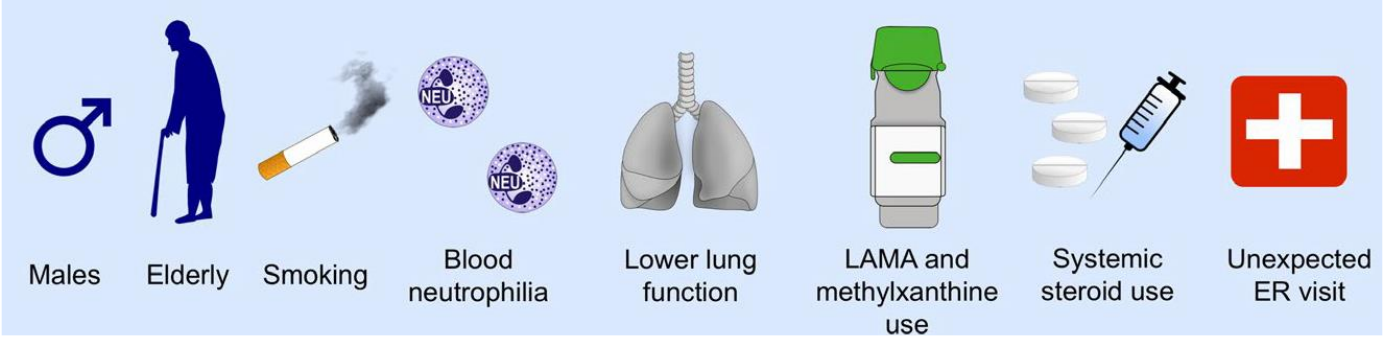
Lee HY et al., Allergy Asthma Immunol Res 2024; 16:267-78.

Asthma-COPD Overlap in patients with SA

- Specialist-diagnosed asthma asthma-COPD Overlap (ACO)







Lee H et al., Allergy 2021; 76:223-32.

Asthma-COPD Overlap: analysis from KoSAR and KOCOSS

- ACO from KoSAR and KOCOSS (Korean COPD subgroup study)
- ACO in COPD: 19.8% (defined as BDR ≥ 15% and ≥ 400 mL or blood eosinophil ≥ 300 /μL
- ACO in severe asthma: 12.5% (defined as age ≥ 35 years, smoking ≥ 10 pack-years, and post-bronchodilator FEV1/FVC <0.7)

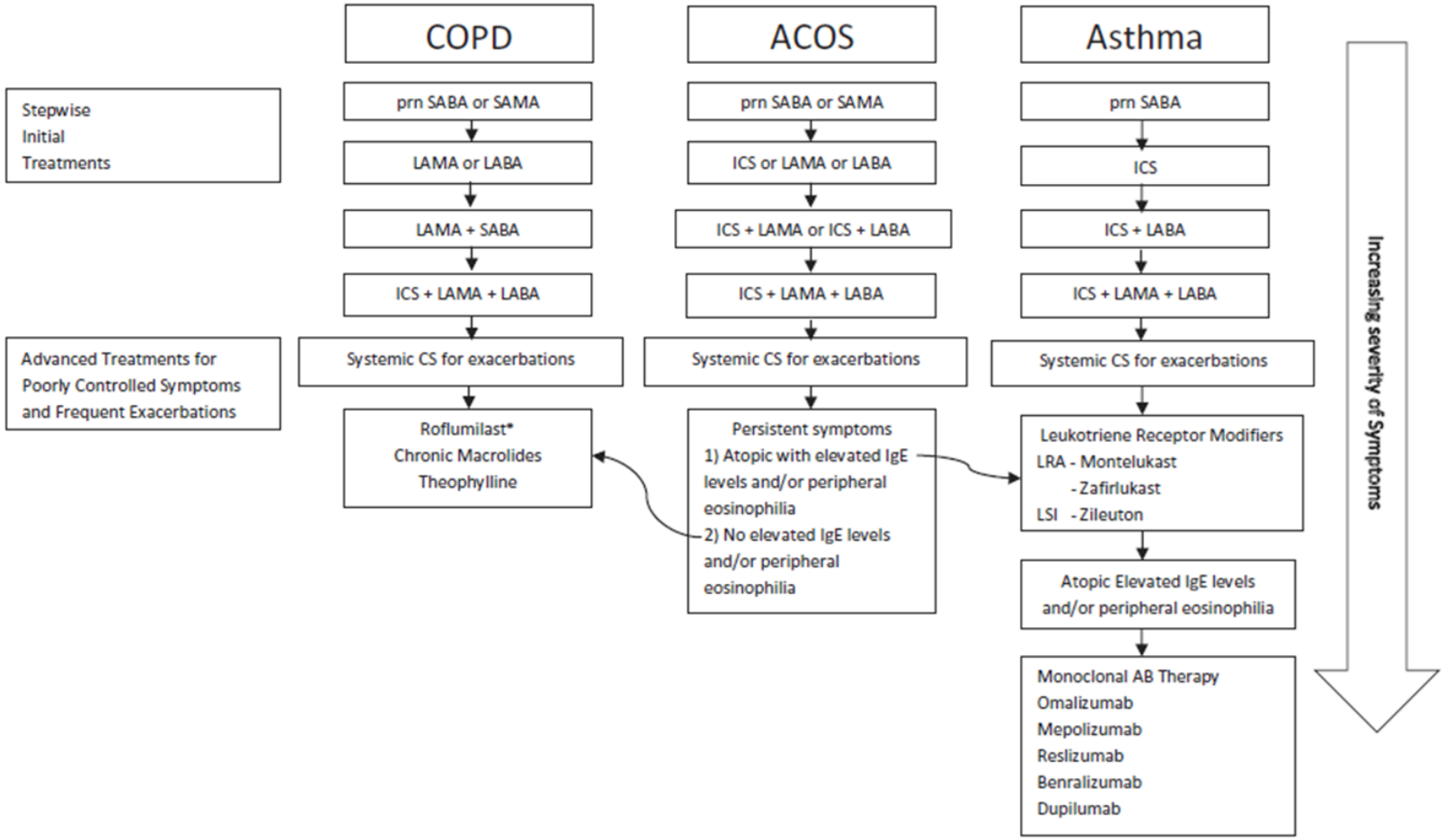
Table 5. Comparison of characteristics of ACO patients in KOCOSS and KoSAR

Characteristics	KOCOSS	KoSAR	*P* value
No. of patients	365	104	
Age, yr	68.32 ± 7.75	60.32 ± 10.03	< 0.001
Male	360 (98.6)	91 (87.5)	< 0.001
Smoking			< 0.001
Ex-smoker	248 (67.9)	88 (84.6)	
Current-smoker	117 (32.1)	16 (15.4)	
Pack-years	46.52 ± 24.82	34.66 ± 27.36	< 0.001
Pulmonary function test			
Post-BD FVC, L	3.40 ± 0.79	3.40 ± 0.94	0.992
Post-BD FVC, %	81.13 ± 16.49	81.96 ± 16.22	0.648
Post-BD FEV1, L	1.75 ± 0.58	1.79 ± 0.57	0.486
Post-BD FEV1, %	58.75 ± 18.54	56.56 ± 14.62	0.268
Post-BD FEV1/FVC	51.27 ± 11.94	53.22 ± 11.11	0.136
BDR, %	6.90 ± 15.86	9.89 ± 9.79	0.069
BDR, mL	89.23 ± 226.64	148.96 ± 148.10	0.012

Data are expressed as mean ± standard deviation or number (%).
COPD = chronic obstructive pulmonary disease, ACO = asthma-COPD overlap, KOCOSS = Korean COPD subgroup study, KoSAR = Korean Severe Asthma Registry, BD = bronchodilator, FVC = forced vital capacity, FEV1 = forced expiratory volume in 1 second, BDR = bronchodilator response.

Joo H et al., J Korean Med Sci 2022; 37:e236.

Management of asthma, COPD and ACO

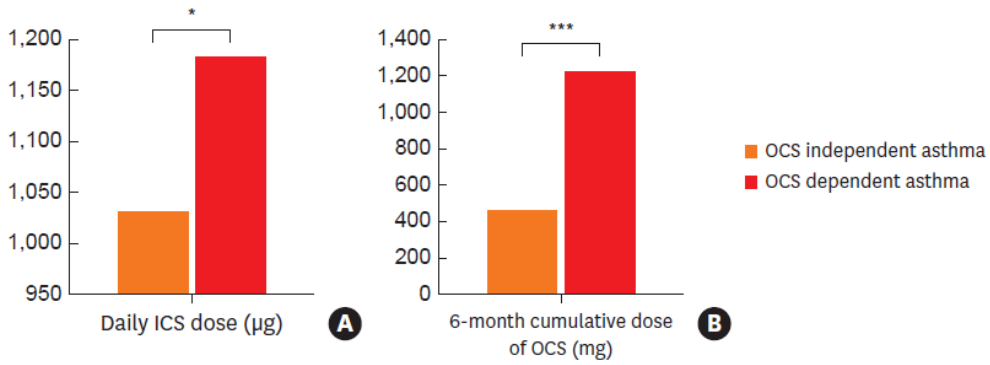


Albertson TE et al., Expert Opin Pharmacother 2020; 21:213-31

OCS dependent asthma

- 121 of 562 (21.5%) patients were defined as having OCS-dependent asthma (OCS use ≥6 months over the last 12 months)
- older at symptom onset and had a higher prevalence of anxiety, worse lung function, and used more medication than the control group

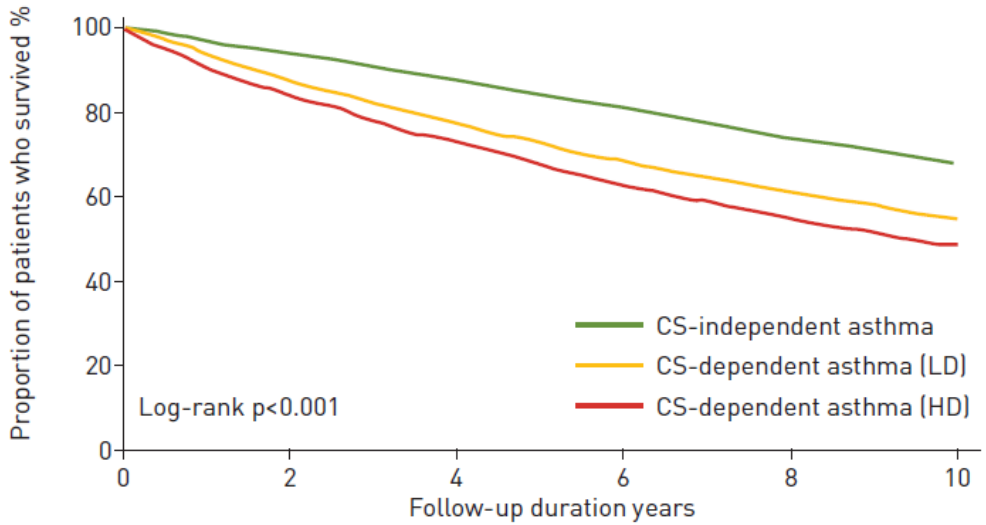
Characteristics	OCS-independent (n = 441)	OCS-dependent (n = 121)	*P* value
Age (yr)	54.5 ± 14.5	57.7 ± 12.3	0.077
Male (%)	191 (43.4)	62 (51.2)	0.125
BMI (kg/m^2) (n = 556)	24.2 ± 4.0	24.6 ± 3.6	0.105
History of asthma			
Age at symptom onset (yr) (n = 527)	40.1 ± 17.1	44.0 ± 14.7	0.042
Adult-onset asthma (n = 527)	369 (89.6)	111 (96.5)	0.021
Age of asthma diagnosis (yr) (n = 521)	43.2 ± 16.6	46.2 ± 14.4	0.095
Duration of treatment (yr) (n = 558)	9.8 ± 11.1	10.3 ± 9.0	0.057
Lung function			
FEV1 (% predicted) (n = 553)	67.7 ± 19.2	62.2 ± 21.8	0.014
FEV1 (L) (n = 558)	1.8 ± 0.7	1.6 ± 0.7	0.008
FVC (% predicted) (n = 553)	80.04 ± 16.5	75.5 ± 16.8	0.009
FVC (L) (n = 558)	2.8 ± 0.9	2.5 ± 0.8	0.008
FEV1/FVC ratio (n = 556)	0.67 ± 0.15	0.66 ± 0.14	0.428



Lee JH et al., Allergy Asthma Immunol Res 2022; 14:412-23.

OCS dependent asthma: 사망률

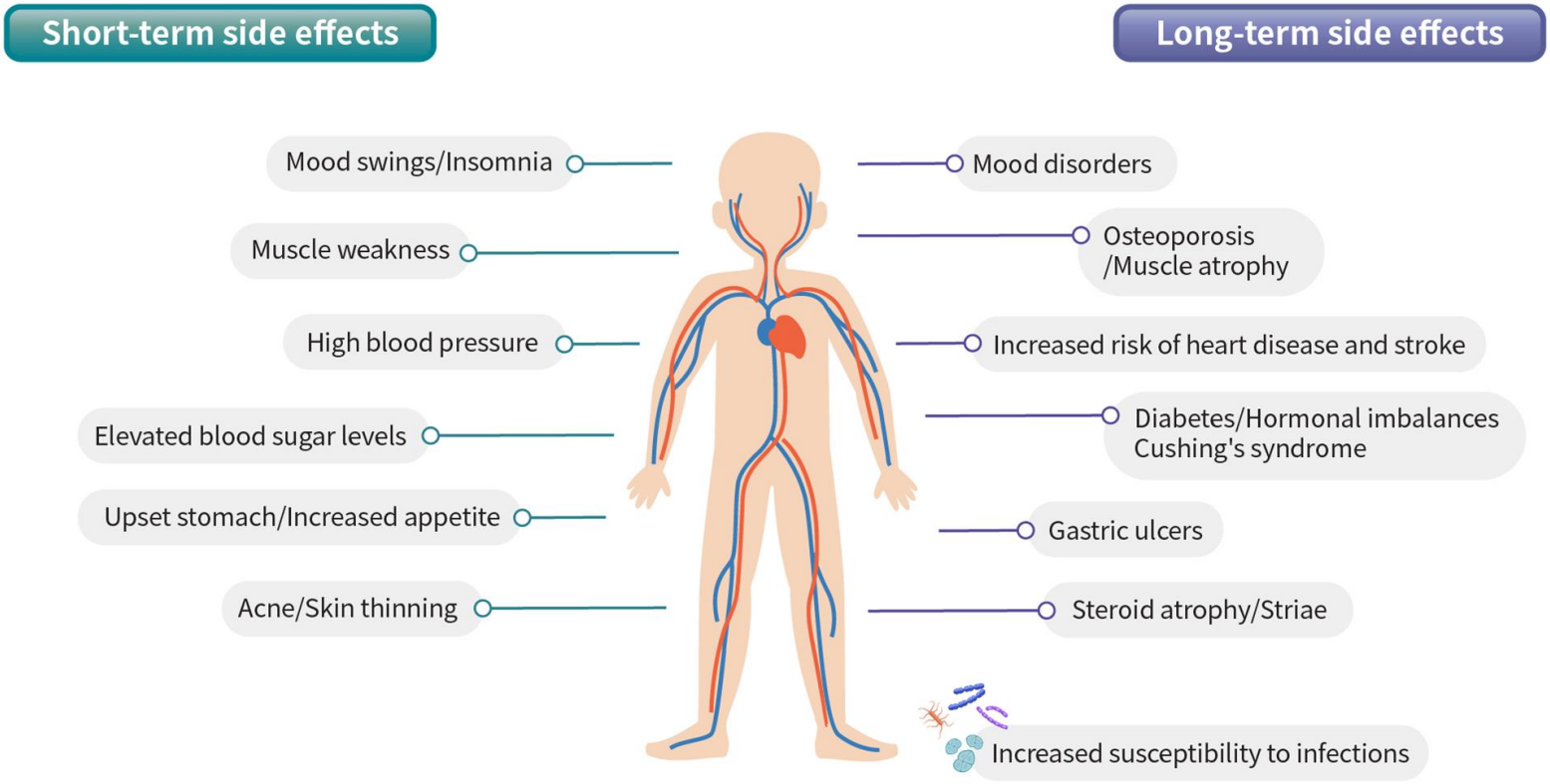
- The Korean National Health Insurance Service database from 2005 to 2015
- A population-based matched cohort study of asthma patients ≥ 18 years
- 8,334 (1.8%) CS dependent asthma of 466,941 adult asthmatics



At risk n:						
CS-independent asthma	8334	7904	7297	6735	6159	29
CS-dependent asthma (LD)	4167	3646	3220	2855	2544	18
CS-dependent asthma (HD)	4167	3483	3029	2607	2291	29

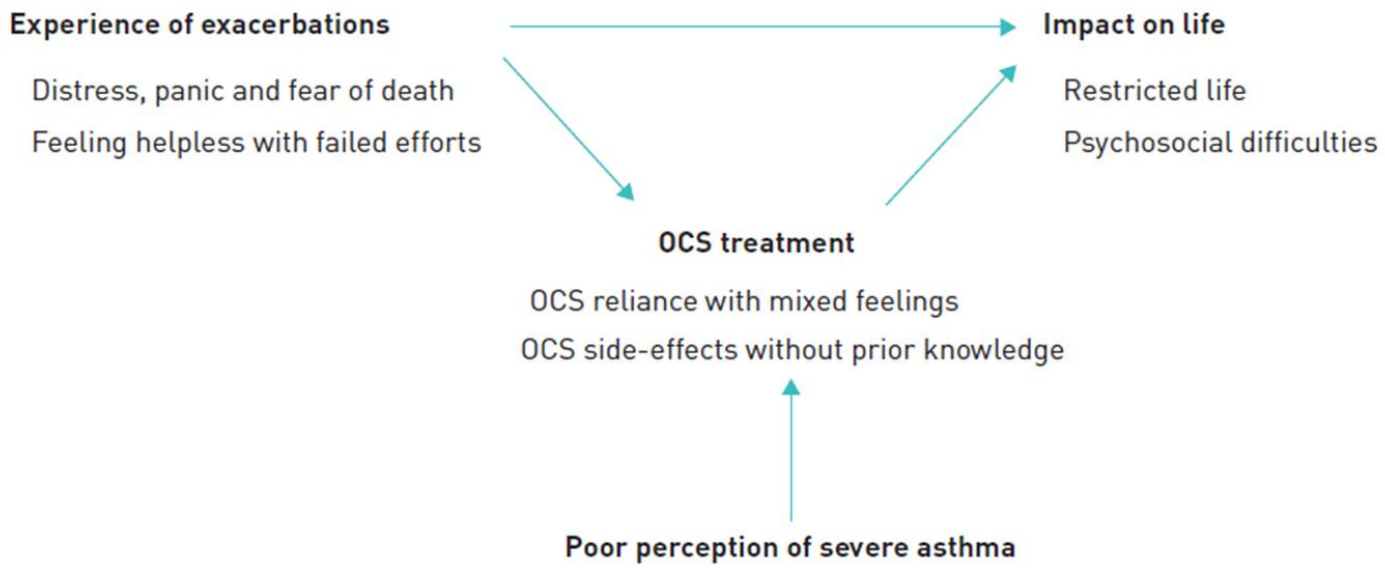
Lee H et al., Eur Respir J 2019; 54

OCS 이상반응


Short-term side effects
Long-term side effects
Mood swings/Insomnia
Muscle weakness
High blood pressure
Elevated blood sugar levels
Upset stomach/Increased appetite
Acne/Skin thinning
Mood disorders
Osteoporosis /Muscle atrophy
Increased risk of heart disease and stroke
Diabetes/Hormonal imbalances Cushing's syndrome
Gastric ulcers
Steroid atrophy/Striae
Increased susceptibility to infections

천식악화와 OCS 사용에 대한 **환자들의 인식**

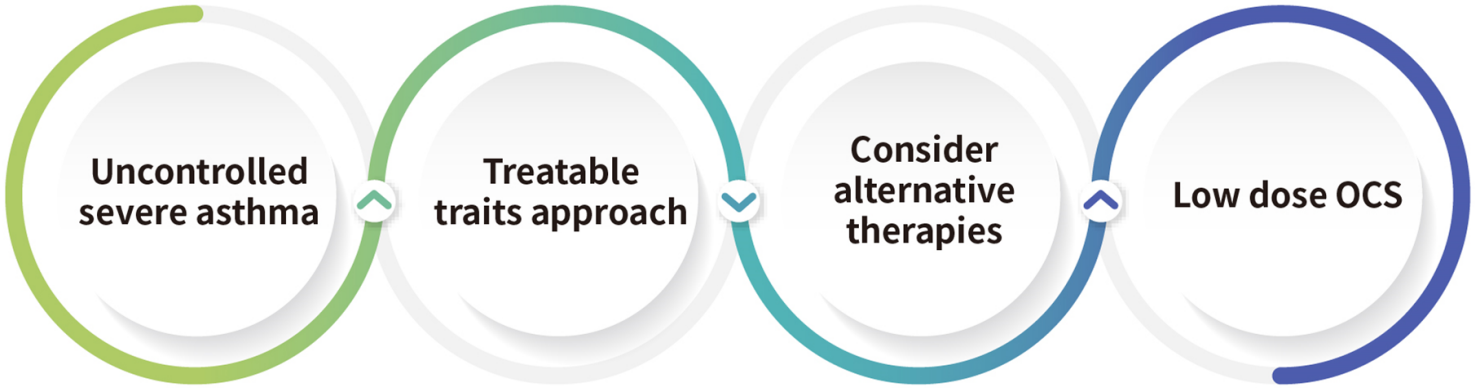
- Qualitative interview with adults with severe asthma from 3 tertiary hospitals in Korea
- Conceptual diagram of the overarching theme clusters regarding asthma exacerbation and experience in patients with severe asthma



Song WJ et al., ERJ Open Res 2021;7.

OCS sparing strategy

- "중증 천식 환자 스테로이드 사용과 감량에 대한 전문가 의견서"



AE, adverse event
LAMA, long-acting muscarinic antagonist
ICS, inhaled corticosteroid
OCS, oral corticosteroid
T2, type 2 inflammation
TT, treatable traits

Allergy Asthma Respir Dis (in press)

중증천식에서 생물학적 제제: **한국 현실**

성분 (상품명)	작용기전	적응증	허가	보험급여
Omalizumab (Xolair®)	항 IgE	6세 이상 중증 알레르기 천식	2007	2020
Mepolizumab (Nucala®)	항 IL5	18세 이상 중증 호산구성 천식	2016	2023
Reslizumab (Cinqair®)	항 IL5	18세 이상 중증 호산구성 천식	2017	2023
Benralizumab (Fasenra®)	항 IL5R	18세 이상 중증 호산구성 천식	2019	2024
Dupilumab (Dupixent®)	항 IL4Rα	12세 이상 중증 호산구성 천식 OCS 의존성 중증천식	2020	X
Tezepelumab (Tezspire®)	항 TSLP	12세 이상 중증 천식	2023	X

Survey on Specialists

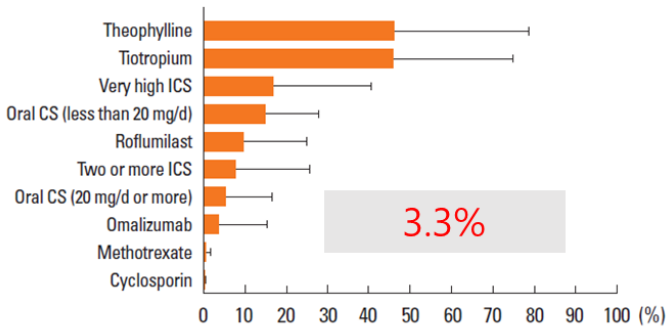
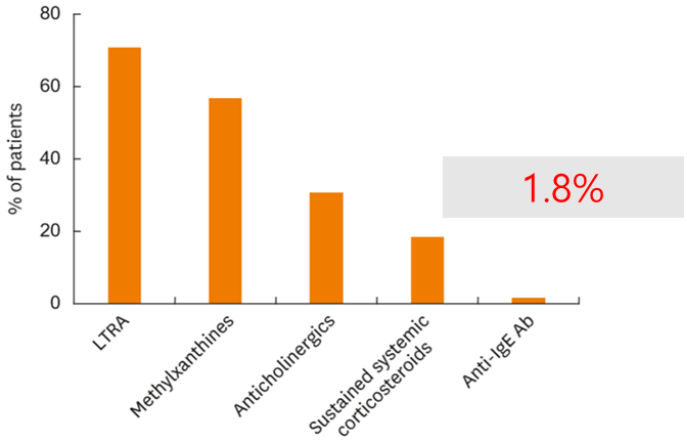


Fig. 3. Estimated percentage of patients with severe asthma who were prescribed add-on asthma controllers.

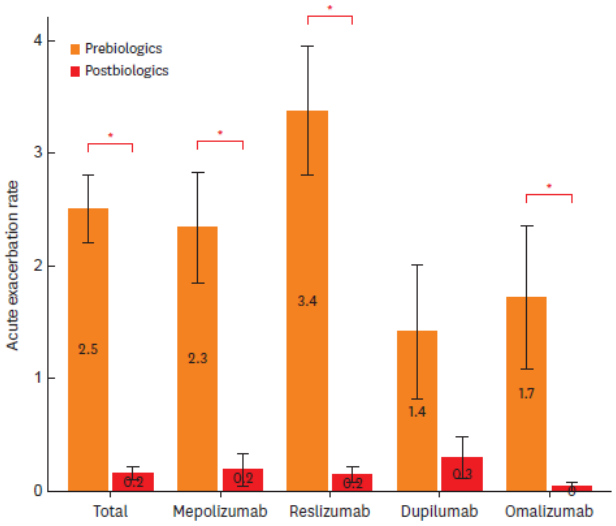
Severe Asthma Registry (KoSAR-1)

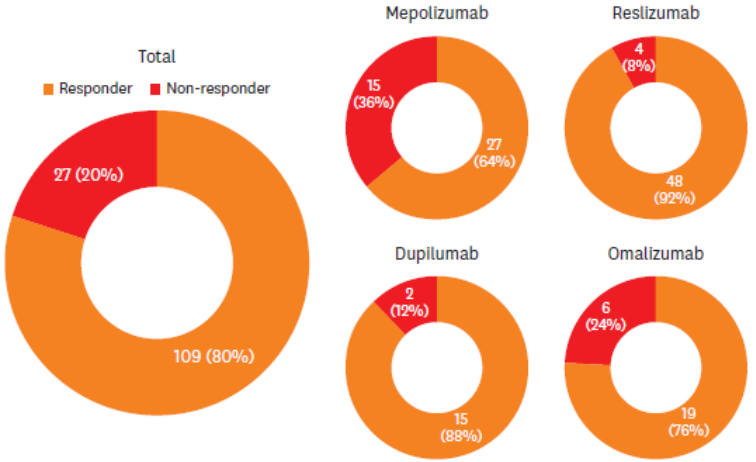


Kim SH et al., Allergy Asthma Immunol Res 2018; 10:225-35
Kim MH et al., Allergy Asthma Immunol Res 2019; 11:43-54

중증천식에서 생물학적 제제: **Real World Evidence**

- multicenter, retrospective cohort study included 136 patients with severe asthma who received biologics (≥4 months) (Sep 2017 – Jul 2022)
- Responder: excellent of good GETE score (the Global Evaluation of Treatment Effectiveness) score

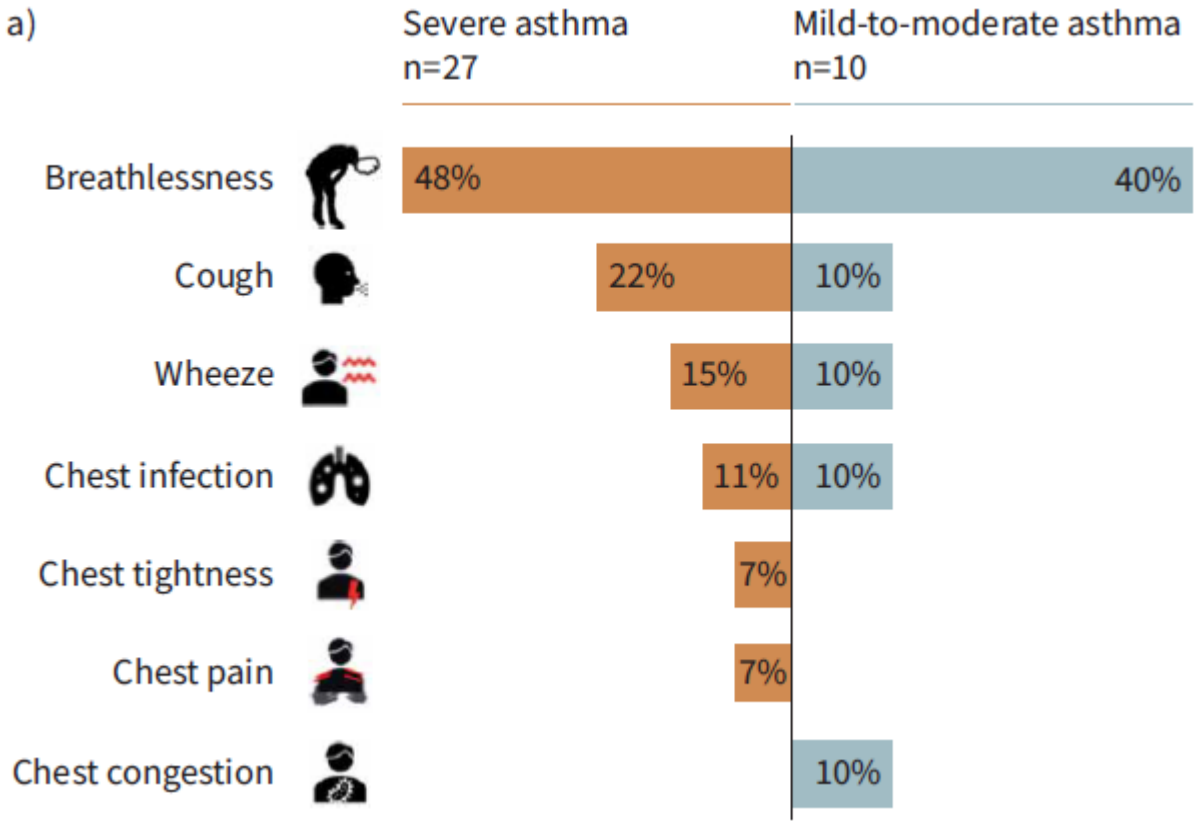




Park SY et al., Allergy Asthma Immunol Res 2024; 16:253-66.

중증천식의 증상: 환자의 입장에서

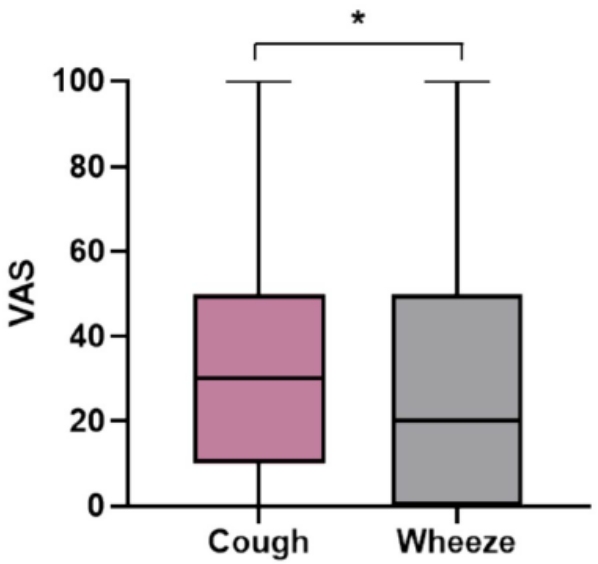
- Qualitative study in Australia and UK
- People with asthma are burdened by breathlessness and cough and other disabling symptoms
- Cough was a source of frustration



Majellano EC et al., ERJ Open Res 2024; 10.

조절되지 않는 천식증상: 기침

- relationship between cough severity and quality of life in patients with severe asthma
- cough severity remained significantly associated with ACT, SAQ scores and EQ-5D index in multivariate analyses adjusted for wheeze severity and other confounders



Parameters	Cough	Wheeze
SAQ score	−0.41**	−0.52**
ACT score	−0.50**	−0.63**
EQ-5D index	−0.40**	−0.45**
FEV1% predicted	−0.13*	−0.20**
FVC% predicted	−0.13*	−0.18**
FEV1/FVC ratio	−0.05 (ns)	−0.08 (ns)
Blood eosinophils	−0.13 (ns)	−0.07 (ns)
Sputum eosinophils	0.03 (ns)	−0.19 (ns)
FeNO	−0.03 (ns)	−0.08 (ns)

SAQ Severe Asthma Questionnaire; *ACT* Asthma Control Test; *EQ-5D* EuroQoL 5-Dimension; *FEV1* forced expiratory volume for 1 s; *FVC* forced vital capacity; *FeNO* fractional exhaled nitric oxide; *ns* non-significant

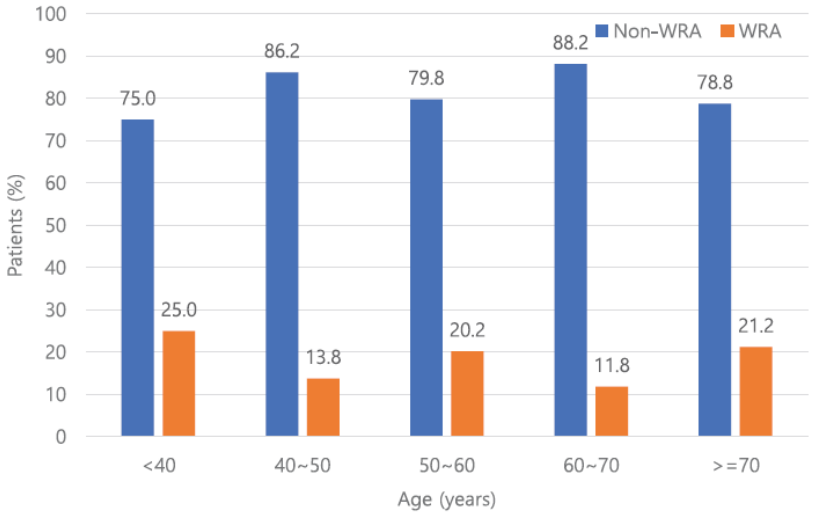
*$P < 0.05$

**$P < 0.001$

Lee HY et al., Lung 2024; 202:405-14.

중증천식에서 Work-Related Asthma (WRA)

- 18% WRA (asthma symptom aggravation at the workplace)
- affecting all the age groups (12-25%)
- more likely to experience anxiety (7.7% vs. 2.4%) and depression (12.3% vs. 3.7%)
- lower QoL than those without WRA

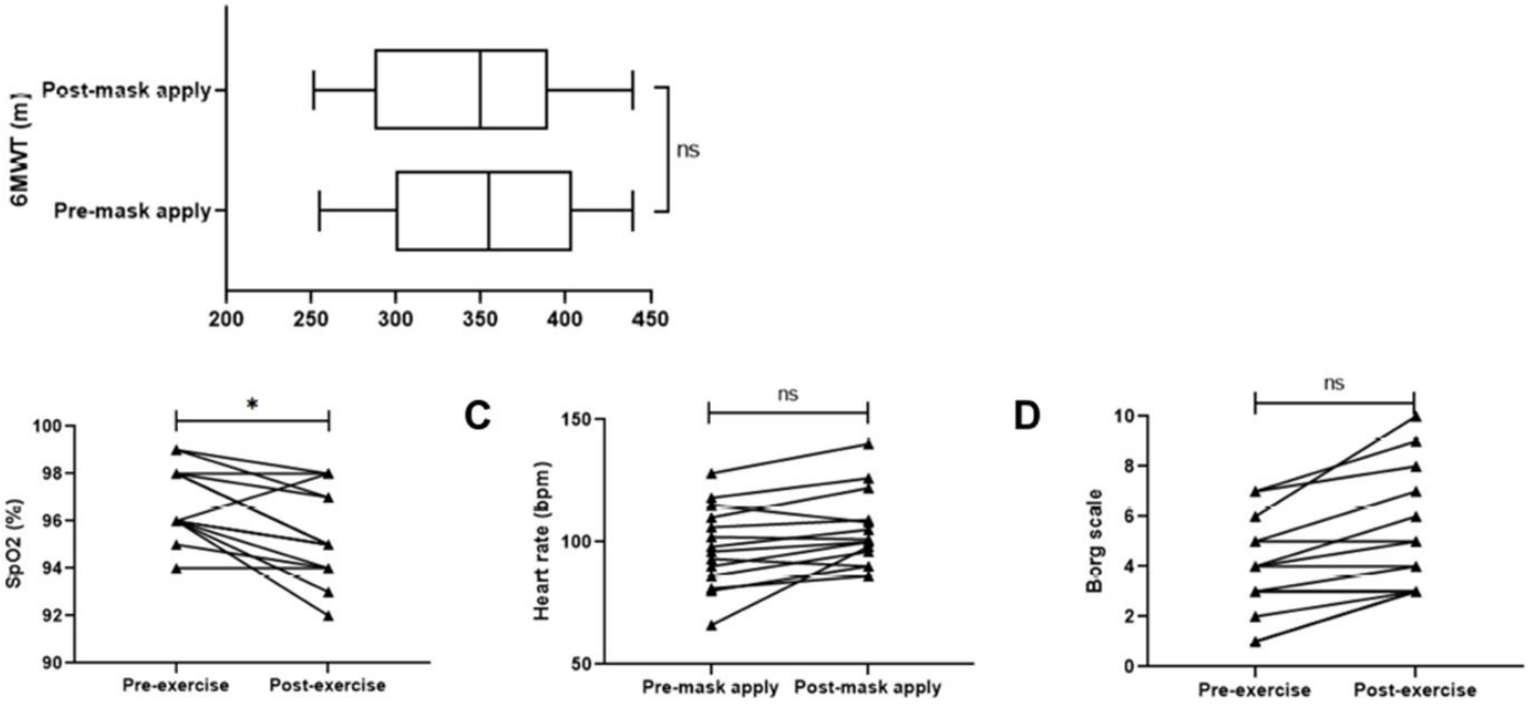


Question	WRA group (n = 65)	Non-WRA group (n = 299)	*P-value*
1. Chest discomfort	3.4 ± 1.1	3.7 ± 1.0	0.046
2. Concern about suffering from asthma exacerbation	3.2 ± 1.4	3.7 ± 1.4	0.019
3. Dyspnea due to asthma	3.3 ± 1.0	3.7 ± 1.2	0.017
4. Asthma symptom provoked by smoke or a pungent smell	3.0 ± 1.6	3.3 ± 1.6	0.094
5. Wheezing	3.4 ± 1.4	3.8 ± 1.2	0.022
6. Cough	3.1 ± 1.1	3.5 ± 1.0	0.009
7. Emotional stress due to asthma	3.0 ± 1.4	3.7 ± 1.3	<0.001
8. Sleep disturbance due to cough or dyspnea	3.6 ± 1.3	4.1 ± 1.1	0.003
9. Aggravated asthma symptoms by weather, temperature changes or air pollution	3.5 ± 1.4	4.1 ± 1.2	<0.001
10. Concern about asthma treatment	3.3 ± 1.3	3.6 ± 1.3	0.129
11. Sputum	2.6 ± 1.3	3.0 ± 1.3	0.036
12. Asthma symptoms aggravated by indoor dust or hazy air	3.2 ± 1.1	3.8 ± 1.2	<0.001
13. Limitations in strenuous physical activities due to asthma	3.1 ± 1.1	3.5 ± 1.2	0.020
14. Limitations in light daily activities due to asthma	3.7 ± 1.1	4.0 ± 1.0	0.038
15. Limitations in social activities due to asthma	3.8 ± 1.3	4.1 ± 1.0	0.118
16. Limitations in occupational activities due to asthma	3.8 ± 1.1	4.2 ± 0.9	0.004
17. Limitations in all daily activities due to asthma	3.5 ± 1.0	3.9 ± 0.9	0.013

Lee Y et al., World Allergy Organ J 2024; 17:100903.

중증천식에서 **마스크 영향**

- Assessment of perceptions on COVID-19 and wearing face masks in patients with severe asthma from 5 university hospitals
- exercise capacity in asthma patients with or without mask



Sohn KH et al., J Asthma Allergy 2022; 15:1065-8.

Management of Severe Asthma during COVID-19

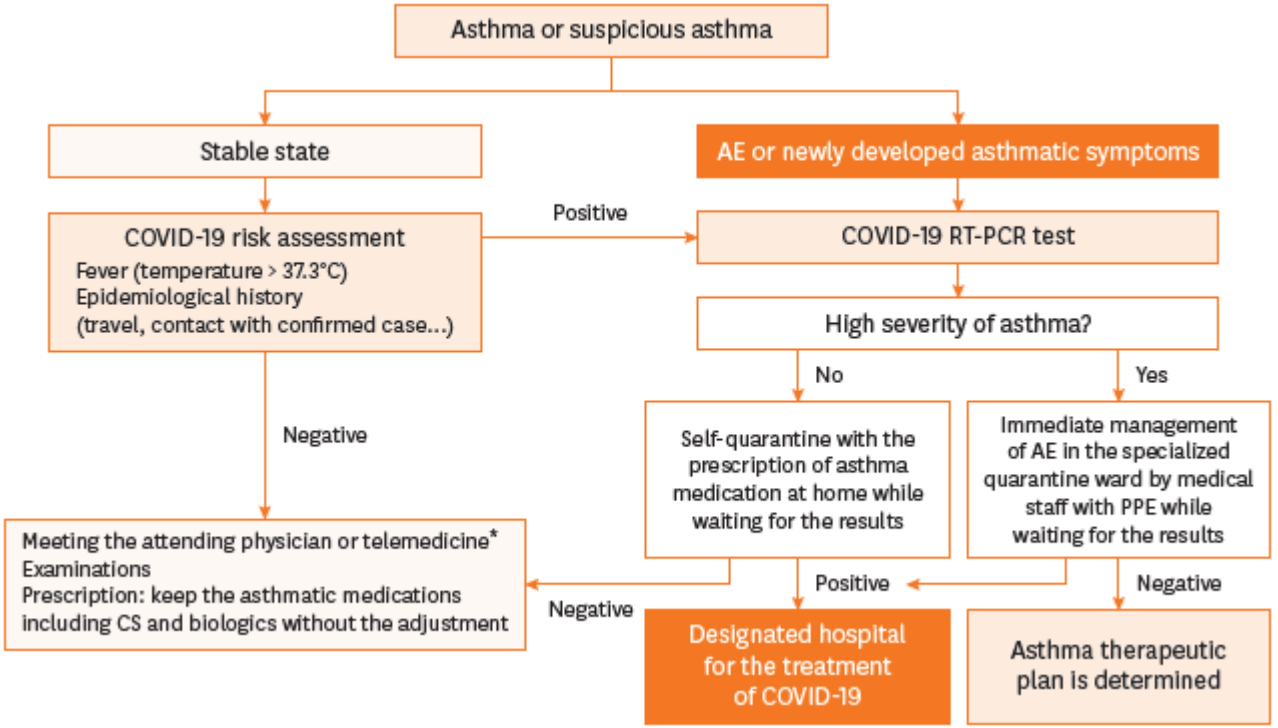
Allergy Asthma Immunol Res. 2020 Sep;12(5):897-901
https://doi.org/10.4168/aair.2020.12.5.897
pISSN 2092-7355·eISSN 2092-7363

Allergy, Asthma & Immunology Research AAIR

Letter to the Editor

Check for updates

Management of Severe Asthma During the COVID-19 Pandemic in Korea



Kim S et al., Allergy Asthma Immunol Res 2020; 12:897-901.

환자등록과 임상정보 수집 및 추적관찰

설문조사와 의무기록 조사

성별, 연령, 생활환경, 약물 사용, 동반질환, 폐 기능 검사, 알레르기 검사 결과 등 질병정보를 조사함. 수집된 자료는 데이터베이스 eCRF에 데이터를 입력함.

인체자원 수집

환자의 plasma와 DNA 자료를 국립중앙인체자원은행 인체자원 관리지침 및 '국립중앙인체자원은행 업무메뉴얼'에 따라 수집, 보관, 운송 및 정도 관리를 시행 중에 있음. 추후 전향적인 유전, 면역, 염증지표에 대한 분석을 시행할 예정임.

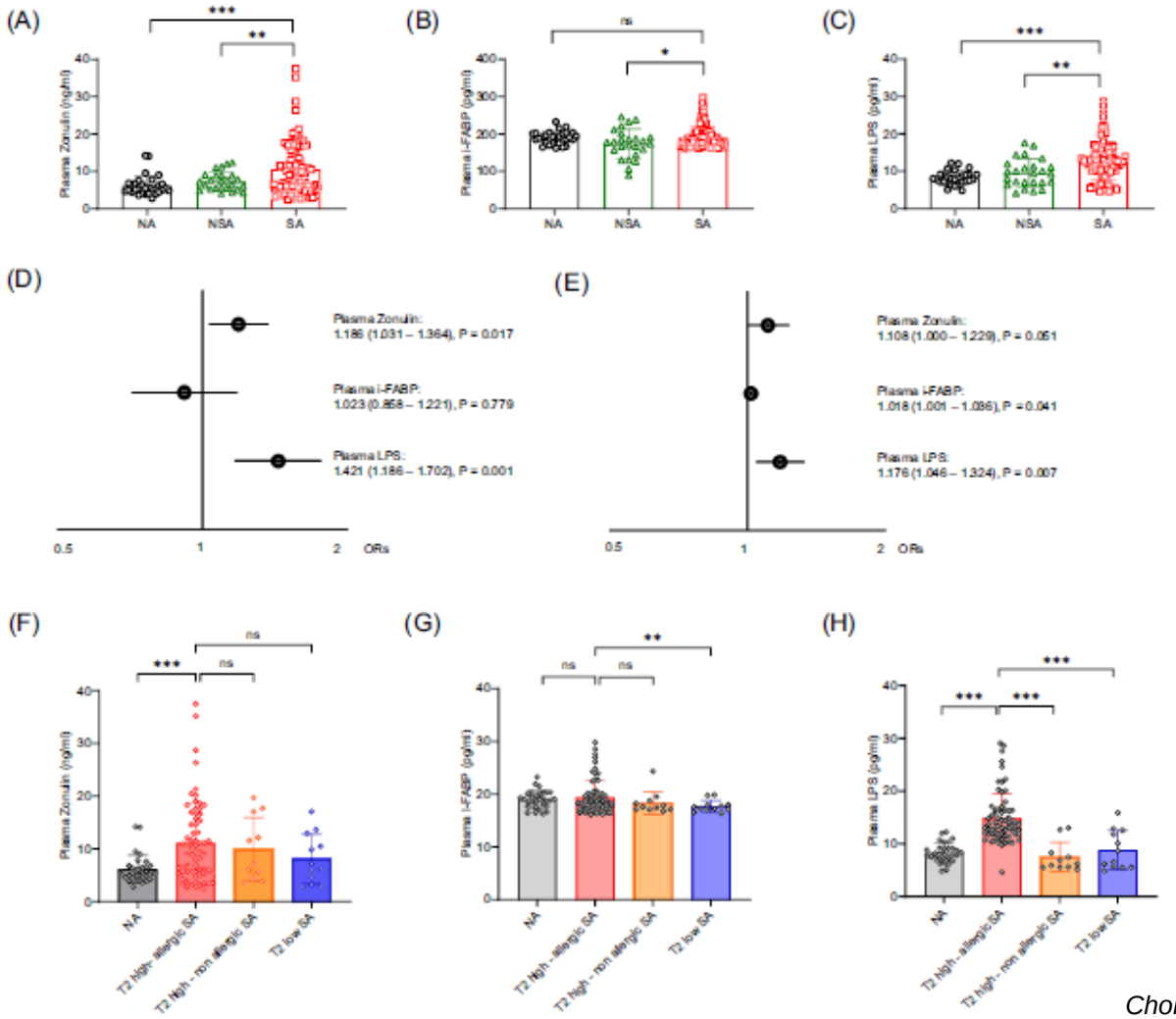
자원제작 : (주)지씨씨엘 (https://www.gccl.co.kr/index.asp)

흉부 전산 단층 촬영

등록된 환자의 흉부를 고해상도로 촬영하여, 기후 및 환경 요인과 천식의 중증도에 따른 폐와 기관지의 형태 생리학적 변화를 분석함.

Gut permeability in severe asthma

- SA is associated with increased gut permeability
- atopy identified as the most significant patient trait influencing this condition



Choi DY et al., Allergy 2024.

중증천식 평가와 관리 **전문가의견서(2020)**

Allergy Asthma Immunol Res. 2020 Nov;12(6):910-933
https://doi.org/10.4168/aair.2020.12.6.910
pISSN 2092-7355·eISSN 2092-7363

Allergy, Asthma & Immunology Research AAIR

Review

Evaluation and Management of Difficult-to-Treat and Severe Asthma: An Expert Opinion From the Korean Academy of Asthma, Allergy and Clinical Immunology, the Working Group on Severe Asthma

Byung-Keun Kim,[1†] So-Young Park,[2†] Ga-Young Ban,[3†] Mi-Ae Kim,[4*] Ji-Hyang Lee,[5] Jin An,[5] Ji-Su Shim,[6] Youngsoo Lee,[7] Ha-Kyeong Won,[8] Hwa Young Lee,[9] Kyoung-Hee Sohn,[10] Sung-Yoon Kang,[11] So Young Park,[12*] Hyun Lee,[13] Min-Hye Kim,[6] Jae-Woo Kwon,[14] Sun-Young Yoon,[15] Jae-Hyun Lee,[16] Chin Kook Rhee,[9] Ji-Yong Moon,[13] Taehoon Lee,[17] So Ri Kim,[18] Jong Sook Park,[19] Sang-Heon Kim,[13*] Heung-Woo Park,[20] Jae Won Jeong,[21] Sang-Hoon Kim,[12] Young-Il Koh,[22] Yeon-Mok Oh,[23] An-Soo Jang,[19] Kwang Ha Yoo,[2] You Sook Cho,[5] and on behalf of the Korean Academy of Asthma, Allergy, and Clinical Immunology (KAACI), the Working Group on Severe Asthma

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Accepted: Mar 13, 2020

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Kim BK et al., Allergy Asthma Immunol Res 2020; 12:910-33.

2024 중증천식 심포지엄

2024 중증천식 심포지엄

일시 • 2024년 12월 21일(토) 13:30-17:00
장소 • aT센터 3층 세계로룸
평점 • 대한의사협회 3평점
대한내과학회 3평점(분과전문의, 내과평생교육)

13:30~13:40	인사말	
Session 1. Understanding of Severe Asthma		성균관의대 **이병재**
13:40~14:10	Use of biologics in Type 2 inflammatory diseases	순천향의대 **김정현**
14:10~14:40	Non-type 2 severe asthma: from molecular insights to novel treatment strategies	경희의대 **손경희**
14:40~15:10	Remission and disease modification in the management of rheumatic diseases	한양의대 **최찬범**
15:10~15:30	Coffee break	
Session 2. Korean Severe Asthma Registry (KoSAR)		서울의대 **장윤석**
15:30~16:00	KoSAR-2: Major findings and implications in clinical practice	울산의대 **송우정**
16:00~16:30	Radiomics in severe asthma: Uncovering biomarkers and phenotypes	경북의대 **김수정**
16:30~17:00	Occupational and environmental exposure in severe asthma	아주의대 **이영수**