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(copd OR "Pulmonary Disease, Chronic Obstructive"[Mesh])

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Review

Ren Fail

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. 2024 Dec;46(2):2368082.

doi: 10.1080/0886022X.2024.2368082. Epub 2024 Jun 28.

Predictors, prevalence and prognostic role of pulmonary hypertension in patients with chronic kidney disease: a systematic review and meta-analysis

Chunlong Lin [1], Qilong Ge [1], Lei Wang [1], Pan Zeng [1], Mingmin Huang [1], Dan Li [1]

Affiliations expand

- **PMID: 38938193**

- **DOI: 10.1080/0886022X.2024.2368082**

Abstract

Background: To estimate the predictors, prevalence and prognostic role of pulmonary hypertension (PH) in patients with chronic kidney disease (CKD) using meta-analysis.

Methods: The PubMed, EmBase, and the Cochrane library were systematically searched for eligible studies from inception till May 2024. All of pooled analyses were performed using the random-effects model.

Results: Fifty observational studies involving 17,558 CKD patients were selected. The prevalence of PH in CKD patients was 38% (95% confidence interval [CI]: 33%-43%), and the prevalence according to CKD status were 31% (95% CI: 20%-42%) for CKD (I-V), 39% (95% CI: 25%-54%) for end stage kidney disease (ESKD) (predialysis), 42% (95% CI: 35%-50%) for ESKD (hemodialysis), and 26% (95% CI: 19%-34%) for renal transplant. We noted the risk factors for PH in CKD included Black individuals (relative risk [RR]: 1.39; 95% CI: 1.18-1.63; $p < 0.001$), chronic obstructive pulmonary disease (RR: 1.48; 95% CI: 1.21-1.82; $p < 0.001$), cardiovascular disease history (RR: 1.62; 95% CI: 1.05-2.51; $p = 0.030$), longer dialysis (RR: 1.70; 95% CI: 1.18-2.46; $p = 0.005$), diastolic dysfunction (RR: 1.88; 95% CI: 1.38-2.55; $p < 0.001$), systolic dysfunction (RR: 3.75; 95% CI: 2.88-4.87; $p < 0.001$), and grade 5 CKD (RR: 5.64; 95% CI: 3.18-9.98; $p < 0.001$). Moreover, PH in CKD patients is also associated with poor prognosis, including all-cause mortality, major cardiovascular events, and cardiac death.

Conclusion: This study systematically identified risk factors for PH in CKD patients, and PH were associated with poor prognosis. Therefore, patients with high prevalence of PH should be identified for treatment.

Keywords: Predictors; chronic kidney disease; meta-analysis; prevalence; prognostic; pulmonary hypertension.

2

Eur Respir J

. 2024 Jun 28;63(6):24E6306.

doi: 10.1183/13993003.E6306-2024. Print 2024 Jun.

ERJ Podcast June 2024: Inhaled treprostinil in pulmonary hypertension associated with COPD

No authors listed

- PMID: 38942439

- DOI: 10.1183/13993003.E6306-2024

No abstract available

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MeSH terms, Substancesexpand

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Observational Study

Medicine (Baltimore)

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. 2024 Jun 28;103(26):e38644.

doi: 10.1097/MD.0000000000038644.

One-year mortality and readmission risks following hospitalization for acute exacerbation of chronic obstructive pulmonary disease based on the types of acute respiratory failure: An observational study

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Affiliations expand

- PMID: 38941408

- DOI: 10.1097/MD.0000000000038644

Abstract

Few studies have examined the risk factors associated with the type of acute respiratory failure (ARF) in patients with acute exacerbation of chronic obstructive pulmonary disease (COPD). This study evaluated the clinical characteristics and prognosis of patients hospitalized for acute exacerbation of COPD based on the type of ARF. The medical charts of hospitalized patients with acute exacerbation of COPD between 2016 and 2021 were retrospectively reviewed. We classified ARF into 2 types: type 1 ARF with PaO2 < 60 mm Hg in room air or a ratio of arterial partial pressure to fractional inspired oxygen < 300, and type 2 ARF with PaCO2 > 45 mm Hg and arterial pH < 7.35. A total of 435 patients were enrolled in study, including 170 participants without ARF, 165 with type 1 ARF, and 100 with type 2 ARF. Compared with the non-ARF group, the frequency of high-flow nasal cannula, noninvasive ventilation, intensive care unit admissions, and in-hospital deaths was higher in the ARF group compared with the non-ARF group. The ARF group had higher 1-year mortality group (hazard ratio [HR], 2.809; 95% confidence interval [CI], 1.099-7.180; P = .031) and readmission within 1-year rates (HR, 1.561; 95% CI, 1.061-2.295; P = .024) than the non-ARF group. The type 1 ARF group had a higher risk of 1-year mortality (HR, 3.022; 95% CI, 1.041-8.774; P = .042) and hospital readmission within 1-year (HR, 2.053; 95% CI, 1.230-3.428; P = .006) compared with the non-ARF group. There was no difference in mortality and readmission rates between the type 1 and type 2 ARF groups. In conclusion, patients with type 1 ARF rather than type 2 ARF had higher mortality and readmission rates than those without ARF. The prognoses of patients with type 1 and type 2 ARF were similar.

Conflict of interest statement

The authors have no funding and conflicts of interest to disclose.

- 18 references

supplementary info

Publication types, MeSH termsexpand

full text links

J Leukoc Biol

. 2024 Jun 28:qiae153.

doi: 10.1093/jleuko/qiae153. Online ahead of print.

The relevance of eosinophils in chronic obstructive pulmonary disease: inflammation, microbiome and clinical outcomes

Andrew Higham [1], Augusta Beech [1], Dave Singh [1 2]

Affiliations expand

- PMID: 38941350

- DOI: 10.1093/jleuko/qiae153

Abstract

Chronic obstructive pulmonary disease (COPD) is caused by the inhalation of noxious particles such as cigarette smoke. The pathophysiological features include airway inflammation, alveolar destruction and poorly reversible airflow obstruction. A sub-group of COPD patients have higher blood eosinophil counts (BECs), associated with an increased response to inhaled corticosteroids and increased biomarkers of pulmonary type 2 (T2) inflammation. Emerging evidence shows that COPD patients with increased pulmonary eosinophil counts have an altered airway microbiome. Higher BECs are also associated with increased lung function decline, implicating T2 inflammation in progressive pathophysiology in COPD. We provide a narrative review of the role of eosinophils and T2 inflammation in the pathophysiology of COPD, encompassing the lung microbiome, pharmacological targeting of T2 pathways in COPD, and the clinical use of BEC as a COPD biomarker.

Keywords: IL-13; Type 2 inflammation; alarmins; mast cells; small airways; sputum.

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J Glob Health

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. 2024 Jun 28:14:04129.

doi: 10.7189/jogh.14.04129.

Analysis of clinical characteristics, prognosis and influencing factors in patients with bronchiectasis-chronic obstructive pulmonary disease overlap syndrome: A prospective study for more than five years

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Affiliations expand

- PMID: 38940273

- DOI: 10.7189/jogh.14.04129

Abstract

Background: Considering the large population of bronchiectasis and chronic obstructive pulmonary disease (COPD) patients in China, we aimed to conduct a thorough analysis that investigates the clinical characteristics and prognosis of bronchiectasis-COPD overlap syndrome (BCOS). Further, we aimed to explore factors associated with acute exacerbation and death in BCOS, which may be of value in its early diagnosis and intervention.

Methods: We recruited inpatients with COPD from the second Xiangya Hospital of Central South University in China in August 2016, with follow-up until March 2022. Patients in the BCOS group had to meet the criteria for diagnosing bronchiectasis. We used self-completion questionnaires, clinical records, and self-reported data as primary data collection methods. We used Kaplan-Meier survival analyses and Cox proportional hazard models to assess the risk of severe acute exacerbation and death for BCOS during the follow-up period.

Results: A total of 875 patients were included and followed up. Patients in the BCOS group had more females, fewer smokers, lower discharge COPD assessment test (CAT) scores, lower forced vital capacity (FVC), a higher likelihood of co-occurring active tuberculosis, higher levels of eosinophils and inflammatory markers, and a higher rate of positive sputum cultures for Pseudomonas aeruginosa than patients in the COPD-only group. Patients in the acute exacerbation group (AE+) were found to have lower body mass index (BMI), more frequent acute exacerbations, higher modified Medical Research Council (mMRC) dyspnoea grade on admission, higher

inflammatory markers, lower FVC, higher rates of using inhaled bronchodilators, and higher rates of both positive and Pseudomonas aeruginosa positive sputum cultures. Patients in the 'death' group were older, had a lower BMI, had spent longer time in the hospital, had higher mMRC dyspnoea grade and CAT scores upon admission and discharge, had higher levels of inflammatory markers, lower rates of using inhaled bronchodilators, were more likely to have a combination of pulmonary heart disease and obsolete pulmonary tuberculosis, as well as a higher rate of fungus-positive sputum cultures. Both erythrocyte sedimentation rate at baseline and Pseudomonas aeruginosa culture positivity were confirmed as independent predictors of severe acute exacerbation in multivariate analysis during the years of follow-up. Fungus culture positivity baseline blood urea nitrogen, baseline lymphocyte count, comorbidities with obsolete pulmonary tuberculosis and comorbidities with pulmonary heart disease were verified as independent predictors of death in multivariate analysis during the years of follow-up. Kaplan-Meier curves under survival analysis demonstrated no statistically significant difference in mortality between the COPD and the BCOS groups at the full one, two, and three years of follow-up.

Conclusions: Patients with BCOS present with reduced lung function, increased susceptibility to different complications, elevated blood eosinophils and inflammatory markers, and elevated rates of positive Pseudomonas aeruginosa cultures. These distinctive markers are linked to a greater risk of severe acute exacerbations and mortality.

Conflict of interest statement

Disclosure of interests: The authors completed the ICMJE Disclosure of Interest Form (available upon request from the corresponding author) and disclose no relevant interests.

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MeSH termsexpand

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Review

Eur Respir J

. 2024 Jun 28;63(6):2301494.

doi: 10.1183/13993003.01494-2023. Print 2024 Jun.

The paradox of the safer cigarette: understanding the pulmonary effects of electronic cigarettes

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Affiliations expand

- PMID: 38609098

- DOI: 10.1183/13993003.01494-2023

Abstract

Electronic cigarette (e-cigarette) use continues to rise globally. E-cigarettes have been presented as safer alternatives to combustion cigarettes that can mitigate the harm associated with tobacco products; however, the degree to which e-cigarette use itself can lead to morbidity and mortality is not fully defined. Herein we describe how e-cigarettes function; discuss the current knowledge of the effects of e-cigarette aerosol on lung cell cytotoxicity, inflammation, antipathogen immune response, mucociliary clearance, oxidative stress, DNA damage, carcinogenesis, matrix remodelling and airway hyperresponsiveness; and summarise the impact on lung diseases, including COPD, respiratory infection, lung cancer and asthma. We highlight how the inclusion of nicotine or flavouring compounds in e-liquids can impact lung toxicity. Finally, we consider the paradox of the safer cigarette: the toxicities of e-cigarettes that can mitigate their potential to serve as a harm reduction tool in the fight against traditional cigarettes, and we summarise the research needed in this underinvestigated area.

Conflict of interest statement

Conflict of interest: K. Allbright reports grants from Burroughs Wellcome Fund and T32 (5T32HL007563-35), outside the submitted work. L.E. Crotty Alexander reports grants from NIH NHLBI R01, NIH NHLBI K24 and VA Merit Award, advisory board participation with Regeneron, and leadership roles with CHEST and ALA San Diego, outside the submitted work. M. Zhang reports support for the present article from Regeneron Pharmaceuticals. K.H. Benam has received grants from the US Food and Drug Administration, US National Institutes of Health, US Department of Defense and the Gordon and Betty Moore Foundation, royalties from Emulate Inc.,

consulting fees from Pneumax LLC, has received invited speaker honorarium from Colorado State University, has multiple pending and issued patent applications, has non-significant personal investments in a number of publicly traded companies, and is the founder of Pneumax LLC. The remaining authors have no potential conflicts of interest to disclose.

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Postgrad Med J

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. 2024 Jun 28;100(1185):469-474.

doi: 10.1093/postmj/qgae024.

Body composition, pulmonary function tests, exercise capacity, and quality of life in chronic obstructive pulmonary disease patients with obesity

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Affiliations expand

- PMID: 38377471

- DOI: 10.1093/postmj/qgae024

Abstract

Purpose of the study: Larger proportions of chronic obstructive pulmonary disease (COPD) patients are currently overweight or with obesity than underweight, and the combination of COPD and obesity is increasing. The purpose of this study was to investigate differences in the body composition, pulmonary function tests, exercise

capacity, and health-related quality of life among normal weight, overweight, and obese patients with COPD.

Study design: A total of 514 patients with COPD were included in the study. According to the World Health Organization criteria for body mass index, the patients were classified as normal weight, overweight, and obese. Evaluations included fat-free mass, fat-free mass index, phase angle, pulmonary function tests, and 6-minute walk test. Dyspnea was assessed using the modified Medical Research Council dyspnea scale, and the health-related quality of life was evaluated using COPD Assessment Test and St. George's Respiratory Questionnaire. Values were compared among the three groups.

Results: There were 315 male and 199 female patients, with a mean age of 66.7 ± 8.4 years. Fat-free mass, fat-free mass index, and phase angle values were significantly higher in COPD patients with obesity than in other patients ($P < .001$, $P < .001$, $P < .001$). Forced expiratory volume in 1 s, forced expiratory volume in 1 s/forced vital capacity, and diffusing capacity of lung for carbon monoxide value in pulmonary function tests were significantly higher in COPD patients with obesity than in other patients ($P = .046$, $P < .001$, $P < .001$), while the forced vital capacity values were similar in all groups. Exercise capacity (6-min walk test distance), dyspnea symptoms (modified Medical Research Council scale), and health-related quality of life (COPD Assessment Test and St. George's Respiratory Questionnaire) did not differ significantly between groups.

Conclusions: According to our study, obesity has no negative effect on pulmonary function tests, dyspnea perception, exercise capacity, and health-related quality of life.

. 2024 Jun 27;62(5):746-758.

doi: 10.1016/j.resinv.2024.06.004. Online ahead of print.

Gastroesophageal reflux disease in chronic obstructive pulmonary disease

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Affiliations expand

- PMID: 38941760

- DOI: 10.1016/j.resinv.2024.06.004

Abstract

Gastroesophageal reflux disease (GERD) is one of the most common comorbidities of chronic obstructive pulmonary disease (COPD). Decreased lower and upper esophageal sphincter pressures, esophageal dysmotility, high transdiaphragmatic pressure, and decreased saliva secretion have been implicated as mechanisms leading to the development of GERD in COPD. Clinically, comorbid GERD in COPD is reportedly associated with worse symptoms, quality of life, and lung function, as well as a high risk of exacerbations. Aspiration of regurgitation and the cholinergic-mediated esophagobronchial reflex play a significant role in the pathophysiology. Abnormal swallowing reflexes and discoordination of swallowing can worsen aspiration. The diagnosis of GERD is not based on a single criterion; however, various approaches, including questionnaires and endoscopic evaluations, can be widely applied in clinical settings. Due to the increased risk of esophageal and gastric cancers in patients with COPD, the threshold for endoscopic examination should be low. Acid inhibitory agents, such as proton pump inhibitors and histamine H2 receptor antagonists, and prokinetic agents, including mosapride and itopride, are clinically used to treat GERD. Endoscopic fundoplication can be performed in patients with GERD refractory to medical treatment. There is still insufficient evidence, but an increasing number of studies have suggested the clinical efficacy of treatment in patients with COPD and GERD. As GERD is an evaluative and treatable common disease, and access to evaluation and treatment is relatively easy, clinicians should provide adequate care for GERD in the management of COPD.

Keywords: Chronic obstructive pulmonary disease; Comorbidity; Exacerbations; Gastroesophageal reflux disease; Treatment.

Conflict of interest statement

Declaration of competing interest K.T. received honoraria from GlaxoSmithKline. K.K. S.M. received honoraria from Nippon Boehringer Ingelheim Co., Ltd., AstraZeneca. K.K., and GlaxoSmithKline. K.K. S.M. and K.T. have received research grants from ROHTO Pharmaceutical Co.,Ltd. and FUKUDA Life Tech Co., Ltd. outside the submitted work.

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Publication typesexpand

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Review

J Clin Nurs

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. 2024 Jun 27.

doi: 10.1111/jocn.17225. Online ahead of print.

Comparative effectiveness of eHealth interventions on the exercise endurance and quality of life of patients with COPD: A systematic review and network meta-analysis

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Affiliations expand

- **PMID: 38937908**

- **DOI: 10.1111/jocn.17225**

Abstract

Aims: To compare the effectiveness of different types of eHealth interventions in improving exercise endurance and quality of life in chronic obstructive pulmonary disease (COPD) patients.

Background: COPD is a chronic airway disease characterized by persistent respiratory symptoms and airflow limitation. eHealth interventions have been accepted and recognized by healthcare professionals and COPD patients as an effective alternative to pulmonary rehabilitation. However, it is not clear which eHealth interventions are effective and preferred for exercise endurance and quality of life in COPD patients.

Design: A systematic review and network meta-analysis based on PRISMA-NMA.

Methods: We searched nine electronic databases to identify randomized controlled trials addressing the effect of eHealth interventions on the exercise endurance and quality of life of COPD patients from their inception to 30 October 2022. First, a random-effects model was chosen to conduct a traditional meta-analysis to directly investigate the efficacy of different eHealth interventions. Next, a network meta-analysis was performed to evaluate the relative efficacy of the eHealth interventions for COPD. The quality of the data was assessed using the Cochrane Risk of Bias tool.

Results: Fifty-one studies containing six eHealth interventions (telemonitoring, application [APP], web-based interventions, phone calls, virtual reality and combined interventions [≥two types]) were included in the final analysis. Network meta-analysis showed that telemonitoring, APP, web-based interventions and combined interventions improved exercise endurance in COPD patients, with telemonitoring being the most effective. Web-based interventions and apps are effective in improving the quality of life, and web-based interventions are the most effective.

Conclusions: This study confirms that eHealth interventions can improve exercise endurance and quality of life in COPD patients. In the future, healthcare professionals can promote the use of telemedicine in COPD patients to enhance their exercise endurance and quality of life according to their individual needs.

Relevance to clinical practice: This evidence suggests that eHealth interventions can improve exercise endurance and quality of life in COPD patients. Therefore, in the future, eHealth interventions could be used to maximize their effectiveness in improving exercise endurance and quality of life in COPD patients.

Keywords: COPD; eHealth; exercise endurance; network meta-analysis; quality of life.

- **45 references**

supplementary info

Publication types, Grants and fundingexpand

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BMC Public Health

. 2024 Jun 27;24(1):1714.

doi: 10.1186/s12889-024-19131-3.

Housing conditions and risk of incident COPD: a Danish cohort study, 2000-2018

Stine Kloster [1], Anne Marie Kirkegaard [2 3], Michael Davidsen [2], Anne Illemann Christensen [2], Niss Skov Nielsen [3], Lars Gunnarsen [3], Jørgen Vestbo [4], Annette Kjær Ersbøll [2]

Affiliations expand

- PMID: 38937765

- DOI: 10.1186/s12889-024-19131-3

Abstract

Background: More knowledge is needed on the risk of developing chronic obstructive pulmonary disease (COPD) associated with housing conditions and indoor environment based on cohort studies with a long follow-up time.

Objective: To examine the association between housing conditions and indoor environment and the risk of developing COPD.

Methods: In this cohort study, we followed 11,590 individuals aged ≥ 30 years free of COPD at baseline. Information on incident COPD and housing conditions and indoor environment was obtained from the Danish national registers and the Danish Health and Morbidity Survey year 2000. Poisson regression of incidence rates (IRs) were used to estimate incidence rate ratios (IRRs) of COPD.

Results: The overall IR of COPD was 8.6 per 1,000 person-years. Individuals living outside the biggest cities vs. living in the biggest cities (≥ 50,000) had a lower risk of COPD (200-4,999; IRR 0.77 (95% CI 0.65-0.90). Individuals living in semi-detached houses had a higher risk compared to individuals living in detached houses (IRR

1.29 (95% CI 1.07-1.55)). Likewise, individuals living in rented homes had a higher risk (IRR 1.47 (95% CI 1.27-1.70)) compared to individuals living in owned homes. The IR of COPD was 17% higher among individuals living in dwellings build > 1982 compared with individuals living in older dwellings (< 1962), not statistically significant though (IRR 0.83 (95% CI 0.68-1.03)). Likewise, the IR of COPD was 15% higher among individuals living in the densest households compared with individuals living in the least dense households, not statistically significant though (IRR 1.15 (95% CI 0.92-1.45)). This was primary seen among smokers. There was no difference in risk among individuals with different perceived indoor environments. Overall, similar patterns were seen when stratified by smoking status with exception of perceived indoor environment, where opposite patterns were seen for smokers and never smokers.

Conclusion: Individuals living in semi-detached houses or rented homes had a higher risk of developing COPD compared to individuals living in detached or owned homes. Individuals living in cities with < 50.000 residents had a lower risk of COPD compared to individuals living in cities with ≥ 50.000 residents.

Keywords: Built Environment; Chronic Obstructive Pulmonary Disease; Epidemiology; Housing; Indoor environment.

- 41 references

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MeSH termsexpand

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Eur Respir J

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. 2024 Jun 27:2400314.

doi: 10.1183/13993003.00314-2024. Online ahead of print.

Low smoking exposure and development and prognosis of COPD over four decades: A population-based cohort study

Yunus Çolak [1 2], Anders Løkke [3 4], Jacob L Marott [5], Peter Lange [1 2 5 6], Jørgen Vestbo [7], Børge G Nordestgaard [2 5 8], Shoaib Afzal [9 8]

Affiliations expand

- PMID: 38936967

- DOI: 10.1183/13993003.00314-2024

Abstract

A diagnosis of chronic obstructive pulmonary disease (COPD) is mainly considered in individuals with more than 10 pack-years of smoking. We tested the hypothesis that low smoking exposure, below the critical threshold of 10 pack-years, increases risk of COPD and leads to poor prognosis.We followed non-obstructive adult smokers from the Copenhagen City Heart Study for COPD, defined as forced expiratory volume in one second [FEV_1]/forced vital capacity [FVC]<0.70 and FEV_1<80% predicted, and for related clinical outcomes. First, we followed individuals for 5years according to baseline smoking for risk of developing COPD, and hereafter for up to four decades for severe exacerbations and death.In 6098 non-obstructive smokers, 1781(29%) developed COPD after 5 years follow-up; 23% in individuals with <10pack-years of smoking at baseline, 26% in those with 10-19.9pack-years, 30% in those with 20-39.9pack-years, and 39% in those with ≥40pack-years. During four decades follow-up, we recorded 620 exacerbations and 5573 deaths. Compared to individuals without COPD with <10pack-years of smoking, multivariable adjusted hazard ratios (HRs) for exacerbations were 1.94(95% confidence interval:1.36-2.77) in those without COPD with ≥10pack-years, 2.83(1.72-4.66) in those with COPD with <10pack-years, 4.34(2.93-6.43) in COPD with 10-19.9pack-years, 4.39(2.98-6.47) in COPD with 20-39.9pack-years, and 4.98(3.11-7.97) in COPD with ≥40pack-years. Corresponding HRs for all-cause mortality were 1.20(1.10-1.32), 1.33(1.14-1.56), 1.59(1.40-1.80),1.81(1.62-2.03), and 1.81(1.55-2.10), respectively.Low smoking exposure below the critical threshold of 10 pack-years increases risk of COPD in middle-aged adults within 5 years, and these individuals have increased risk of severe exacerbation and early death over four decades.

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Am J Respir Crit Care Med

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. 2024 Jun 27.

doi: 10.1164/rccm.202401-0011OC. Online ahead of print.

Dysanapsis Genetic Risk Predicts Lung Function Across the Lifespan

Catherine L Debban [1], Amirthagowri Ambalavanan [2], Auyon Ghosh [3], Zhonglin Li [4], Kristina L Buschur [5 6 7 8], Yanlin Ma [9], Elizabeth George [10], Carrie Pistenmaa [11], Alain G Bertoni [12], Elizabeth C Oelsner [13], Erin D Michos [14], Theo J Moraes [15 16], David R Jacobs Jr [17], Stephanie Christenson [18], Surya P Bhatt [19], Robert J Kaner [20], Elinor Simons [21], Stuart E Turvey [22], Motahareh Vameghestahbanati [23], James C Engert [24], Miranda Kirby [25], Jean Bourbeau [26 27], Wan C Tan [28], Stacey B Gabriel [29], Namrata Gupta [29], Prescott G Woodruff [30], Padmaja Subbarao [31], Victor E Ortega [32], Eugene R Bleecker [33], Deborah A Meyers [34], Stephen S Rich [1], Eric A Hoffman [35], R Graham Barr [36], Michael H Cho [37], Yohan Bossé [38], Qingling Duan [39], Ani Manichaikul [40], Benjamin M Smith [41]

Affiliations expand

- PMID: 38935874

- DOI: 10.1164/rccm.202401-0011OC

Abstract

Rationale Dysanapsis refers to a mismatch between airway tree caliber and lung size arising early in life. Dysanapsis assessed by computed tomography (CT) is evident by early adulthood and associated with chronic obstructive pulmonary disease (COPD) risk later in life. **Objective** By examining the genetic factors associated with CT-assessed dysanapsis, we aimed to elucidate its molecular underpinnings and physiological significance across the lifespan. **Methods** We performed a genome-wide association study (GWAS) of CT-assessed dysanapsis in 11,951 adults, including individuals from two population-based and two COPD-enriched studies. We applied colocalization analysis to integrate GWAS and gene expression data from whole blood and lung. Genetic variants associated with dysanapsis were combined into a genetic risk score that was applied to examine association with lung function in children from a population-based birth cohort (n=1,278) and adults from the UK Biobank (n=369,157). **Measurements and Main Results** CT-assessed dysanapsis was associated with genetic variants from 21 independent signals in 19 gene regions, implicating *HHIP*, *DSP*, and *NPNT* as potential molecular targets based on colocalization of their expression. Higher dysanapsis genetic risk score was associated with obstructive spirometry among 5 year old children and among adults in the 5th, 6th and 7th decades of life.

Conclusions CT-assessed dysanapsis is associated with variation in genes previously implicated in lung development and dysanapsis genetic risk is associated with obstructive lung function from early life through older adulthood. Dysanapsis may represent an endo-phenotype link between the genetic variations associated with lung function and COPD.

Keywords: COPD; airflow obstruction; chronic obstructive pulmonary disease; lung growth & development.

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Am J Respir Crit Care Med

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. 2024 Jun 27.

doi: 10.1164/rccm.202305-0793OC. Online ahead of print.

Lung Transcriptomics Links Emphysema to Barrier Dysfunction and Macrophage Subpopulations

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Affiliations expand

- **PMID: 38935868**

- **DOI: 10.1164/rccm.202305-0793OC**

Abstract

Rationale: While many studies have examined gene expression in lung tissue, the gene regulatory processes underlying emphysema are still not well understood. Finding efficient non-imaging screening methods and disease-modifying therapies

has been challenging, but knowledge of the transcriptomic features of emphysema may help in this effort.

Objectives: Our goals were to identify emphysema-associated biological pathways through transcriptomic analysis of bulk lung tissue, to determine the lung cell types in which these emphysema-associated pathways are altered, and to detect unique and overlapping transcriptomic signatures in blood and lung samples.

Methods: Using RNA-sequencing data from 446 samples in the Lung Tissue Research Consortium (LTRC) and 3,606 blood samples from the COPDGene study, we examined the transcriptomic features of chest computed tomography-quantified emphysema. We also leveraged publicly available lung single-cell RNA-sequencing data to identify cell types showing COPD-associated differential expression of the emphysema pathways found in the bulk analyses.

Measurements and main results: In the bulk lung RNA-seq analysis, 1,087 differentially expressed genes and 34 dysregulated pathways were significantly associated with emphysema. We observed alternative splicing of several genes and increased activity in pluripotency and cell barrier function pathways. Lung tissue and blood samples shared differentially expressed genes and biological pathways. Multiple lung cell types displayed dysregulation of epithelial barrier function pathways, and distinct pathway activities were observed among various macrophage subpopulations.

Conclusions: This study identified emphysema-related changes in gene expression and alternative splicing, cell-type specific dysregulated pathways, and instances of shared pathway dysregulation between blood and lung.

Keywords: Emphysema; Imaging; Inflammation; Pathways; Transcriptomics.

. 2024 Jun 27.

doi: 10.1080/17476348.2024.2373790. Online ahead of print.

Sleep disordered breathing: OSA-COPD overlap

Mafalda van Zeller [1 2], Walter T McNicholas [3 4]

Affiliations expand

- PMID: 38932721

- DOI: 10.1080/17476348.2024.2373790

Abstract

Introduction: Sleep has important effects on breathing and gas exchange that may have negative consequences in patients with chronic obstructive pulmonary disease (COPD). COPD and obstructive sleep apnea (OSA) are highly prevalent and may coexist, which is referred to as the overlap syndrome.

Areas covered: The probability of OSA-COPD overlap represents the balance of protective and promoting factors such as hyperinflation and fluid retention; thus, different clinical COPD phenotypes influence the likelihood of comorbid OSA. The clinical presentation of OSA-COPD overlap is nonspecific, and the diagnosis requires clinical awareness to identify patients needing overnight studies. Both COPD and OSA are associated with a range of overlapping physiological and biological disturbances including hypoxia and inflammation that contribute to cardiovascular comorbidities. The management of OSA-COPD overlap patients differs from those with COPD alone and the survival of overlap patients treated with positive airway pressure (PAP) is superior to those untreated.

Expert opinion: The recognition of OSA-COPD overlap has important clinical relevance because of its impact on outcomes and management. Management of the overlap should address both sleep quality and disordered gas exchange. PAP therapy has demonstrated reductions in COPD exacerbations, hospitalizations, healthcare costs and mortality in overlap patients.

Keywords: Chronic obstructive pulmonary disease; Comorbidities; Obstructive sleep apnea; Outcomes; Overlap; Positive airway pressure; Sleep disordered breathing.

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Clinical Trial

N Engl J Med

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. 2024 Jun 27;390(24):2274-2283.

doi: 10.1056/NEJMoa2401304. Epub 2024 May 20.

Dupilumab for COPD with Blood Eosinophil Evidence of Type 2 Inflammation

Surya P Bhatt [1], Klaus F Rabe [1], Nicola A Hanania [1], Claus F Vogelmeier [1], Mona Bafadhel [1], Stephanie A Christenson [1], Alberto Papi [1], Dave Singh [1], Elizabeth Laws [1], Naimish Patel [1], George D Yancopoulos [1], Bolanle Akinlade [1], Jennifer Maloney [1], Xin Lu [1], Deborah Bauer [1], Ashish Bansal [1], Raolat M Abdulai [1], Lacey B Robinson [1]; NOTUS Study Investigators

Collaborators, Affiliations expand

- PMID: 38767614

- DOI: 10.1056/NEJMoa2401304

Abstract

Background: Dupilumab, a fully human monoclonal antibody that blocks the shared receptor component for interleukin-4 and interleukin-13, key and central drivers of type 2 inflammation, has shown efficacy and safety in a phase 3 trial involving patients with chronic obstructive pulmonary disease (COPD) and type 2 inflammation and an elevated risk of exacerbation. Whether the findings would be confirmed in a second phase 3 trial was unclear.

Methods: In a phase 3, double-blind, randomized trial, we assigned patients with COPD who had a blood eosinophil count of 300 cells per microliter or higher to receive subcutaneous dupilumab (300 mg) or placebo every 2 weeks. The primary end point was the annualized rate of moderate or severe exacerbations. Key secondary end points, analyzed in a hierarchical manner to adjust for multiplicity, included the changes from baseline in the prebronchodilator forced expiratory volume in 1 second (FEV_1) at weeks 12 and 52 and in the St. George's Respiratory Questionnaire (SGRQ; scores range from 0 to 100, with lower scores indicating better quality of life) total score at week 52.

Results: A total of 935 patients underwent randomization: 470 were assigned to the dupilumab group and 465 to the placebo group. As prespecified, the primary analysis was performed after a positive interim analysis and included all available data for the 935 participants, 721 of whom were included in the analysis at week 52. The annualized rate of moderate or severe exacerbations was 0.86 (95% confidence interval [CI], 0.70 to 1.06) with dupilumab and 1.30 (95% CI, 1.05 to 1.60) with placebo; the rate ratio as compared with placebo was 0.66 (95% CI, 0.54 to 0.82; P<0.001). The prebronchodilator FEV_1 increased from baseline to week 12 with dupilumab (least-squares mean change, 139 ml [95% CI, 105 to 173]) as compared with placebo (least-squares mean change, 57 ml [95% CI, 23 to 91]), with a significant least-squares mean difference at week 12 of 82 ml (P<0.001) and at week 52 of 62 ml (P = 0.02). No significant between-group difference was observed in the change in SGRQ scores from baseline to 52 weeks. The incidence of adverse events was similar in the two groups and consistent with the established profile of dupilumab.

Conclusions: In patients with COPD and type 2 inflammation as indicated by elevated blood eosinophil counts, dupilumab was associated with fewer exacerbations and better lung function than placebo. (Funded by Sanofi and Regeneron Pharmaceuticals; NOTUS ClinicalTrials.gov number, NCT04456673.).

supplementary info

Publication types, MeSH terms, Substances, Associated data, Grants and fundingexpand

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Rev Esp Cardiol (Engl Ed)

. 2024 Jun 25:S1885-5857(24)00194-4.

doi: 10.1016/j.rec.2024.06.003. Online ahead of print.

Risk of severe cardiovascular events following COPD exacerbations: results from the EXACOS-CV study in Spain

[Article in English, Spanish]

Salud Santos [1], Nicolás Manito [2], Joaquín Sánchez-Covisa [3], Ignacio Hernández [4], Carmen Corregidor [5], Luciano Escudero [5], Kirsty Rhodes [6], Clementine Nordon [7]

Affiliations expand

- PMID: 38936468

- DOI: 10.1016/j.rec.2024.06.003

Abstract

Introduction and objectives: This real-world study-the first of its kind in a Spanish population-aimed to explore severe risk for cardiovascular events and all-cause death following exacerbations in a large cohort of patients with chronic obstructive pulmonary disease (COPD).

Methods: We included individuals with a COPD diagnosis code between 2014 and 2018 from the BIG-PAC health care claims database. The primary outcome was a composite of a first severe cardiovascular event (acute coronary syndrome, heart failure decompensation, cerebral ischemia, arrhythmia) or all-cause death following inclusion in the cohort. Time-dependent Cox proportional hazards models estimated HRs for associations between exposed time periods (1-7, 8-14, 15-30, 31-180, 181-365, and > 365 days) following an exacerbation of any severity, and following moderate or severe exacerbations separately (vs unexposed time before a first exacerbation following cohort inclusion).

Results: During a median follow-up of 3.03 years, 18 901 of 24 393 patients (77.5%) experienced ≥ 1 moderate/severe exacerbation, and 8741 (35.8%) experienced the primary outcome. The risk of a severe cardiovascular event increased following moderate/severe COPD exacerbation onset vs the unexposed period, with rates being most increased during the first 1 to 7 days following exacerbation onset (HR, 10.10; 95%CI, 9.29-10.97) and remaining increased > 365 days after exacerbation onset (HR, 1.65; 95%CI, 1.49-1.82).

Conclusions: The risk of severe cardiovascular events or death increased following moderate/severe exacerbation onset, illustrating the need for proactive multidisciplinary care of patients with COPD to prevent exacerbations and address other cardiovascular risk factors.

Keywords: Agudización; Cardiopulmonar; Cardiopulmonary; Cardiovascular risk; Chronic obstructive pulmonary disease; Enfermedad pulmonar obstructiva crónica; Estudio observacional; Exacerbation; Mortalidad; Mortality; Observational study; Riesgo cardiovascular.

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Heart Lung

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. 2024 Jun 25:68:68-73.

doi: 10.1016/j.hrtlng.2024.06.013. Online ahead of print.

BMI moderates the relationship between depression and chronic obstructive pulmonary disease: A cross-sectional survey

Feng Wang [1], Liangliang Jia [2]

Affiliations expand

- PMID: 38936063

- DOI: 10.1016/j.hrtlng.2024.06.013

Abstract

Background: Prior research has established a connection between depression and chronic obstructive pulmonary disease (COPD). However, the influence of age and BMI on this association remains unclear.

Objectives: We used the National Health and Nutrition Examination Survey (NHANES) database to explore the relationship between depression and COPD, and to investigate whether age and Body mass index (BMI) act as moderators in this relationship.

Methods: We analyzed data from 10,940 participants in the NHANES database. Depression served as the independent variable. COPD status served as the outcome variable. We employed multivariable logistic regression to examine the relationship between depression and COPD.

Results: Of the 10,940 respondents surveyed, about 3.9 % had COPD and 8.5 % had depression. The prevalence of depression in COPD patients was significantly greater than the prevalence of overall respondents (21.1 % VS.8.5 %). We found that the association between depression and COPD was mediated by BMI status. Controlling for other covariates, the association between depression and COPD

increased significantly. For the underweight group, the impact of depression on the risk of COPD was lower compared to the normal BMI group.

Conclusion: This study confirms a significant association between depression and COPD, with BMI serving as a moderator. These findings enhance our understanding of the complex interplay between depression and COPD and underscore the importance of considering individual physical health characteristics in clinical assessments. The results have significant implications for clinical practice and public health policymaking.

Keywords: Age; Body mass index; Chronic obstructive pulmonary disease; Cross-sectional study; Depression.

Conflict of interest statement

Declaration of competing interest All authors declare that they have no conflicts of interest.

18

Multicenter Study

BMC Pulm Med

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. 2024 Jun 25;24(1):297.

doi: 10.1186/s12890-024-03106-6.

Prevalence and risk factors for obstructive pulmonary dysfunction caused by silica dust exposure: a multicenter cross-sectional study

Li Xin [1], Tang Mei An [1], Li Ying [1], Dai Wei Rong [1], Huang Lei [2]

Affiliations expand

- PMID: 38918735

- PMCID: PMC11197187

- DOI: 10.1186/s12890-024-03106-6

Free PMC article

Abstract

Objective: To understand the prevalence rate of obstructive pulmonary dysfunction in workers exposed to silica dust and analyze its risk factors, so as to provide reference for the formulation of diagnostic criteria for chronic obstructive pulmonary disease caused by occupational dust.

Methods: Data collection and structured questionnaire were used to collect the data of 2064 workers exposed to silica dust who underwent health examination in Hunan Occupational Disease Prevention and Control Hospital and Yuanling Second People's Hospital from January 1, 2021 to June 30, 2022. The prevalence rate of obstructive pulmonary ventilation dysfunction was analyzed and the risk factors were analyzed.

Results: The prevalence rate of obstructive pulmonary ventilation dysfunction (FEV1/FVC < 70%) was 2.3% in 2064 silica dust exposed workers. The prevalence of restrictive pulmonary ventilation dysfunction (FVC/Pre < 80%) was 8.1%. The prevalence of obstructive pulmonary ventilation dysfunction in the high level exposure group was higher than that in the low level exposure group, 8.2 vs0.9% (P < 0.05). The rate of obstructive pulmonary ventilation dysfunction in female group was higher than that in male group (5.3% vs. 1.7%, p = 0.00). Workers with obstructive pulmonary dysfunction were older and worked longer than workers without obstructive pulmonary dysfunction, but there was no statistical difference. Multivariate regression analysis showed that high exposure level was a risk factor for obstructive pulmonary ventilation dysfunction in silica dust exposed workers (P < 0.05). Females were the risk factors for obstructive pulmonary ventilation dysfunction (P < 0.05).

Conclusion: Silica dust exposure can cause obstructive pulmonary ventilation dysfunction and lead to chronic obstructive pulmonary disease. High level of exposure is a risk factor for obstructive pulmonary ventilation dysfunction. Women exposed to dust are more prone to obstructive pulmonary ventilation dysfunction than men. Early diagnosis of chronic obstructive pulmonary disease caused by silica dust and timely intervention measures are very important to delay the decline of lung function and protect the health of workers.

- 14 references

supplementary info

Publication types, MeSH terms, Substancesexpand

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19

Observational Study

PLoS One

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. 2024 Jun 25;19(6):e0300945.

doi: 10.1371/journal.pone.0300945. eCollection 2024.

Influence of frailty on cardiovascular events and mortality in patients with Chronic Obstructive Pulmonary Disease (COPD): Study protocol for a multicentre European observational study

Alessia Verduri [1], Enrico Clini [1], Ben Carter [2], Jonathan Hewitt [3]

Affiliations expand

- PMID: 38917212
- PMCID: PMC11198743
- DOI: 10.1371/journal.pone.0300945

Abstract

Background: Frailty is a clinical state that increases susceptibility to minor stressor events. The risk of frailty is higher in chronic conditions, such as Chronic Obstructive Pulmonary Disease (COPD). Recent studies on COPD have shown that patients living with frailty have an increased risk of mortality. The presence of cardiovascular diseases or conditions are common in COPD and may increase the risk of death.

Methods: This protocol describes a European prospective cohort study of community-based people, in a stable condition with diagnosis of COPD (as defined by GOLD guidelines) across hospitals in Italy and UK. Frailty prevalence will be assessed using the Clinical Frailty Scale. At 1- and 2-year follow up, primary outcome will be the impact of frailty on the number of cardiovascular events; secondary outcomes: the influence of frailty on cardiovascular mortality, all-cause mortality, and deaths due to COPD. For the primary outcome a zero-inflated Poisson regression will compare the number of cardiovascular events at 1 year. Secondary outcomes will be analysed using the time to mortality.

Discussion: This multicentre study will assess the association between frailty and cardiovascular events and mortality in population with COPD. Data collection is prospective and includes routine clinical data. This research will have important implications for the management of patients with COPD to improve their quality of care, and potentially prognosis.

Trial registration number: NCT05922202 (www.clinicaltrials.gov).

Conflict of interest statement

The authors have declared that no competing interests exist.

- 19 references
- 2 figures

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Respirology

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. 2024 Jun 24.

doi: 10.1111/resp.14776. Online ahead of print.

Computed tomography mucus plugs and airway tree structure in patients with chronic obstructive pulmonary disease: Associations with airflow limitation, health-related independence and mortality

Naoya Tanabe [1 2], Kaoruko Shimizu [3], Hiroshi Shima [1], Nobuyasu Wakazono [3], Yusuke Shiraishi [1], Kunihiko Terada [4], Satoru Terada [1 4], Tsuyoshi Oguma [1 5], Ryo Sakamoto [6], Masaru Suzuki [3], Hironi Makita [3 7], Atsuyasu Sato [1], Susumu Sato [1 8], Masaharu Nishimura [3 7], Satoshi Konno [3], Toyohiro Hirai [1]

Affiliations expand

- PMID: 38924669

- DOI: 10.1111/resp.14776

Abstract

Background and objective: Mucus plugs and underlying airway tree structure can affect airflow limitation and prognosis in patients with chronic obstructive pulmonary disease (COPD), but their relative roles are unclear. This study used two COPD cohorts to examine whether mucus plugs on computed tomography (CT) were associated with airflow limitation and clinical outcomes independent of other airway structural changes and emphysema.

Methods: Based on visual CT assessment, patients with mucus plugs in 0, 1-2 and ≥3 lung segments were assigned to no-, low- and high-mucus groups. Loss of health-related independence and mortality were prospectively recorded for 3 and 10 years in the Kyoto-Himeji and Hokkaido cohorts, respectively. The percentages of the wall area of the central airways (WA%), total airway count (TAC) and emphysema were quantified on CT.

Results: Of 199 and 96 patients in the Kyoto-Himeji and Hokkaido cohorts, 34% and 30%, respectively, had high mucus scores. In both cohorts, TAC was lower in the high-mucus group than in the no-mucus group, whereas their emphysema severity did not differ. High mucus score and low TAC were independently associated with airflow limitation after adjustment for WA% and emphysema. In multivariable models adjusted for WA% and emphysema, TAC, rather than mucus score, was associated with a greater rate of loss of independence, whereas high mucus score, rather than TAC, was associated with increased mortality.

Conclusion: Mucus plugs and lower airway branch count on CT had distinct roles in airflow limitation, health-related independence and mortality in patients with COPD.

Keywords: COPD; CT; airway disease; emphysema; mortality; radiology and other imaging.

- 39 references

supplementary info

Grants and fundingexpand

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21

ESC Heart Fail

. 2024 Jun 24.

doi: 10.1002/ehf2.14894. Online ahead of print.

Setting the optimal threshold of NT-proBNP and BNP for the diagnosis of heart failure in patients over 75 years

Emmanuelle Berthelot [1], Minh Tam Bailly [1], Xenia Cerchez Lehova [1], Manel El Blidi Rahmani [1], Rahil Bounab [1], Nathan Mewton [2], John E Dobbs [1], Remy Mas [3], Marie Frank [3], Nicolas Lellouche [1], Marion Paclot [4], Patrick Jourdain [1]

Affiliations expand

- PMID: 38923835

- DOI: 10.1002/ehf2.14894

Free article

Abstract

Aims: Diagnosing acute heart failure (AHF) remains particularly challenging in older patients. Natriuretic peptides are recommended as valuable diagnostic tools in this context. This study aims to establish the diagnostic thresholds of B-type natriuretic peptide (BNP) and N-terminal pro-B-type natriuretic peptide (NT-proBNP) for AHF in patients aged over 75 years, both with and without co-morbidities.

Methods and results: In this retrospective longitudinal multicentre cohort study, data were gathered from 12 071 hospitalized patients aged 75 years or older, presenting with acute dyspnoea and undergoing BNP or NT-proBNP measurement within 48 h of admission across 10 Assistance Publique-Hôpitaux de Paris facilities between 2011 and 2022, encompassing geriatrics, cardiology, and pulmonology departments. Final diagnoses were categorized using ICD-10 criteria as either AHF or other acute respiratory conditions such as COPD exacerbation, pulmonary embolism, and pneumonia. The mean (SD) age of the population was 84.0 (80.0, 89.0) years, with 52.7% being female. Out of these, 7946 (65.8%) were diagnosed with AHF upon discharge. For NT-proBNP, the identified 'optimal' threshold for diagnosing AHF was 1748 ng/L, with a positive predictive value (PPV) of 84%. Among patients aged over 85 years, a threshold of 2235 pg/mL for NT-proBNP was associated with an 84% PPV. In patients with atrial fibrillation (AF), a threshold of 2332 pg/mL for NT-proBNP demonstrated a PPV of 90% for AHF diagnosis. Additionally, in patients with an estimated glomerular filtration rate (eGFR) < 30 mL/min, a threshold of 3474 pg/mL for NT-proBNP yielded a 90% PPV for AHF diagnosis. In male patients, a threshold of 1800 pg/mL showed an 85% PPV for AHF diagnosis, while in patients with obesity, a threshold of 1375 pg/mL demonstrated an 85% PPV for AHF diagnosis.

Conclusions: In older patients, we found significant effects of co-morbidities on natriuretic peptides results, particularly in patients over 85 years old, older patients with abnormal renal function, obesity, and atrial fibrillation. Despite the consideration of those co-morbid conditions, NT-proBNP and BNP level continue to demonstrate utility in the diagnosis of AHF in older patients.

Keywords: Acute heart failure; Diagnosis; NT-proBNP; Older.

- 25 references

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J Physiother

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. 2024 Jun 24:S1836-9553(24)00058-4.

doi: 10.1016/j.jphys.2024.06.003. Online ahead of print.

Interventions with a clear focus on achieving behaviour change are important for maintaining training-related gains in people with chronic obstructive pulmonary disease: a systematic review

Sarah Hug [1], Vinicius Cavalheri [2], Hollie Lawson-Smith [3], Daniel F Gucciardi [3], Kylie Hill [4]

Affiliations expand

- PMID: 38918084

- DOI: 10.1016/j.jphys.2024.06.003

Free article

Abstract

Questions: In people with chronic obstructive pulmonary disease (COPD) who complete an exercise training program (ETP) offered at a sufficient dose to result in training-related gains, to what extent are these gains maintained 12 months after program completion? Do variables such as the application of behaviour change techniques moderate the maintenance of these training-related gains?

Design: Systematic review, meta-analysis and meta-regression of randomised controlled trials.

Participants: People with stable COPD.

Intervention: Trials were included if they applied ≥ 4 weeks of a whole-body ETP and reported outcome data immediately following program completion and 12 months after initial program completion. The control group received usual care that did not include a formal exercise training component.

Outcome measures: Exercise tolerance, health-related quality of life and dyspnoea during activities of daily living.

Data sources: EMBASE, PEDro, PubMed and the Cochrane Library.

Results: Nineteen randomised trials with 2,103 participants were found, of which 12 had a sufficiently similar design to be meta-analysed. At 12 months after ETP completion, compared with the control group, the experimental group demonstrated better exercise tolerance (SMD 0.48, 95% CI 0.19 to 0.77) and quality of life (SMD 0.22, 95% CI 0.03 to 0.41) with no clear effect on dyspnoea. Meta-regression using data from all 19 trials demonstrated that the magnitude of between-group differences at the 12-month follow-up was moderated by: behaviour change being a core aim of the strategies implemented following completion of the ETP; the experimental group receiving more behaviour change techniques during the program; and the magnitude of between-group change achieved from the program.

Conclusion: At 12 months after completion of an ETP of ≥ 4 weeks, small gains were maintained in exercise tolerance and health-related quality of life. Applying behaviour change techniques with a clear focus on participants integrating exercise into daily life beyond initial program completion is important to maintain training-related gains.

Registration: CRD42020193833.

Keywords: Behaviour therapy; Chronic obstructive pulmonary disease; Exercise; Maintenance; Physical therapy.

full text links

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Lung

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. 2024 Jun 24.

doi: 10.1007/s00408-024-00725-y. Online ahead of print.

Association of Delirium with Long-Term Mortality in Critically Ill Patients with COPD Who Survived to Discharge: A Retrospective Cohort Study

Hong-Bo Xu [1], Fang Xue [1], Yuan Ye [1], Hai-Gang Zhang [2]

Affiliations expand

- **PMID: 38914868**

- **DOI: 10.1007/s00408-024-00725-y**

Abstract

Background: Critically ill patients with chronic obstructive pulmonary disease (COPD) face significant mortality after hospital discharge. Delirium is common in

patients with COPD, but its impact on long-term mortality in critically ill COPD patients who survive to discharge remains uncertain.

Methods: Critically ill patients with COPD who survived to discharge were selected from the Medical Information Mart for Intensive Care IV database. Delirium was assessed using the Confusion Assessment Method for Intensive Care Unit. The primary outcome was 365- and 180-day mortality after discharge. The secondary outcomes included 90- and 30-day mortality following discharge, length of intensive care unit (ICU) and hospital stays, and nursing care needs after hospital discharge.

Results: Of the 2621 survivors of critically ill COPD patients, 982 had suffered delirium during their ICU stay and 709 died within 365 days after hospital discharge. Delirium was significantly associated with 365-day mortality after hospital discharge (adjusted hazard ratio [HR] 1.22; 95% confidence interval [CI] 1.02-1.47). The results were consistent for 180-, 90-, and 30-day post-discharge mortality (adjusted HR [95% CI]: 1.35 [1.09-1.66], 1.48 [1.16-1.89], and 1.68 [1.21-2.32], respectively). Additionally, patients with delirium had longer ICU and hospital stay (adjusted β 2.75; 95% CI 2.35-3.16 and 4.25; 95% CI 3.51-4.98, respectively) and increased nursing care needs after hospital discharge (adjusted odds ratio, 1.56; 95% CI 1.13-2.14).

Conclusion: ICU delirium was an independent risk factor for both long-term and short-term mortality in critically ill patients with COPD who survived to discharge.

Keywords: COPD; Delirium; Mortality; Survival.

- **26 references**

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JCI Insight

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. 2024 Jun 24;9(12):e181925.

doi: 10.1172/jci.insight.181925.

Association of urine mitochondrial DNA with clinical measures of COPD in the SPIROMICS cohort

William Z Zhang, Michelle C Rice, Katherine L Hoffman, Clara Oromendia, Igor Z Barjaktarevic, J Michael Wells, Annette T Hastie, Wassim W Labaki, Christopher B Cooper, Alejandro P Comellas, Gerard J Criner, Jerry A Krishnan, Robert Paine 3rd, Nadia N Hansel, Russell P Bowler, R Graham Barr, Stephen P Peters, Prescott G Woodruff, Jeffrey L Curtis, Meilan K Han, Karla V Ballman, Fernando J Martinez, Augustine Mk Choi, Kiichi Nakahira, Suzanne M Cloonan, Mary E Choi; SPIROMICS Investigators

- PMID: 38912587

- DOI: 10.1172/jci.insight.181925

Free article

No abstract available

supplementary info

Publication types, MeSH terms, Substancesexpand

full text links

Review

Expert Rev Respir Med

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. 2024 Jun 24:1-14.

doi: 10.1080/17476348.2024.2369716. Online ahead of print.

The impact of smoking on bronchiectasis and its comorbidities

David de la Rosa-Carrillo [1], José Ignacio de Granda-Orive [2 3], Layla Diab Cáceres [2], Fernando Gutiérrez Pereyra [1], Beatriz Raboso Moreno [4], Miguel-Ángel Martínez-García [5], Guillermo Suárez-Cuartin [6]

Affiliations expand

- PMID: 38888096

- DOI: 10.1080/17476348.2024.2369716

Abstract

Introduction: Bronchiectasis, characterized by irreversible bronchial dilatation, is a growing global health concern with significant morbidity. This review delves into the intricate relationship between smoking and bronchiectasis, examining its epidemiology, pathophysiology, clinical manifestations, and therapeutic approaches. Our comprehensive literature search on PubMed utilized MESH terms including 'smoking,' 'smoking cessation,' 'bronchiectasis,' and 'comorbidities' to gather relevant studies.

Areas covered: This review emphasizes the role of smoking in bronchiectasis development and exacerbation by compromising airways and immune function. Interconnected comorbidities, including chronic obstructive pulmonary disease, asthma, and gastroesophageal reflux disease, create a detrimental cycle affecting patient outcomes. Despite limited studies on smoking cessation in bronchiectasis, the review stresses its importance. Advocating for tailored cessation programs, interventions like drainage, bronchodilators, and targeted antibiotics are crucial to disrupting the inflammatory-infection-widening cycle.

Expert opinion: The importance of smoking cessation in bronchiectasis management is paramount due to its extensive negative impact on related conditions. Proactive cessation programs utilizing technology and targeted education for high-risk groups aim to reduce smoking's impact on disease progression and related comorbidities. In conclusion, a personalized approach centered on smoking cessation is deemed vital for bronchiectasis, aiming to improve outcomes and enhance patients' quality of life in the face of this complex respiratory condition.

Keywords: Bronchiectasis; COPD; bronchial inflammation; comorbidities; smoking; smoking cessation.

supplementary info

Publication typesexpand

full text links

"Multimorbidity"[Mesh Terms] OR Multimorbidity[Text Word]

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Br J Gen Pract

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. 2024 Jun 27;74(744):e442-e448.

doi: 10.3399/BJGP.2023.0406. Print 2024 Jul.

Interventions to improve medication adherence in adults with mental-physical multimorbidity in primary care: a systematic review

Elena Lammila-Escalera [1], Geva Greenfield [1], Ziyang Pan [1], Dasha Nicholls [1], Azeem Majeed [1], Benedict Hayhoe [2]

Affiliations expand

- **PMID: 38429109**
- **PMCID: PMC11181560**
- **DOI: 10.3399/BJGP.2023.0406**

Abstract

Background: Medication non-adherence is a notable contributor to healthcare inefficiency, resulting in poor medication management, impaired patient outcomes, and ineffective symptom control.

Aim: To summarise interventions targeting medication adherence for adults with mental-physical multimorbidity in primary healthcare settings.

Design and setting: A systematic review of the literature - published in any language and with any country of origin - was conducted.

Method: MEDLINE, EMBASE, PsycInfo, Web of Science, Cochrane Library, and the Cumulated Index to Nursing and Allied Health Literature - more commonly known as CINAHL - were searched for relevant studies. Data were extracted and synthesised using narrative synthesis. The Effective Practice and Organisation of Care (EPOC) taxonomy was used to classify intervention types. Risk of bias was assessed using the National Heart, Lung, and Blood Institute's quality assessment tool for controlled intervention studies.

Results: Eleven studies, representing 2279 patients, were included. All interventions examined were classified into one EPOC domain, namely 'delivery arrangements'. All included studies examined patients who had a physical condition and depression. Seven studies examining interventions focused on coordination of care and management of care processes reported statistically significant improvements in medication adherence that were attributed to the intervention. Four studies considering the use of information and communication technology observed no changes in medication adherence.

Conclusion: Interventions that coordinate and manage healthcare processes may help improve patients' adherence to medication regimes in those with mental-physical multimorbidity. However, it is still necessary to better understand how digital health technology can support patients in following their medication regimes. As the growing challenges of treating multimorbidity are faced, everyone involved in health services - from providers to policymakers - must be receptive to a more integrated approach to healthcare delivery.

Keywords: medication adherence; multimorbidity; primary care.

Conflict of interest statement

The authors have declared no competing interests.

- **57 references**
- **1 figure**

supplementary info

Publication types, MeSH termsexpand

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Review

Expert Opin Pharmacother

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. 2024 Jun 28.

doi: 10.1080/14656566.2024.2374048. Online ahead of print.

Optimizing drug therapy for older adults: shifting away from problematic polypharmacy

Ruth Daunt [1], Denis Curtin [1], Denis O'Mahony [1]

Affiliations expand

- PMID: 38940370

- DOI: 10.1080/14656566.2024.2374048

Abstract

Introduction: The accelerated discovery and production of pharmaceutical products has resulted in many positive outcomes. However, this progress has also contributed to problematic polypharmacy, one of the rapidly growing threats to public health in this century. Problematic polypharmacy results in adverse patient outcomes and imposes increased strain and financial burden on healthcare systems.

Areas covered: A review was conducted on the current body of evidence concerning factors contributing to and consequences of problematic polypharmacy. Recent trials investigating interventions that target polypharmacy and emerging solutions, including incorporation of artificial intelligence, are also examined in this article.

Expert opinion: To shift away from problematic polypharmacy, a multifaceted interdisciplinary approach is necessary. Any potentially successful strategy must be adapted to suit various healthcare settings and must utilize all available resources, including artificial intelligence.

Keywords: Artificial intelligence; Geriatric medicine; Medication-related harm; Multimorbidity; Problematic polypharmacy; deprescribing.

Eur J Heart Fail

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. 2024 Jun 26.

doi: 10.1002/ejhf.3304. Online ahead of print.

Cardiovascular-kidney-metabolic overlap in heart failure with preserved ejection fraction: Cardiac structure and function, clinical outcomes, and response to sacubitril/valsartan in PARAGON-HF

Mats C H Lassen [# 1 2 3], John W Ostrominski [# 1 4], Brian L Claggett [1], Milton Packer [5], Michael Zile [6], Akshay S Desai [1], Amil M Shah [7], Maja Cikes [8], Bela Merkely [9], Mauro Gori [10], Xiaowen Wang [1], Sheila M Hegde [1], Marc A Pfeffer [1], Martin Lefkowitz [11], John J V McMurray [12], Scott D Solomon [1], Muthiah Vaduganathan [1]

Affiliations expand

- PMID: 38932589

- DOI: 10.1002/ejhf.3304

Abstract

Aims: Cardiovascular-kidney-metabolic (CKM) multimorbidity is prevalent among individuals with heart failure (HF), but whether cardiac structure and function, clinical outcomes, and treatment response to sacubitril/valsartan vary in relation to CKM status is unknown.

Methods and results: In this PARAGON-HF post-hoc analysis, we evaluated the impact of CKM multimorbidity (atherosclerotic cardiovascular [CV] disease, chronic kidney disease, and type 2 diabetes) on cardiac structure and function, clinical outcomes, and treatment effects of sacubitril/valsartan versus valsartan. The primary outcome was a composite of total HF hospitalizations and CV death. Secondary outcomes included the individual components of the primary outcome and a composite kidney outcome (sustained estimated glomerular filtration rate reduction of ≥50%, end-stage kidney disease, or kidney-related death). At baseline, 35.2% had one CKM condition, 33.3% had two, 15.9% had three, and only 15.6% had HF alone. CKM multimorbidity was associated with higher septal and posterior wall thickness, lower global longitudinal strain, higher E/e', and worse right ventricular function. Total HF hospitalizations or CV death increased with greater CKM multimorbidity, with the highest relative risk observed with three CKM conditions (rate ratio 3.06, 95% confidence interval 2.33-4.03), compared with HF alone. Treatment effects of sacubitril/valsartan were consistent irrespective of the number of CKM conditions for the primary endpoint ($p_{interaction}$ = 0.75), CV death ($p_{interaction}$ =

0.82), total HF hospitalizations ($p_{interaction}$ = 0.67), and the composite kidney endpoint ($p_{interaction}$ = 0.99).

Conclusions: Cardiovascular-kidney-metabolic multimorbidity was common in PARAGON-HF and associated with adverse changes in cardiac structure and function and with a stepwise increase in risk of clinical outcomes. Treatment effects of sacubitril/valsartan were consistent irrespective of CKM burden.

Clinical trial registration: ClinicalTrials.gov NCT01920711.

Keywords: Cardiovascular-kidney-metabolic; Heart failure; Multimorbidity; Sacubitril/valsartan.

- 46 references

supplementary info

Associated data, Grants and fundingexpand

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4

Multicenter Study

J Med Internet Res

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. 2024 Jun 24:26:e53162.

doi: 10.2196/53162.

Multicentric Assessment of a Multimorbidity-Adjusted Disability Score to Stratify Depression-Related Risks Using Temporal Disease Maps: Instrument Validation Study

Rubèn González-Colom [1], Kangkana Mitra [1], Emili Vela [2 3], Andras Gezsi [4], Teemu Paajanen [5], Zsófia Gál [6 7], Gabor Hullam [4 7], Hannu Mäkinen [5], Tamas Nagy [4 6 7], Mikko

Kuokkanen [5 8 9], Jordi Piera-Jiménez [2 3 10], Josep Roca [1 11 12], Peter Antal [# 4], Gabriella Juhasz [# 6 7], Isaac Cano [# 1 12]

Affiliations expand

- PMID: 38913991

- DOI: 10.2196/53162

Free article

Abstract

Background: Comprehensive management of multimorbidity can significantly benefit from advanced health risk assessment tools that facilitate value-based interventions, allowing for the assessment and prediction of disease progression. Our study proposes a novel methodology, the Multimorbidity-Adjusted Disability Score (MADS), which integrates disease trajectory methodologies with advanced techniques for assessing interdependencies among concurrent diseases. This approach is designed to better assess the clinical burden of clusters of interrelated diseases and enhance our ability to anticipate disease progression, thereby potentially informing targeted preventive care interventions.

Objective: This study aims to evaluate the effectiveness of the MADS in stratifying patients into clinically relevant risk groups based on their multimorbidity profiles, which accurately reflect their clinical complexity and the probabilities of developing new associated disease conditions.

Methods: In a retrospective multicentric cohort study, we developed the MADS by analyzing disease trajectories and applying Bayesian statistics to determine disease-disease probabilities combined with well-established disability weights. We used major depressive disorder (MDD) as a primary case study for this evaluation. We stratified patients into different risk levels corresponding to different percentiles of MADS distribution. We statistically assessed the association of MADS risk strata with mortality, health care resource use, and disease progression across 1 million individuals from Spain, the United Kingdom, and Finland.

Results: The results revealed significantly different distributions of the assessed outcomes across the MADS risk tiers, including mortality rates; primary care visits; specialized care outpatient consultations; visits in mental health specialized centers; emergency room visits; hospitalizations; pharmacological and nonpharmacological expenditures; and dispensation of antipsychotics, anxiolytics, sedatives, and antidepressants (P<.001 in all cases). Moreover, the results of the pairwise comparisons between adjacent risk tiers illustrate a substantial and gradual pattern of increased mortality rate, heightened health care use, increased health care expenditures, and a raised pharmacological burden as individuals progress from lower MADS risk tiers to higher-risk tiers. The analysis also revealed an augmented risk of multimorbidity progression within the high-risk groups, aligned with a higher incidence of new onsets of MDD-related diseases.

Conclusions: The MADS seems to be a promising approach for predicting health risks associated with multimorbidity. It might complement current risk assessment

state-of-the-art tools by providing valuable insights for tailored epidemiological impact analyses of clusters of interrelated diseases and by accurately assessing multimorbidity progression risks. This study paves the way for innovative digital developments to support advanced health risk assessment strategies. Further validation is required to generalize its use beyond the initial case study of MDD.

Keywords: disease trajectories; health risk assessment; major depressive disorder; multimorbidity.

supplementary info

Publication types, MeSH termsexpand

full text links

"asthma"[MeSH Terms] OR asthma[Text Word]

1

Editorial

Curr Opin Allergy Clin Immunol

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. 2024 Aug 1;24(4):228-229.

doi: 10.1097/ACI.0000000000000995. Epub 2024 Jun 27.

Editorial: pharmacotherapy and evidence-based medicine

Giovanni Paoletti [1 2], Federica Buta [2 3], Danilo Di Bona [4]

Affiliations expand

- **PMID: 38934329**

- **DOI: 10.1097/ACI.0000000000000995**

No abstract available

- 17 references

supplementary info

Publication types, MeSH termsexpand

full text links

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Am J Respir Crit Care Med

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. 2024 Jun 28.

doi: 10.1164/rccm.202308-1484OC. Online ahead of print.

Childhood Air Pollution Exposure Associated with Self-Reported Bronchitic Symptoms in Adulthood

Erika Garcia [1], Zoe H Birnhak [2], Scott West [2], Steve Howland [2], Frederick Lurmann [3], Nathan R Pavlovic [4], Rob McConnell [2], Shohreh F Farzan [2], Theresa M Bastain [2], Rima Habre [2], Carrie V Breton [2]

Affiliations expand

- **PMID: 38940605**

- **DOI: 10.1164/rccm.202308-1484OC**

Abstract

Rationale: Few studies have examined the effects of long-term childhood air pollution exposure on adult respiratory health, including whether childhood respiratory effects underlie this relation.

Objectives: To evaluate associations between childhood air pollution exposure and self-reported adult bronchitic symptoms, while considering child respiratory health, in the Southern California Children's Health Study.

Methods: Nitrogen dioxide (NO_2), ozone, particulate matter<2.5μm ($PM_{2.5}$) and <10μm (PM_{10}) exposures assessed using inverse-distance-squared spatial interpolation based on childhood (birth-17 years) residential histories. Bronchitic symptoms (bronchitis, cough, or phlegm in last 12 months) were ascertained via questionnaire in adulthood. Associations between mean air pollution exposure across childhood and self-reported adult bronchitic symptoms were estimated using logistic regression. We further adjusted for childhood bronchitic symptoms and asthma to understand whether associations operated beyond childhood respiratory health impacts. Effect modification was assessed for family history of asthma, childhood asthma, and adult allergies.

Measurements and main results: 1308 participants were included (mostly non-Hispanic White [56%] or Hispanic [32%]). At adult assessment (age mean=32.0 years, standard deviation [SD]=4.7) 25% reported bronchitic symptoms. Adult bronchitic symptoms were associated with NO_2 and PM_{10} childhood exposures. Odds ratios per SD increase: 1.69 (95%CI:1.14,2.49) for NO_2 (SD=11.1ppb); 1.51 (95%CI:1.00,2.27) for PM_{10} ($SD=14.2\mu g/m^3$). Adjusting for childhood bronchitic symptoms or asthma produced similar results. NO_2 and PM_{10} associations were modified by childhood asthma, with larger associations among asthmatics.

Conclusion: Childhood NO_2 and PM_{10} exposures were associated with adult bronchitic symptoms. Associations were not explained by childhood respiratory health impacts; however, participants with childhood asthma had stronger associations.

Keywords: bronchitis; cough; nitrogen dioxide; particulate matter; phlegm.

3

Review

Respirology

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. 2024 Jun 28.

doi: 10.1111/resp.14782. Online ahead of print.

Contemporary Concise Review 2023: Asthma

John Politis [1], Philip G Bardin [1], Paul Leong [1]

Affiliations expand

- PMID: 38940241

- DOI: 10.1111/resp.14782

Abstract

Asthma research and management needs to meet the priorities of the end user-patients, carers and clinicians. A better understanding of the natural history of asthma and the progression of disease has highlighted the importance of early identification of patients with asthma and the potential role of early intervention. Management of mild asthma requires a consistent approach with the same detail and consideration used when managing severe disease. Evidence around treatable traits approaches continues to evolve, supporting the role of a personalized medicine in asthma. Oral corticosteroid (OCS) stewardship continues to be an urgent issue in asthma management. Strategies to taper OCS doses and the implementation of biologic therapies for their steroid sparing benefits will be important steps to address this problem. The concept of remission in asthma provides an ambitious target and treatment outcome.

Keywords: asthma; asthma control; oral corticosteroid stewardship; remission; treatable traits.

- 71 references

supplementary info

Publication typesexpand

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4

Review

Clin Exp Allergy

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. 2024 Jun 27.

doi: 10.1111/cea.14517. Online ahead of print.

Severe Allergy as a Chronic Inflammatory Condition From a Systems Biology Perspective

M I Delgado Dolset [1 2], C Pablo-Torres [1], N Contreras [1 2], A Couto-Rodríguez [1 2], A Escolar-Peña [1], O Graña-Castro [1], E Izquierdo [1], J C López-Rodríguez [1], A Macías-Camero [1 2], M Pérez-Gordo [1], A Villaseñor [1 2], E Zubeldia-Varela [1], D Barber [1], M M Escribese [1]

Affiliations expand

- **PMID: 38938054**

- **DOI: 10.1111/cea.14517**

Abstract

Persistent and unresolved inflammation is a common underlying factor observed in several and seemingly unrelated human diseases, including cardiovascular and neurodegenerative diseases. Particularly, in atopic conditions, acute inflammatory responses such as those triggered by insect venom, food or drug allergies possess also a life-threatening potential. However, respiratory allergies predominantly exhibit late immune responses associated with chronic inflammation, that can eventually progress into a severe phenotype displaying similar features as those observed in other chronic inflammatory diseases, as is the case of uncontrolled severe asthma. This review aims to explore the different facets and systems involved in chronic allergic inflammation, including processes such as tissue remodelling and immune cell dysregulation, as well as genetic, metabolic and microbiota alterations, which are common to other inflammatory conditions. Our goal here was to deepen on the understanding of an entangled disease as is chronic allergic inflammation and expose potential avenues for the development of better diagnostic and intervention strategies.

Keywords: T cells; allergy; epithelial barrier; inflammation; metabolism; microbiota; omic technologies; platelets.

- **366 references**

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Publication types, Grants and fundingexpand

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Review

Clin Exp Allergy

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. 2024 Jun 27.

doi: 10.1111/cea.14520. Online ahead of print.

Obesity and Asthma: Implementing a Treatable Trait Care Model

Francisca Castro Mendes [1 2 3], Vanessa Garcia-Larsen [4], André Moreira [1 2 3 5]

Affiliations expand

- PMID: 38938020

- DOI: 10.1111/cea.14520

Abstract

Recognition of obesity as a treatable trait of asthma, impacting its development, clinical presentation and management, is gaining widespread acceptance. Obesity is a significant risk factor and disease modifier for asthma, complicating treatment. Epidemiological evidence highlights that obese asthma correlates with poorer disease control, increased severity and persistence, compromised lung function and reduced quality of life. Various mechanisms contribute to the physiological and clinical complexities observed in individuals with obesity and asthma. These encompass different immune responses, including Type IVb, where T helper 2 cells are pivotal and driven by cytokines like interleukins 4, 5, 9 and 13, and Type IVc, characterised by T helper 17 cells and Type 3 innate lymphoid cells producing interleukin 17, which recruits neutrophils. Additionally, Type V involves immune

response dysregulation with significant activation of T helper 1, 2 and 17 responses. Finally, Type VI is recognised as metabolic-induced immune dysregulation associated with obesity. Body mass index (BMI) stands out as a biomarker of a treatable trait in asthma, readily identifiable and targetable, with significant implications for disease management. There exists a notable gap in treatment options for individuals with obese asthma, where asthma management guidelines lack specificity. For example, there is currently no evidence supporting the use of incretin mimetics to improve asthma outcomes in asthmatic individuals without Type 2 diabetes mellitus (T2DM). In this review, we advocate for integrating BMI into asthma care models by establishing clear target BMI goals, promoting sustainable weight loss via healthy dietary choices and physical activity and implementing regular reassessment and referral as necessary.

Keywords: asthma; body mass index; obesity; treatable trait; weight loss interventions.

- 167 references

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Review

NPJ Prim Care Respir Med

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. 2024 Jun 27;34(1):16.

doi: 10.1038/s41533-024-00379-6.

Can we measure whether asthma guidelines lead to improved care?

Ronnie Tan [1 2], Anna Murphy [2], Chris Brightling [1 2], Dominick Shaw [3 4]

Affiliations expand

- **PMID: 38937520**

- **DOI: 10.1038/s41533-024-00379-6**

Abstract

The British Thoracic Society (BTS) and Scottish Intercollege Guidelines Network (SIGN), as well as National Institute for Health and Care Excellence (NICE), have previously produced separate asthma guidance differing in some key aspects in diagnosis and management leading to confusion, potentially hampering guideline dissemination and uptake. While there are inherent challenges, the upcoming release of new joint BTS/SIGN/NICE asthma guidance presents an opportunity to assess guideline adoption and its impact on clinical practice. The use of prescription data via databases such as OpenPrescribing can be used as a surrogate for guideline adoption and potentially linked to clinical outcomes such as hospital episode statistics (HES). The potential recommendation for anti-inflammatory reliever therapy (AIR) and maintenance and reliever therapy (MART) with inhaled corticosteroid/formoterol combination therapy in the next iteration of UK asthma guidance will require the accurate coding for the respective therapeutic approaches on prescribing platforms in order to assess their impact in real-life clinical practice. This could then direct targeted measures to improve wider guidance adoption leading to better clinical care in asthma based on up to date evidence.

- **20 references**

supplementary info

Publication types, MeSH terms, Substancesexpand

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7

Ann Am Thorac Soc

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. 2024 Jun 27.

doi: 10.1513/AnnalsATS.202401-085OC. Online ahead of print.

Practice Patterns for Acute Asthma Exacerbation in Adult Patients Admitted to US Intensive Care Units

Collin Homer-Bouthiette [1], Burton H Shen [2], Aaron C Dobie [2], Divya A Shankar [2], Brandon Pang [2], Anica C Law [3], Nicholas A Bosch [4]

Affiliations expand

- PMID: 38935672

- DOI: 10.1513/AnnalsATS.202401-085OC

Abstract

Rationale: Guidelines recommend systemic corticosteroids and inhaled beta-agonists for patients with severe asthma exacerbation admitted to intensive care units (ICUs). The benefits and utilization of adjunct treatments after guideline recommended first-line treatments have been initiated are unclear.

Methods: Using the Premier Inc. PINC AI multicenter database (2016-2022), we sought to explore the use of adjunct interventions (medications [e.g., magnesium, leukotriene inhibitors, terbutaline, heliox]; and procedures [e.g., invasive and non-invasive mechanical ventilation]) for adult patients admitted to United States (US) ICUs with acute asthma exacerbations. We used hierarchical generalized linear models to calculate risk-adjusted rates of adjunct interventions and quantified between-hospital variation in adjunct interventions using the intraclass correlation coefficient (ICC - higher values correspond to higher between hospital variation). We then used K-means clustering to identify groups of hospitals with similar risk-adjusted practice profiles of all adjunct treatments and examined associations between identified hospital clusters and patient outcomes.

Results: We identified 62,392 patients from 961 hospitals for inclusion. Adjunct interventions with the highest between hospital variation after risk-adjustment were heliox (ICC 91%), inhaled steroids (ICC 23%), invasive mechanical ventilation (ICC 21%), terbutaline (ICC 22%), paralytics (ICC 16%), and non-invasive ventilation (ICC 15%). K-means clustering identified two distinct hospital clusters: patients admitted to cluster 1 hospitals (399 hospitals) had higher risk-adjusted rates of non-invasive ventilation (51% vs 33%) compared to patients admitted to cluster 2 hospitals (234 hospitals) which had higher risk-adjusted rates of invasive mechanical ventilation (63% vs 30%). Cluster 2 was associated with fewer hospital free days (beta -0.75 days, CI -0.95, -0.55 days) and increased in-hospital mortality (aOR 1.28, CI 1.17, 1.40).

Conclusions: The use of adjunct interventions for patients with severe asthma exacerbations vary widely across US hospitals; however, hospitals generally fall into two clusters differentiated primarily by the use of invasive or non-invasive

mechanical ventilation. Our results help to inform usual care arms of future comparative effectiveness studies and efforts to standardize asthma practice.

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Am J Respir Crit Care Med

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. 2024 Jun 27.

doi: 10.1164/rccm.202307-1266OC. Online ahead of print.

Increased Muc5AC and Decreased Ciliated Cells in Severe Asthma Partially Restored by Inhibition of IL-4Rα Receptor

Jonathan Boomer [1], Jiwoong Choi [1], Alexander Alsup [2], Mary Clare McGregor [3], Julia Lieu [4], Cooper Johnson [5], Chase Hall [6], Xiaosong Shi [1], Taewon Kim [1], Charles Goss [7], Daphne Lew [7], Stephanie Christenson [8], Prescott G Woodruff [9], Annette Hastie [10], David Mauger [11], Sally E Wenzel [12], Eric A Hoffman [13], Ken B Schechtman [14], Mario Castro [15]

Affiliations expand

- **PMID: 38935626**

- **DOI: 10.1164/rccm.202307-1266OC**

Abstract

Background: The role of IL-13 on the airway epithelium in severe asthma leading to airway remodeling remains poorly understood.

Objective: To study IL-13 induced airway remodeling on goblet cells and cilia in the airway epithelium in severe asthma and the impact of an anti-IL4Rα antibody, dupilumab, *in vitro*.

Methods: Quantitative CT (qCT) lungs and endobronchial biopsies and brushings were obtained in 51 participants (22 severe, 11 non-severe asthma and 18 healthy

participants) in the Severe Asthma Research Program (SARPIII) and measured for mucin and cilia related proteins. Epithelial cells were differentiated in air-liquid interphase (ALI) with IL-13 +/-dupilumab and assessed for mucin, cilia, cilia beat frequency (CBF) and epithelial integrity (transepithelial electrical resistance, TEER).

Results: Increased Muc5AC (Δ+263.2±92.7 lums/EpiArea) and decreased ciliated cells (Δ-0.07±0.03 Foxj1+cells/EpiArea) were observed in biopsies from severe asthma when compared to healthy ($p<0.01$ and $p=0.047$ respectively). RNAseq of epithelial cell brushes confirmed a *Muc5AC* increase with a decrease in a 5-gene cilia-related mean in severe asthma compared to healthy (all $p<0.05$). IL-13 (5 ng/mL) differentiated ALI cultures of healthy and asthmatic (severe and non-severe participants) increased Muc5AC, decreased cilia (α-acytl-tubulin) in healthy (Δ+6.5±1.5%, Δ-14.1±2.7%; all $p<0.001$ respectively) and asthma (Δ+4.4±2.5%, Δ-13.1±2.7%; $p=0.084$, $p<0.001$ respectively); decreased epithelial integrity (TEER) in healthy (-140.9±21.3 [ohms], $p<0.001$) while decreasing CBF in asthma (Δ-4.4±1.7 [Hz], $p<0.01$). When dupilumab was added to ALI with IL-13, there was no significant decrease in Mu5AC but there was restoration of cilia in healthy and asthma participants (absolute increase of 67.5% and 32.5% cilia, all $p<0.05$ respectively) while CBF increased (Δ+3.6±1.1 [Hz], $p<0.001$) and TEER decreased (only in asthma Δ-37.8±16.2 [ohms] $p<0.05$).

Conclusions: IL-13 drives features of airway remodeling in severe asthma which are partially reversed by inhibiting IL-4Rα receptor *in vitro*.

Keywords: airway remodeling; dupilumab; severe asthma.

Mol Biotechnol

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. 2024 Jun 27.

doi: 10.1007/s12033-024-01222-6. Online ahead of print.

Clearing the Path: Exploring Apoptotic Cell Clearance in Inflammatory and Autoimmune Disorders for Therapeutic Advancements

Shadi Ghorbanzadeh [# 1], Javad Yaghmoorian Khojini [# 2], Reza Abouali [3], Sajad Alimardan [4], Mohammad Zahedi [5 6], Zahra Tahershamsi [7], Amir Tajbakhsh [8 9], Seyed Mohammad Gheibihayat [10 11]

Affiliations expand

- PMID: 38935260

- DOI: 10.1007/s12033-024-01222-6

Abstract

Inflammatory and autoimmune disorders, characterized by dysregulated immune responses leading to tissue damage and chronic inflammation, present significant health challenges. This review uniquely focuses on efferocytosis-the phagocyte-mediated clearance of apoptotic cells-and its pivotal role in these disorders. We delve into the intricate mechanisms of efferocytosis' four stages and their implications in disease pathogenesis, distinguishing our study from previous literature. Our findings highlight impaired efferocytosis in conditions like atherosclerosis and asthma, proposing its targeting as a novel therapeutic strategy. We discuss the therapeutic potential of efferocytosis in modulating immune responses and resolving inflammation, offering a new perspective in treating inflammatory disorders.

Keywords: Anti-inflammatory cytokines; Apoptotic cell clearance; Chronic inflammatory disease; Phagocytes; Resolution of inflammation; Targeted therapy.

- 139 references

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Pediatr Pulmonol

. 2024 Jun 27.

doi: 10.1002/ppul.27145. Online ahead of print.

Factors influencing the initiation of biologic therapy in children with severe asthma: Results of the pediatric asthma noninvasive diagnostic approaches (PANDA) study

Yoni E van Dijk [1 2 3 4], Milou A Brandsen [1 2 3 4], Simone Hashimoto [1 2], Niels W Rutjes [1], Kornel Golebski [2 3], Frederique Vermeulen [5], Suzanne W J Terheggen-Lagro [1], Bart E van Ewijk [5], Anke-Hilse Maitland-van der Zee [1 2 3 4], Susanne J H Vijverberg [1 2 3 4]

Affiliations expand

- PMID: 38934778

- DOI: 10.1002/ppul.27145

Abstract

Background & objectives: Despite the availability of biologics for severe pediatric asthma, real-life studies reporting on drivers behind initiating biologics and their alignment with the Global Initiative for Asthma (GINA) recommendations are lacking.

Methods: We performed analysis within the pediatric asthma noninvasive diagnostic approaches study, a prospective cohort of 6- to 17-year-old children with severe asthma. Information was collected on demographic factors, symptom control, treatment, comorbidities, and diagnostic tests from medical records and questionnaires. We divided patients into "starters" or "nonstarters" based on the clinical decision to initiate biologics and performed multivariate logistic regression analysis to identify drivers behind initiating therapy. Additionally, we assessed patient suitability for biologics according to key factors in the GINA recommendations: Type 2 inflammation, frequency of exacerbations, and optimization of treatment adherence.

Results: In total, 72 children (mean age 11.5 ± 3.0 years, 65.3% male) were included (13 starters). Initiation of biologics was associated with a higher GINA treatment step (adjusted odds ratio's [aOR] = 5.0, 95%CI 1.33-18.76), steroid toxicity (aOR = 21.1, 95%CI 3.73-119.91), frequency of exacerbations (aOR = 1.6, 95%CI 1.10-2.39), improved therapy adherence (aOR = 1.7, 95%CI 1.10-2.46), Caucasian ethnicity (aOR = 0.20, 95%CI 0.05-0.80), ≥1 allergic sensitization (aOR = 0.06, 95%CI 0.004-0.97), and allergic rhinitis (aOR = 0.13, 95%CI 0.03-0.65). Furthermore, steroid toxicity was identified as an important factor for deviation from the current recommendations on biologic prescription.

Conclusions: We identified multiple drivers and inhibitors for initiating biologics, and showed the clinical need for biologics in severe pediatric asthmatics suffering from steroid toxicity. These findings may help refine asthma management guidelines.

Keywords: asthma management; biologic; clinical practice; real-life study; severe pediatric asthma; therapy adjustment.

- **40 references**

supplementary info

Grants and fundingexpand

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Editorial

Respirology

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. 2024 Jun 27.

doi: 10.1111/resp.14783. Online ahead of print.

Is remission the new target in asthma management?

Constance H Katelaris [1]

Affiliations expand

- **PMID: 38932649**

- **DOI: 10.1111/resp.14783**

No abstract available

Keywords: asthma; chronic rhinosinusitis; nasal polyposis; remission.

- 9 references

supplementary info

Publication typesexpand

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J Med Chem

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. 2024 Jun 27;67(12):9816-9841.

doi: 10.1021/acs.jmedchem.4c00298. Epub 2024 Jun 10.

Discovery, Multiparametric Optimization, and Solid-State Driven Identification of CHF-6550, a Novel Soft Dual Pharmacology Muscarinic Antagonist and β_2 Agonist (MABA) for the Inhaled Treatment of Respiratory Diseases

Laura Carzaniga [1], Ian D Linney [2], Andrea Rizzi [1], Wolfgang Schmidt [2], Christopher K Knight [2], Valentina Mileo [3], Francesco Amadei [3], Fiorella Pastore [4], Daniela Miglietta [4], Nicola Cesari [5], Benedetta Riccardi [5], Roberta Mazzucato [1], Eleonora Ghidini [1], Wesley P Blackaby [2], Riccardo Patacchini [6], Loredana Battipaglia [7], Gino Villetti [4], Paola Puccini [5], Silvia Catinella [3], Maurizio Civelli [8], Fabio Rancati [1]

Affiliations expand

- **PMID: 38857426**

- **DOI: 10.1021/acs.jmedchem.4c00298**

Abstract

Clinical guidelines for COPD and asthma recommend inhaled β-adrenergic agonists, muscarinic antagonists, and, for frequent exacerbators, inhaled corticosteroids,

with the challenge of combining them into a single device. The MABA (muscarinic antagonist and β_2 agonist) concept has the potential to simplify this complexity while increasing the efficacy of both pharmacologies. In this article, we report the outcome of our solid-state driven back-up program that led to the discovery of the MABA compound CHF-6550. A soft drug approach was applied, aiming at high plasma protein binding and high hepatic clearance, concurrently with an early stage assessment of crystallinity through a dedicated experimental workflow. A new chemotype was identified, the diphenyl hydroxyacetic esters, able to generate crystalline material. Among this class, CHF-6550 demonstrated *in vivo* efficacy, suitability for dry powder inhaler development, favorable pharmacokinetics, and safety in preclinical settings and was selected as a back-up candidate, fulfilling the desired pharmacological and solid-state profile.

supplementary info

MeSH terms, Substancesexpand

full text links

13

Sci Rep

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. 2024 Jun 26;14(1):14703.

doi: 10.1038/s41598-024-65763-1.

Survival benefit of inhaled corticosteroids in patients with chronic obstructive pulmonary disease: a nationwide cohort study

Jiyoung Shin [# 1], Sojung Park [# 2], Ji-Young Lee [3], Jin Hwa Lee [4]

Affiliations expand

- **PMID: 38926519**

- **DOI: 10.1038/s41598-024-65763-1**

Free article

Abstract

The role of inhaled corticosteroids (ICS) in chronic obstructive pulmonary disease (COPD) is debated. We investigated whether the administration of ICS could lower the mortality risk in patients with COPD. We utilized the Korean National Health Insurance Service-National Sample Cohort database from 2002 to 2019. We included patients who had claim codes for COPD and inhalation respiratory medicine at least twice a year. A time-dependent Cox regression model was employed to estimate the association between ICS usage and survival. The cumulative dose of ICS was classified into three groups, and the mortality risk was compared among these groups. Of 16,463 included patients, there were 4395 (26.7%) deaths during the mean follow-up period of 5.0 years. The time-dependent Cox regression model demonstrated that ICS users had a significantly lower mortality risk compared to non-users (adjusted hazard ratio, 0.89; 95% CI, 0.83-0.94; p < 0.001), particularly among individuals aged ≥ 55 years, women, never smokers, and those with history of asthma or coronary heart disease. Higher cumulative dose groups were associated with a lower mortality risk compared to the lowest cumulative dose group. In conclusion, the administration of ICS seemed to be associated with a lower mortality risk in patients with COPD.

Keywords: Bronchodilator; Chronic obstructive pulmonary disease; Corticosteroid; Mortality; Survival.

- **37 references**

supplementary info

MeSH terms, Substancesexpand

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nature portfolio UNIMORE

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Am J Respir Crit Care Med

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. 2024 Jun 26.

doi: 10.1164/rccm.202405-1033ED. Online ahead of print.

External Validation of Potential Breath Biomarkers for Asthma: A Step Forward Towards the Clinical Implementation of Breath Analysis

Rosa A Sola-Martínez [1], Alice M Turner [2], Teresa de Diego Puente [3]

Affiliations expand

- PMID: 38924503

- DOI: 10.1164/rccm.202405-1033ED

No abstract available

Keywords: Asthma; Breath analysis; Breathomics; Volatile Organic Compounds.

15

Review

Eur Ann Allergy Clin Immunol

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. 2024 Jun 26.

doi: 10.23822/EurAnnACI.1764-1489.351. Online ahead of print.

Impact of asthma on severe food-induced allergic reactions: a systematic review and meta-analysis

M B Cilona [1], G A Ramirez [2], C Asperti [1], A Ferlito [1], G Benanti [1], S Nannipieri [1], R M Abdul Hadi [3], C Capellini [3], L Dagna [1 3], M Cottini [4], M-R Yacoub [1]

Affiliations expand

- PMID: 38919132

- DOI: 10.23822/EurAnnACI.1764-1489.351

Free article

Abstract

Background. Food allergy can range from mild to severe, life-threatening reactions with various symptoms and organ involvement. The impact of asthma on severe food-induced allergic reactions is not completely understood. In the hypothesis that asthma increases the risk of severe food-induced allergic reactions, the aim of this study is to compare the incidence of severe food-induced allergic reactions in patients with history of asthma compared with patients without history of asthma. Methods. We performed a systematic research on electronic databases, including PubMed, Scopus, and Web of Science. Observational studies, studies reporting medical characteristics of patients diagnosed with food allergy, and studies reporting medical history of patients with allergic reactions were included. The primary outcome was the incidence of severe food-induced allergic reactions in patients with history of asthma compared with patients without history of asthma. The protocol of this review was registered in PROSPERO (CRD42023448293). Results. Eight studies with a total of 90,367 patients met the inclusion criteria and were included, with a total population of 28,166 of patients with food allergy. The incidence of severe food-induced allergic reactions in patients with history of asthma compared with patients without history of asthma was increased (OR = 1.28; 95% CI 1.03-1.59; p = 0.03; I2 = 59%). Conclusions. Individuals with both food allergy and asthma are at high risk of severe, potentially fatal allergic reactions. Healthcare professionals should prioritize prevention and management strategies for these subjects.

Keywords: anaphylaxis; asthma; food allergy; risk factor; severe allergic reactions.

supplementary info

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Respir Med

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. 2024 Jun 25:107723.

doi: 10.1016/j.rmed.2024.107723. Online ahead of print.

Short-acting β_2-agonists (SABA) overuse in asthma and patients' perceptions for this behavior

Claire D Visser [1], Maaike R A Faay [2], Ayşe Özdemir [3], Henk-Jan Guchelaar [4], Martina Teichert [5]

Affiliations expand

- PMID: 38936636

- DOI: 10.1016/j.rmed.2024.107723

Abstract

Background: Short-acting β_2-agonists (SABA) overuse is associated with poor asthma control. The Global Initiative for Asthma (GINA) 2019-updated guideline has therefore taken a paradigm shift in reliever therapy recommendations.

Objectives: (I) To investigate the status of SABA overuse and medication dispensing patters in asthma in the Netherlands (II) validate dispensing data for SABA overuse identification and (III) understand patients' perspectives towards this SABA-taking behavior to inform future improvement strategies.

Methods: An annually repeated cross-sectional study was conducted from 2017-2021 using pharmacy dispensing data in a real-world setting, including asthma patients aged 18-45 with ≥ 1 inhaler. A following qualitative study was performed in identified SABA overusing patients with a questionnaire and semi-structured interviews, supported by theoretical frameworks.

Results: Dispensing data was available from 87% of all community pharmacies (n=1,994) in 2017 and 95% (n=2,005) in 2021. SABA overuse prevalence was constant for the five study-years with 20.6% (±0.5%). Increased ICS-formoterol and decreased SABA dispenses were observed in starters of inhalation therapy in 2021. 53 asthma patients completed the questionnaire of whom 43 patients confirmed SABA overuse, generating a positive predictive value of 81%. Key behavioral drivers covered 7 themes regarding capability (knowledge; skills; memory, attention and decision process) motivation (emotion; beliefs about- capabilities; consequences) and opportunity (environmental context).

Conclusion: SABA overuse remains in one-fifth of asthma patients across the Netherlands, requiring careful attention from healthcare professionals. Dispensing data is a valid measure for SABA overuse in a clinical setting, facilitating patient selection. To meet patients' varied supporting needs, integration of tailored behavioral interventions is essential.

Keywords: asthma; pharmacy dispensing data; primary care; reliever therapy; self-management; short-acting β(2)-agonists (SABA).

Conflict of interest statement

Declaration of Competing Interest ☐ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. ☒ The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Martina Teichert reports financial support was provided by AstraZeneca. Martina Teichert reports financial support was provided by The Royal Dutch Pharmacists Association (KNMP). MT received unconditional research grants from AstraZeneca and the KNMP for the advancement of pharmacy. The PhD project of CV is funded with these grants. MF and AO contributed equally to this manuscript as master pharmacy students at the Leiden University; MF is currently employed at the Health Base foundation and AO is employed in a community pharmacy in the Netherlands. The remaining author HJG declared no competing interests for this work. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

17

Ann Allergy Asthma Immunol

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. 2024 Jun 25:S1081-1206(24)00376-4.

doi: 10.1016/j.anai.2024.06.024. Online ahead of print.

Once-Daily Fluticasone Furoate/Vilanterol Versus Once-Daily Fluticasone Furoate in Asthma Patients Aged 5-17 Years

Philippe Bareille [1], Richard Forth [2], Varsha Imber [3], Irina Bondarenko [4], Arthur Michaud [5], Bernadetta Majorek-Olechowska [6]

Affiliations expand

- **PMID: 38936466**

- DOI: 10.1016/j.anai.2024.06.024

Abstract

Background: Limited data exist comparing inhaled corticosteroid (ICS) plus adjunctive therapy versus ICS alone in pediatric asthma patients.

Objective: Evaluate the efficacy and safety of fluticasone furoate/vilanterol (FF/VI) versus FF in children and adolescents with asthma.

Methods: This Phase 3, randomized, double-blind, multicenter study (NCT03248128) included participants aged 5-17 years with ≥6 months' asthma history uncontrolled on ICS monotherapy. Participants received 4 weeks' open-label fluticasone propionate (100 µg) twice daily before 1:1 randomization to 24 weeks' double-blind FF (50 µg:100 µg) or FF/VI (50/25 µg:100/25 µg) once daily. Two populations with different primary endpoints were analyzed to meet United States (Week 12 weighted mean forced expiratory volume in 1 second [FEV1; 0-4 hours]; participants aged 5-17 years) and European (change from baseline pre-dose morning peak expiratory flow [ΔAM PEF] averaged over Weeks 1-12; participants aged 5-11 years) regulator requirements.

Results: Overall, 902 participants were randomized and treated, including 673 children aged 5-11 years. In participants aged 5-17, Week 12 weighted mean FEV1 (0-4 hours) was greater with FF/VI versus FF (difference: 0.083 L; P < .001). In participants aged 5-11, ΔAM PEF over Weeks 1-12 showed numerical improvement with FF/VI versus FF but was not statistically significant (difference: 3.2 L/minute; P = .228). No drug-related serious adverse events or deaths were reported.

Conclusion: FF/VI significantly improved weighted mean FEV1 (0-4 hours; participants aged 5-17 years), but not ΔAM PEF (participants aged 5-11 years) versus FF. No new safety concerns were apparent.

Keywords: ICS; LABA; combination therapy; monotherapy.

Conflict of interest statement

Declaration of competing interest PB is an employee of and holds shares in GSK. RF is an employee of and holds shares in GSK. VI is an employee of and holds shares in GSK. IB is an employee of Parexel. AM is an employee of and holds shares in GSK. BMO is a Principal Investigator of a GSK-sponsored study.

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Adv Ther

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. 2024 Jun 25.

doi: 10.1007/s12325-024-02914-w. Online ahead of print.

A Simulation Study of the Effect of Clinical Characteristics and Treatment Choice on Reliever Medication Use, Symptom Control and Exacerbation Risk in Moderate-Severe Asthma

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Affiliations expand

- PMID: 38916810

- DOI: 10.1007/s12325-024-02914-w

Abstract

Introduction: The relationship between immediate symptom control, reliever medication use and exacerbation risk on treatment response and factors that modify it have not been assessed in an integrated manner. Here we apply simulation scenarios to evaluate the effect of individual baseline characteristics on treatment response in patients with moderate-severe asthma on regular maintenance dosing monotherapy with fluticasone propionate (FP) or combination therapy with fluticasone propionate/salmeterol (FP/SAL) or budesonide/formoterol (BUD/FOR).

Methods: Reduction in reliever medication use (puffs/24 h), change in symptom control scores (ACQ-5), and annualised exacerbation rate over 12 months were simulated in a cohort of patients with different baseline characteristics (e.g. time since diagnosis, asthma control questionnaire (ACQ-5) symptom score, smoking status, body mass index (BMI) and sex) using drug-disease models derived from large phase III/IV clinical studies.

Results: Simulation scenarios show that being a smoker, having higher baseline ACQ-5 and BMI, and long asthma history is associated with increased reliever medication use ($p < 0.01$). This increase correlates with a higher exacerbation risk and higher ACQ-5 scores over the course of treatment, irrespective of the underlying maintenance therapy. Switching non-responders to ICS monotherapy to combination therapy after 3 months resulted in immediate reduction in reliever medication use (i.e. 1.3 vs. 1.0 puffs/24 h for FP/SAL and BUD/FOR, respectively). In addition, switching patients with ACQ-5 > 1.5 at baseline to FP/SAL resulted in 34% less exacerbations than those receiving regular dosing BUD/FOR ($p < 0.01$).

Conclusions: We have identified baseline characteristics of patients with moderate to severe asthma that are associated with greater reliever medication use, poor symptom control and higher exacerbation risk. Moreover, the effects of different inhaled corticosteroid (ICS)/long-acting beta agonist (LABA) combinations vary significantly when considering long-term treatment performance. These factors should be considered in clinical practice as a basis for personalised management of patients with moderate-severe asthma symptoms.

Keywords: Clinical trial simulations; Exacerbation; Fluticasone propionate; ICS/LABA combination therapy; Reliever use; Salmeterol; Short-acting beta agonist; Symptom control; Treatable traits.

Plain language summary

In this study we looked at how different factors affect the response to asthma treatment in people with moderate to severe asthma who are taking regular medication. Specifically, we wanted to quantify how much asthma duration, differences in the degree of symptom control and lung function, as well as smoking habit, body weight, and sex influence how well someone responds to regular maintenance therapy. Using computer simulations based on models obtained from data in a large patient population with moderate–severe asthma, we explored scenarios that reflect real-life management of patients undergoing treatment with inhaled corticosteroids alone or in combination with long-acting beta agonists over a 12-month period. We looked at how much reliever inhaler they use, how well they rate their asthma control, and how often they have asthma attacks. By considering these results together, we evaluated how well the treatments work on ongoing symptoms and/or reduce the risk of future asthma attacks. Our simulations showed that smokers, people with higher asthma symptom scores, who are obese, and have a longer history of asthma tend to use their reliever inhalers more often. This was linked to a higher risk of having asthma attacks and worse symptom control. Switching those patients who do not respond well to their initial treatment with corticosteroid to combination therapy reduced how much reliever inhaler they need. Also, the effects of fluticasone propionate/salmeterol combination therapy were greater than budesonide/formoterol. In conclusion, our study found that certain patient characteristics can predict how well someone responds to asthma treatment.

- **62 references**

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Int J Biostat

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. 2024 Jun 25.

doi: 10.1515/ijb-2023-0061. Online ahead of print.

An interpretable cluster-based logistic regression model, with application to the characterization of response to therapy in severe eosinophilic asthma

Massimo Bilancia [1], Andrea Nigri [2], Barbara Cafarelli [2], Danilo Di Bona [3]

Affiliations expand

- **PMID: 38910330**

- **DOI: 10.1515/ijb-2023-0061**

Abstract

Asthma is a disease characterized by chronic airway hyperresponsiveness and inflammation, with signs of variable airflow limitation and impaired lung function leading to respiratory symptoms such as shortness of breath, chest tightness and cough. Eosinophilic asthma is a distinct phenotype that affects more than half of patients diagnosed with severe asthma. It can be effectively treated with monoclonal antibodies targeting specific immunological signaling pathways that fuel the inflammation underlying the disease, particularly Interleukin-5 (IL-5), a cytokine that plays a crucial role in asthma. In this study, we propose a data analysis pipeline aimed at identifying subphenotypes of severe eosinophilic asthma in relation to response to therapy at follow-up, which could have great potential for use in routine clinical practice. Once an optimal partition of patients into subphenotypes has been determined, the labels indicating the group to which each patient has been assigned are used in a novel way. For each input variable in a specialized logistic regression model, a clusterwise effect on response to therapy is determined by an appropriate interaction term between the input variable under consideration and the cluster label. We show that the clusterwise odds ratios can be meaningfully interpreted conditional on the cluster label. In this way, we can define an effect measure for the response variable for each input variable in each of the groups identified by the clustering algorithm, which is not possible in standard logistic regression because the effect of the reference class is aliased with the overall intercept. The interpretability of the model is enforced by promoting sparsity, a goal achieved by learning interactions in a hierarchical manner using a special group-Lasso technique. In addition, valid expressions are provided for computing odds ratios in the unusual parameterization used by the sparsity-promoting algorithm. We show how to apply the proposed data analysis pipeline to the problem of sub-phenotyping asthma patients also in terms of quality of response to therapy with monoclonal antibodies.

Keywords: clustering algorithms; group-Lasso; logistic regression with interactions; partitioning around medoids (PAM); severe eosinophilic asthma.

- **77 references**

full text links

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J Asthma

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. 2024 Jun 25:1-10.

doi: 10.1080/02770903.2024.2366523. Online ahead of print.

Asthma remission one, none and one-hundred thousand: the relevance of the patient's view

Matteo Bonini [1], Simona Barbaglia [2], Gianna Camiciottoli [3], Stefano Del Giacco [4], Fabiano Di Marco [5], Andrea Matucci [6], Claudio Micheletto [7], Alberto Papi [8], Patrizio Pasqualetti [9], Girolamo Pelaia [10], Fabio Luigi Massimo Ricciardolo [11], Paola Rogliani [12], Gianenrico Senna [13], Massimo Triggiani [14], Carlo Vancheri [15], Giorgio Walter Canonica [16]

Affiliations expand

- **PMID: 38870405**

- **DOI: 10.1080/02770903.2024.2366523**

Abstract

Objective: Achieving remission in severe asthma holds paramount importance in elevating patient quality of life and reducing both individual and societal burdens associated with this chronic condition. This study centers on identifying pivotal patient-relevant endpoints through standardized, reproducible methods, while also

developing a patient-centric definition of remission, essential for effective disease management.

Methods: A discrete choice experiment (DCE) was conducted to assess patients' perceptions on the four primary criteria for defining severe asthma remission, as outlined by the SANI survey. Additionally, it investigated the correlation between these perceptions and improvements in the doctor-patient therapeutic alliance during treatment decision-making.

Results: 249 patients (70% aged between 31-60, 59% women and 82% without other pathologies requiring corticosteroids) prioritize the use of oral corticosteroids (OCS, 48%) and the Asthma Control Test (ACT, 27%) in defining their condition, ranking these above lung function and exacerbations. This preference for OCS stems from its direct role in treatment, tangible tracking, immediate symptom relief, and being a concrete measure of disease severity compared to the less predictable and quantifiable exacerbations.

Conclusions: This study explores severe asthma remission from patients' perspectives using clinician-evaluated parameters. The DCE revealed that most patients highly value OCS and the ACT, prefer moderate improvement, and avoid cortisone cycles. No definitive preference was found for lung function status. Integrating patient-reported information with professional insights is crucial for effective management and future research. Personalized treatment plans focusing on patient preferences, adherence, and alternative therapies aim to achieve remission and enhance quality of life.

Keywords: Asthma; discrete-choice experiment; patient; personalized medicine; remission.

21

Meta-Analysis

BMC Pulm Med

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. 2024 Jun 24;24(1):293.

doi: 10.1186/s12890-024-03078-7.

Association between psoriasis and asthma: a systematic review and bidirectional meta-analysis

Doudou Wu [1], Xiangnan Zhou [2], Fan Wu [1], Rui Cai [1], Jiayi Liu [1], Yanping Bai [3]

Affiliations expand

- PMID: 38914981
- PMCID: PMC11197190
- DOI: 10.1186/s12890-024-03078-7

Abstract

Background: The risk of asthma in patients with psoriasis has been identified in previous studies, but the bidirectional association between the two has not been fully explored.

Methods: We thoroughly searched PubMed, Embase, and the Cochrane Library to find relevant observational studies published from the inception of these databases to October 2023. All the risk and bias assessments were analyzed by STATA 16.0. Where the heterogeneity was less than 50%, the fixed effect model was utilized. While where the level of heterogeneity was more than 50%, the random effect model was applied. Moreover, to identify publication bias, a visual funnel chart, and Egger's test were applied.

Results: A total of 12,396,911 participants from 16 studies, published between 2011 and 2023 were included in this meta-analysis. We found that psoriasis patients had a higher risk of developing asthma (OR = 1.48, 95%CI 1.28-1.68). Meanwhile, asthma patients also had a higher overall risk of developing psoriasis (OR = 1.33, 95%CI 1.23-1.44). In the subgroup analysis, we found that the type of study, age, and severity of the psoriasis were significant factors in the survey of asthma risk in psoriasis patients.

Conclusions: In the present systematic review and meta-analysis, we found a bidirectional association between psoriasis and asthma with significantly increased risk. As a result, clinicians should make patients aware of the connection between the two, particularly adolescents or patients with moderate to severe psoriasis who need to be informed about the rising likelihood of developing asthma.

Trial registration: Registration number CRD42023390111 .

Keywords: Asthma; Immunology; Meta-analysis; Psoriasis; Risk factors.

Conflict of interest statement

The authors declare no competing interests.

- 43 references
- 5 figures

supplementary info

Publication types, MeSH terms, Grants and fundingexpand

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J Asthma

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. 2024 Jun 24:1-10.

doi: 10.1080/02770903.2024.2372600. Online ahead of print.

Can glucagon-like peptide-1 receptor agonists induce asthma? An analysis of the FAERS database

Mario Cazzola [1], Maria Gabriella Matera [2], Luigino Calzetta [3], Davide Lauro [4], Paola Rogliani [1]

Affiliations expand

- **PMID: 38913778**

- **DOI: 10.1080/02770903.2024.2372600**

Abstract

Glucagon-like peptide-1 receptor agonists (GLP1RAs), originally developed for the treatment of type 2 diabetes mellitus, have attracted attention for their potential therapeutic benefits in asthma due to their anti-inflammatory properties and effects on airway smooth muscle function. However, concerns have been raised about the possibility of GLP1RAs inducing or exacerbating asthma symptoms. Analysis of the US Food and Drug Administration's adverse events reporting system database has shown that certain GLP1RAs, particularly exenatide, semaglutide and liraglutide,

were associated with a higher proportion of respiratory adverse events, particularly asthma or asthma-like events. This association was statistically significant at least for semaglutide and liraglutide. Serious asthma-related events and deaths were also reported, with exenatide having the highest proportion of deaths. However, the reasons for these differences in the adverse event profiles of the GLP1RAs remain unclear and may involve various factors such as pharmacological properties, patient characteristics and reporting biases. The complex interplay between the therapeutic benefits of GLP1RAs and the potential respiratory risks requires careful monitoring by clinicians, underpinned by ongoing research efforts to improve patient care and safety.

Keywords: Asthma; US Food and Drug Administration's adverse events reporting system; glucagon-like peptide-1 receptor agonists.

full text links

"rhinitis"[MeSH Terms] OR rhinitis[Text Word]

1

Medicine (Baltimore)

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. 2024 Jun 28;103(26):e38538.

doi: 10.1097/MD.0000000000038538.

Clinical effectiveness of focused ultrasound combined with plasma radiofrequency ablation technique in the treatment of persistent strain rhinitis

Shuhua Liu [1], Yan Xiao [1], Kailan Xiao [2]

Affiliations expand

- PMID: 38941395

- DOI: 10.1097/MD.0000000000038538

Abstract

Examine the effects of focused ultrasound in combination with plasma radiofrequency ablation technology on the physiological stability and postoperative recovery of persistent strain rhinitis. For a control experiment, 90 patients with persistent strain rhinitis were chosen and split into two groups: the control group

(CG) and the experimental group (EG). The CG used conventional radiofrequency ablation technology, while the EG used focused ultrasound technology combined with radiofrequency ablation technology to treat persistent strain rhinitis. Between the EG and the CG, compare and contrast the recovery of nasal symptoms, nasal signs, postoperative discomfort, and postoperative respiratory status. One quarter after surgery, there was a substantial difference in physical sign ratings between the EG and the CG, and a particularly significant difference was seen after six months of treatment. One year following surgery, there was a statistical difference between the EG and the CG in the comparison of effective rates at various intervals, with a P value of .013. At 6 months following surgery, the MTT times in the EG and CG for the comparison of nasal function were 12.63 2.65 and 17.68 2.84, respectively, with statistically significant differences. The difference between the EG and the CG in the MTR comparison is statistically significant. In the comparison of NNO values between the EG and the CG after different treatment times. The nitric oxide value of the EG patients decreased over time, with statistical significance one month after surgery and one year after surgery. It is evident from the comparison of various symptom efficacy rates that the EG has a higher treatment effectiveness rate than the CG, and the total treatment effect difference following surgery has statistical significance. Indicators for PONV, PA, directional ability, respiratory recovery, and olfactory recovery performed better in the EG than in the CG, and the differences were statistically significant. Focused ultrasound and plasma radiofrequency ablation technology have a good therapeutic impact in the treatment of persistent strain rhinitis and can significantly reduce MTT. This technology can effectively improve symptoms such as nasal congestion, nasal flow, and headache in patients, and the therapeutic effect is long-lasting. The hospitalization time after treatment is significantly shortened.

Conflict of interest statement

The authors have no funding and conflicts of interest to disclose.

- 15 references

supplementary info

MeSH termsexpand

full text links

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J Asthma

. 2024 Jun 28:1-8.

doi: 10.1080/02770903.2024.2370002. Online ahead of print.

Montelukast treatment response according to eosinophil-derived neurotoxin level in children with allergic rhinitis

Yong Ju Lee [1], Hyo-Sun Ma [2], Zak Callaway [2 3], Chang-Keun Kim [2]

Affiliations expand

- PMID: 38884630

- DOI: 10.1080/02770903.2024.2370002

Abstract

Background: Eosinophil-derived neurotoxin (EDN) is an important biomarker of eosinophilic inflammation.

Methods: This study evaluated Montelukast treatment response according to EDN concentration in children with perennial allergic rhinitis (PAR). Fifty-two children with PAR were recruited and took a combination of Montelukast (5mg) and Levocetirizine (5mg) "Mont/Levo Group" or only Montelukast (5mg) "Mont Group" for 4 weeks. All caregivers were instructed to record rhinitis symptoms for 4 weeks. EDN was measured before and after treatment.

Results: Daytime nasal symptom scores (DNSS) significantly decreased in both the Mont/Levo ($p = 0.0001$; $n = 20$) and Mont Group ($p < 0.0001$; $n = 20$), but there were no significant differences between the two groups. EDN concentration also significantly decreased after treatment in both groups ($p < 0.0001$ and $p < 0.001$, respectively). For secondary analysis, children with a high initial EDN concentration (EDN ≥ 53 ng/mL) were placed in the "High EDN Group", while those with a lower initial EDN concentration (EDN < 53 ng/mL) were put in the "Low EDN Group". Both groups experienced significant reductions in DNSS after either treatment regimen ($p < 0.0001$ and $p = 0.0027$, respectively) but the High EDN Group had greater reductions. EDN concentrations in the High EDN Group decreased significantly from either treatment ($p < 0.0001$).

Conclusion: We found that children with AR and a high serum EDN concentration may respond well to Montelukast treatment. A therapeutic strategy using EDN concentrations in patients with AR to evaluate therapeutic response may help improve quality of care.

Keywords: Allergy; Levocetirizine; asthma; biomarker; eosinophil-derived neurotoxin; eosinophilic inflammation; perennial allergic rhinitis.

full text links

3

Review

J Pediatric Infect Dis Soc

. 2024 Jun 28;13(6):328-333.

doi: 10.1093/jpids/piae034.

"Give Me Five": The Case for 5 Days of Antibiotics as the Default Duration for Acute Respiratory Tract Infections

Rana E El Feghaly [1], Preeti Jaggi [2], Sophie E Katz [3], Nicole M Poole [4]

Affiliations expand

- PMID: 38581154

- DOI: 10.1093/jpids/piae034

Abstract

Acute respiratory tract infections (ARTIs) account for most antibiotic prescriptions in pediatrics. Although US guidelines continue to recommend ≥10 days antibiotics for common ARTIs, evidence suggests that 5-day courses can be safe and effective. Academic imprinting seems to play a major role in the continued use of prolonged antibiotic durations. In this report, we discuss the evidence supporting short antibiotic courses for group A streptococcal pharyngitis, acute otitis media, and acute bacterial rhinosinusitis. We discuss the basis for prolonged antibiotic course recommendations and recent literature investigating shorter courses. Prescribers in the United States should overcome academic imprinting and follow international trends to reduce antibiotic durations for common ARTIs, where 5 days is a safe and efficacious course when antibiotics are prescribed.

Keywords: acute bacterial rhinosinusitis; acute otitis media; acute respiratory tract infection; antimicrobial stewardship; duration of therapy; pharyngitis.

supplementary info

Publication types, MeSH terms, Substancesexpand

full text links

chronic cough

1

Curr Opin Pulm Med

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. 2024 Jun 25.

doi: 10.1097/MCP.0000000000001087. Online ahead of print.

What causes cough in pulmonary fibrosis, and how should we treat it?

Katherine J Myall [1 2], Peter S P Cho [1 2], Surinder Birring [1 2]

Affiliations expand

- PMID: 38913018

- DOI: 10.1097/MCP.0000000000001087

Abstract

Purpose of review: To review the current understanding of the impact, mechanisms and treatments for cough in patients with interstitial lung disease (ILD). Evidence suggests that cough is a prevalent symptom in patients with ILD and has a significant impact on patients.

Recent findings: There is increasing interest in the role of cough hypersensitivity as seen in chronic refractory cough in patients with ILD, and encouraging recent results suggest that ILD-associated cough responds to opiate therapy.

Summary: Understanding the aetiology of cough in patients with ILD is crucial to continue to develop therapies which might be effective in reducing cough and increasing quality of life.

- 62 references

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Int J Biostat

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. 2024 Jun 25.

doi: 10.1515/ijb-2023-0061. Online ahead of print.

An interpretable cluster-based logistic regression model, with application to the characterization of response to therapy in severe eosinophilic asthma

Massimo Bilancia [1], Andrea Nigri [2], Barbara Cafarelli [2], Danilo Di Bona [3]

Affiliations expand

- PMID: 38910330

- DOI: 10.1515/ijb-2023-0061

Abstract

Asthma is a disease characterized by chronic airway hyperresponsiveness and inflammation, with signs of variable airflow limitation and impaired lung function leading to respiratory symptoms such as shortness of breath, chest tightness and cough. Eosinophilic asthma is a distinct phenotype that affects more than half of patients diagnosed with severe asthma. It can be effectively treated with monoclonal antibodies targeting specific immunological signaling pathways that fuel the inflammation underlying the disease, particularly Interleukin-5 (IL-5), a cytokine that plays a crucial role in asthma. In this study, we propose a data analysis pipeline aimed at identifying subphenotypes of severe eosinophilic asthma in relation to response to therapy at follow-up, which could have great potential for use in routine clinical practice. Once an optimal partition of patients into subphenotypes has been determined, the labels indicating the group to which each patient has been assigned are used in a novel way. For each input variable in a specialized logistic regression model, a clusterwise effect on response to therapy is determined by an appropriate interaction term between the input variable under consideration and the cluster label. We show that the clusterwise odds ratios can be meaningfully interpreted conditional on the cluster label. In this way, we can define an effect measure for the response variable for each input variable in each of the groups identified by the clustering algorithm, which is not possible in standard logistic regression because the effect of the reference class is aliased with the overall intercept. The interpretability of the model is enforced by promoting sparsity, a goal achieved by learning interactions in a hierarchical manner using a special group-Lasso technique. In addition, valid expressions are provided for computing odds ratios in the unusual parameterization used by the sparsity-promoting algorithm. We show how to apply the proposed data analysis pipeline to the problem of sub-phenotyping asthma patients also in terms of quality of response to therapy with monoclonal antibodies.

Keywords: clustering algorithms; group-Lasso; logistic regression with interactions; partitioning around medoids (PAM); severe eosinophilic asthma.

- 77 references

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Review

Hum Cell

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. 2024 Jun 24.

doi: 10.1007/s13577-024-01089-4. Online ahead of print.

The role of neutrophils in chronic cough

Guan-Zhen Xue [1 2], Hai-Zhen Ma [3], Ta-Na Wuren [4 5]

Affiliations expand

- PMID: 38913146

- DOI: 10.1007/s13577-024-01089-4

Abstract

Chronic cough is a common disorder lasting more than 8 weeks and affecting all age groups. The evidence supporting the role of neutrophils in chronic cough pathology is based on many patients with chronic cough developing airway neutrophilia. How neutrophils influence the development of chronic cough is unknown. However, they are likely involved in multiple aspects of cough etiology, including promoting airway inflammation, airway remodeling, hyper-responsiveness, local neurogenic inflammation, and other possible mechanisms. Neutrophilic airway inflammation is also associated with refractory cough, poor control of underlying diseases (e.g., asthma), and insensitivity to cough suppressant therapy. The potential for targeting neutrophils in chronic cough needs exploration, including developing new drugs targeting one or more neutrophil-mediated pathways or altering the neutrophil phenotype to alleviate chronic cough. How the airway microbiome differs, plays a role, and interacts with neutrophils in different cough etiologies is poorly understood. Future studies should focus on understanding the relationship between the airway microbiome and neutrophils.

Keywords: Airway hyper-responsiveness; Airway inflammation; Chronic cough; Neutrophil.

- 79 references

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"bronchiectasis"[MeSH Terms] OR bronchiectasis[Text Word]

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J Glob Health

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. 2024 Jun 28:14:04129.

doi: 10.7189/jogh.14.04129.

Analysis of clinical characteristics, prognosis and influencing factors in patients with bronchiectasis-chronic obstructive pulmonary disease overlap syndrome: A prospective study for more than five years

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Affiliations expand

- **PMID: 38940273**

- **DOI: 10.7189/jogh.14.04129**

Abstract

Background: Considering the large population of bronchiectasis and chronic obstructive pulmonary disease (COPD) patients in China, we aimed to conduct a thorough analysis that investigates the clinical characteristics and prognosis of bronchiectasis-COPD overlap syndrome (BCOS). Further, we aimed to explore factors associated with acute exacerbation and death in BCOS, which may be of value in its early diagnosis and intervention.

Methods: We recruited inpatients with COPD from the second Xiangya Hospital of Central South University in China in August 2016, with follow-up until March 2022. Patients in the BCOS group had to meet the criteria for diagnosing bronchiectasis. We used self-completion questionnaires, clinical records, and self-reported data as

primary data collection methods. We used Kaplan-Meier survival analyses and Cox proportional hazard models to assess the risk of severe acute exacerbation and death for BCOS during the follow-up period.

Results: A total of 875 patients were included and followed up. Patients in the BCOS group had more females, fewer smokers, lower discharge COPD assessment test (CAT) scores, lower forced vital capacity (FVC), a higher likelihood of co-occurring active tuberculosis, higher levels of eosinophils and inflammatory markers, and a higher rate of positive sputum cultures for Pseudomonas aeruginosa than patients in the COPD-only group. Patients in the acute exacerbation group (AE+) were found to have lower body mass index (BMI), more frequent acute exacerbations, higher modified Medical Research Council (mMRC) dyspnoea grade on admission, higher inflammatory markers, lower FVC, higher rates of using inhaled bronchodilators, and higher rates of both positive and Pseudomonas aeruginosa positive sputum cultures. Patients in the 'death' group were older, had a lower BMI, had spent longer time in the hospital, had higher mMRC dyspnoea grade and CAT scores upon admission and discharge, had higher levels of inflammatory markers, lower rates of using inhaled bronchodilators, were more likely to have a combination of pulmonary heart disease and obsolete pulmonary tuberculosis, as well as a higher rate of fungus-positive sputum cultures. Both erythrocyte sedimentation rate at baseline and Pseudomonas aeruginosa culture positivity were confirmed as independent predictors of severe acute exacerbation in multivariate analysis during the years of follow-up. Fungus culture positivity baseline blood urea nitrogen, baseline lymphocyte count, comorbidities with obsolete pulmonary tuberculosis and comorbidities with pulmonary heart disease were verified as independent predictors of death in multivariate analysis during the years of follow-up. Kaplan-Meier curves under survival analysis demonstrated no statistically significant difference in mortality between the COPD and the BCOS groups at the full one, two, and three years of follow-up.

Conclusions: Patients with BCOS present with reduced lung function, increased susceptibility to different complications, elevated blood eosinophils and inflammatory markers, and elevated rates of positive Pseudomonas aeruginosa cultures. These distinctive markers are linked to a greater risk of severe acute exacerbations and mortality.

Conflict of interest statement

Disclosure of interests: The authors completed the ICMJE Disclosure of Interest Form (available upon request from the corresponding author) and disclose no relevant interests.

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Review

Eur Respir J

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. 2024 Jun 28;63(6):2400518.

doi: 10.1183/13993003.00518-2024. Print 2024 Jun.

Bronchiectasis management in adults: state of the art and future directions

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Affiliations expand

- PMID: 38782469

- DOI: 10.1183/13993003.00518-2024

Abstract

Formerly regarded as a rare disease, bronchiectasis is increasingly recognised. A renewed interest in this disease has led to significant progress in bronchiectasis research. Randomised clinical trials (RCTs) have demonstrated the benefits of airway clearance techniques, inhaled antibiotics and long-term macrolide therapy in bronchiectasis patients. However, the heterogeneity of bronchiectasis remains one of the most challenging aspects of management. Phenotypes and endotypes of bronchiectasis have been identified to help find "treatable traits" and partially overcome disease complexity. The goals of therapy for bronchiectasis are to reduce the symptom burden, improve quality of life, reduce exacerbations and prevent disease progression. We review the pharmacological and non-pharmacological treatments that can improve mucociliary clearance, reduce airway inflammation and tackle airway infection, the key pathophysiological features of bronchiectasis. There are also promising treatments in development for the management of bronchiectasis, including novel anti-inflammatory therapies. This review provides a critical update on the management of bronchiectasis focusing on treatable traits and recent RCTs.

Conflict of interest statement

Conflict of interest: H. Choi reports grants from the Basic Science Research Program of the Korean Ministry of Education (grant number 2021R1I1A3052416), and consulting and lecture fees from Boryung Pharmaceutical Co., Ltd and Kolon Pharma. P.J. McShane reports study funding (paid to institution) from Boehringer Ingelheim, Armata, Paratek, Renovian, Spero, AN2 Therapeutics and Insmed, and speaker fees from Insmed. S. Aliberti reports grants or contracts from Insmed Incorporated, Chiesi, Fisher & Paykel and GlaxoSmithKline, royalties or licences from McGraw Hill, consulting fees from Insmed Incorporated, Insmed Italy, Insmed Ireland Ltd, Zambon SpA, AstraZeneca UK Ltd, AstraZeneca Pharmaceutical LP, CSL Behring GmbH, Grifols, Fondazione Internazionale Menarini, Moderna, Chiesi, MSD Italia Srl, Brahms, Physioassist SAS and GlaxoSmithKline SpA, payment or honoraria for lectures, presentations, manuscript writing or educational events from GlaxoSmithKline SpA, Thermofisher Scientific, Insmed Italy, Insmed Ireland, Zambon and Fondazione Internazionale Menarini, and participation on a data safety monitoring board or advisory board for Insmed Incorporated, Insmed Italy, AstraZeneca UK Ltd and MSD Italia Srl. J.D. Chalmers reports grants or contracts from AstraZeneca, Boehringer Ingelheim, Genentech, Gilead Sciences, GlaxoSmithKline, Grifols, Insmed, LifeArc and Novartis, and consulting fees from AstraZeneca, Chiesi, GlaxoSmithKline, Insmed, Grifols, Novartis, Boehringer Ingelheim, Pfizer, Janssen, Antabio and Zambon.

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Publication types, MeSH terms, Substancesexpand

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Review

Expert Rev Respir Med

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. 2024 Jun 24:1-14.

doi: 10.1080/17476348.2024.2369716. Online ahead of print.

The impact of smoking on bronchiectasis and its comorbidities

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Affiliations expand

- PMID: 38888096

- DOI: 10.1080/17476348.2024.2369716

Abstract

Introduction: Bronchiectasis, characterized by irreversible bronchial dilatation, is a growing global health concern with significant morbidity. This review delves into the intricate relationship between smoking and bronchiectasis, examining its epidemiology, pathophysiology, clinical manifestations, and therapeutic approaches. Our comprehensive literature search on PubMed utilized MESH terms including 'smoking,' 'smoking cessation,' 'bronchiectasis,' and 'comorbidities' to gather relevant studies.

Areas covered: This review emphasizes the role of smoking in bronchiectasis development and exacerbation by compromising airways and immune function. Interconnected comorbidities, including chronic obstructive pulmonary disease, asthma, and gastroesophageal reflux disease, create a detrimental cycle affecting patient outcomes. Despite limited studies on smoking cessation in bronchiectasis, the review stresses its importance. Advocating for tailored cessation programs, interventions like drainage, bronchodilators, and targeted antibiotics are crucial to disrupting the inflammatory-infection-widening cycle.

Expert opinion: The importance of smoking cessation in bronchiectasis management is paramount due to its extensive negative impact on related conditions. Proactive cessation programs utilizing technology and targeted education for high-risk groups aim to reduce smoking's impact on disease progression and related comorbidities. In conclusion, a personalized approach centered on smoking cessation is deemed vital for bronchiectasis, aiming to improve outcomes and enhance patients' quality of life in the face of this complex respiratory condition.

Keywords: Bronchiectasis; COPD; bronchial inflammation; comorbidities; smoking; smoking cessation.

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Cancer Imaging

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. 2024 Jun 23;24(1):78.

doi: 10.1186/s40644-024-00720-9.

Thoracic high resolution computed tomography evaluation of imaging abnormalities of 108 lung cancer patients with different pulmonary function

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Affiliations expand

- PMID: 38910260

- PMCID: PMC11194896

- DOI: 10.1186/s40644-024-00720-9

Abstract

Purpose: Preserved ratio impaired spirometry (PRISm) and chronic obstructive pulmonary disease (COPD) belong to lung function injury. PRISm is a precursor to COPD. We compared and evaluated the different basic information, imaging findings and survival curves of 108 lung cancer patients with different pulmonary function based on high resolution computed tomography (HRCT).

Methods: This retrospective study was performed on 108 lung cancer patients who did pulmonary function test (PFT) and thoracic HRCT. The basic information was evaluated: gender, age, body mass index (BMI), smoke, smoking index (SI). The following pulmonary function findings were evaluated: forced expiratory volume in 1s (FEV_1), forced vital capacity (FVC), FEV_1/FVC ratio. The following computed tomography (CT) findings were evaluated: appearance (bronchiectasis, pneumonectasis, atelectasis, ground-glass opacities [GGO], interstitial inflammation, thickened bronchial wall), diameter (aortic diameter, pulmonary artery diameter, MPAD/AD ratio, inferior vena cava diameter [IVCD]), tumor (volume, classification, distribution, staging [I, II, III, IV]). Mortality rates were calculated and survival curves were estimated using the Kaplan-Meier method.

Results: Compared with normal pulmonary function group, PRISm group and COPD group were predominantly male, older, smoked more, poorer lung function and had shorter survival time after diagnosis. There were more abnormal images in PRISm group and COPD group than in normal lung function group (N-C group). In PRISm group and COPD group, lung cancer was found late, and the tumor volume was larger, mainly central squamous carcinoma. But the opposite was true for the N-C group. The PRISm group and COPD group had significant poor survival probability compared with the normal lung function group.

Conclusions: Considerable differences regarding basic information, pulmonary function, imaging findings and survival curves are found between normal lung function group and lung function injury group. Lung function injury (PRISm and COPD) should be taken into account in future lung cancer screening studies.

Keywords: Chronic obstructive pulmonary disease; High resolution computed tomography; Lung cancer; Preserved ratio impaired spirometry.

Conflict of interest statement

The authors declare that they have no competing interest.

- **25 references**
- **4 figures**

supplementary info

MeSH terms, Grants and fundingexpand

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