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

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PLoS One

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. 2024 Jul 26;19(7):e0308109.

doi: 10.1371/journal.pone.0308109. eCollection 2024.

Effects of using wearable devices to monitoring physical activity in pulmonary rehabilitation programs for chronic respiratory diseases: A systematic review protocol

Thaianne Rangel Agra Oliveira [1], Ana Tereza do Nascimento Sales Figueiredo Fernandes [2], Thayla Amorim Santino [2], Fernanda Elizabeth Pereira da Silva Menescal [3], Patrícia Angélica de Miranda Silva Nogueira [1]

Affiliations expand

- PMID: 39058745

- DOI: 10.1371/journal.pone.0308109

Abstract

Introduction: Pulmonary rehabilitation (PR) is an intervention aimed at the comprehensive care of individuals with chronic respiratory diseases. Patients with chronic obstructive pulmonary disease (COPD) and asthma present low levels of physical fitness because they avoid physical exercises due to the fear of triggering recurrent symptoms. Wearable devices have been integrated into behavioral

modification interventions for physical activity in PR protocols. Therefore, this review aims to identify how wearable devices are being utilized for monitoring chronic respiratory diseases in pulmonary rehabilitation programs.

Methods and analysis: Searches will be conducted on Medline, Cochrane Central Register of Controlled Trials, Embase (CENTRAL), CINAHL and PEDro electronic databases, as well as a search in the grey literature. We will include baseline data from randomized clinical trials reporting the use of wearable devices for monitoring physical activity in protocols for pulmonary rehabilitation programs for chronic respiratory diseases. Studies that discuss only the development of algorithms or applications for the assessment of diseases or unavailable full texts will be excluded. The main reviewer will conduct the initial search and exclusion of duplicates, while two independent reviewers will select studies, extract data, and assess the methodological quality using the PEDro tool.

Prospero registration number: CRD42024504137.

Conflict of interest statement

The authors have declared that no competing interests exist.

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Review

Eur Respir J

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. 2024 Jul 26:2301633.

doi: 10.1183/13993003.01633-2023. Online ahead of print.

Phenotypes in Pulmonary Hypertension

Jason Weatherald [1], Anna R Hemnes [2], Bradley A Maron [3 4], Lisa M Mielniczuk [5], Christian Gerges [6], Laura C Price [7], Marius M Hoeper [8 9], Marc Humbert [10 11 12]

Affiliations expand

- PMID: 38964779

- DOI: 10.1183/13993003.01633-2023

Abstract

The clinical classification of pulmonary hypertension (PH) has guided diagnosis and treatment of patients with PH for several decades. Discoveries relating to underlying mechanisms, pathobiology, and responses to treatments for PH have informed the evolution in this clinical classification to describe the heterogeneity in PH phenotypes. In more recent years, advances in imaging, computational science, and multi-omic approaches have yielded new insights into potential phenotypes and sub-phenotypes within the existing clinical classification. Identification of novel phenotypes in pulmonary arterial hypertension (PAH) with unique molecular profiles, for example, could lead to new precision therapies. Recent phenotyping studies have also identified groups of patients with PAH that more closely resemble patients with left heart disease (group 2 PH) and lung disease (group 3 PH), which has important prognostic and therapeutic implications. Within group 2 and group 3 PH, novel phenotypes have emerged that reflect a persistent and severe pulmonary vasculopathy that is associated with worse prognosis but still distinct from PAH. In group 4 PH (chronic thromboembolic pulmonary disease) and sarcoidosis (group 5 PH) the current approach to patient phenotyping integrates clinical, hemodynamic and imaging characteristics to guide treatment but applications of multi-omic approaches to sub-phenotyping in these areas are sparse. The next iteration of the PH clinical classification is likely to reflect several emerging PH phenotypes and improve the next generation of prognostication tools, clinical trial design, and improve treatment selection in clinical practice.

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Eur Respir J

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. 2024 Jul 26:2400314.

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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BMJ Open

. 2024 Jul 25;14(7):e090000.

doi: 10.1136/bmjopen-2024-090000.

FOUND Trial: randomised controlled trial study protocol for case finding of obstructive sleep apnoea in primary care using a novel device

Michelle A Miller [1], Ly-Mee Yu [2], Asad Ali [3], Patricia Apenteng [4], Peter Auguste [5], Jeremy Dale [5], Kath Hope [6], Milensu Shanyinde [2], Jenna Grabey [2], Emma Scott [5], Anne Smith [2], Francesco P Cappuccio [5 7]; FOUND Trial study group

Collaborators, Affiliations expand

- PMID: 39059802

- DOI: 10.1136/bmjopen-2024-090000

Abstract

Introduction: Obstructive sleep apnoea (OSA) is a common, but underdiagnosed, sleep disorder. If untreated, it leads to poor health outcomes, including Alzheimer's disease, cancer, cardiovascular disease and all-cause mortality. Our aim is to determine the feasibility and cost-effectiveness of moving the testing for OSA into general practice and how general practitioner (GP)-based screening affects overall detection rates.

Methods and analysis: Randomised controlled trial of case finding of OSA in general practice using a novel Medicines and Healthcare products Regulatory Agency-registered device (AcuPebble SA100) compared with usual care with internal feasibility phase. A diverse sample of general practices (approximately 40)

from across the West Midlands Clinical Research Network will identify participants from their records. Eligible participants will be aged 50-70 years with body mass index >30 kg/m^2 and diabetes (type 1 or 2) and/or hypertension (office blood pressure >145/90 mm Hg or on treatment). They will exclude individuals with known OSA or chronic obstructive pulmonary disease, or those they deem unable to take part. After eligibility screening, consent and baseline assessment, participants will be randomised to either the intervention or control group. Participants in the intervention arm will receive by post the AcuPebble sleep test kit. Those in the control arm will continue with usual care. Follow-up questionnaires will be completed at 6 months. The study is powered (90%) to detect a 5% difference and will require 606 patients in each arm (713 will be recruited to each arm to allow for attrition). Due to the nature of the intervention, participants and GPs will not be blinded to the allocation.

Outcomes: Primary: Detection rate of moderate-to-severe OSA in the intervention group versus control group. Secondary: Time to diagnosis and time to treatment for intervention versus control group for mild, moderate and severe OSA; cost-effectiveness analysis comparing the different testing pathways.

Ethics and dissemination: The trial started on 1 November 2022. Ethical approval was granted from the South Central Oxford A Research Ethics Committee on 9 June 2023 (23/SC/0188) (protocol amendment version 1.3; update with amendment and approval to renumber to V2.0 on 29 August 2023). Patient recruitment began on 7 January 2024; initial planned end date will be on 31 April 2025.Results will be uploaded to the ISRCTN register within 12 months of the end of the trial date, presented at conferences, submitted to peer-reviewed journals and distributed via our patient and public involvement networks.The University of Warwick will act as the trial sponsor. The trial will be conducted in accordance with the Sponsor and Primary Care Clinical Trials Unit standard operating procedures.

Trial registration number: ISRCTN 16982033.

Keywords: HEALTH ECONOMICS; Primary Health Care; RESPIRATORY MEDICINE (see Thoracic Medicine); Randomized Controlled Trial; SLEEP MEDICINE.

Conflict of interest statement

Competing interests: MAM and FPC receive royalties from Oxford University Press for the publication of two books on Sleep, Health and Society.

5

Chronic Obstr Pulm Dis

. 2024 Jul 25;11(4):406-415.

doi: 10.15326/jcopdf.2024.0505.

Prevalence of Critical Errors and Insufficient Peak Inspiratory Flow in Patients Hospitalized with COPD in a Department of General Internal Medicine: A Cross-Sectional Study

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Affiliations expand

- PMID: 38901836

- DOI: 10.15326/jcopdf.2024.0505

Free article

Abstract

Background: The suboptimal use of inhalers in the treatment of patients with chronic obstructive pulmonary disease (COPD) is probably a major but poorly documented problem in hospitalized patients. We aimed to describe the prevalence of misused inhalers among patients hospitalized with COPD in a department of general internal medicine.

Methods: We conducted a monocentric cross-sectional study in consecutive patients with a diagnosis of COPD and hospitalized between August 2022 and April 2023 in the internal medicine division of Fribourg Hospital, Switzerland. Patients underwent an assessment of their inhaler technique and peak inspiratory flow (PIF) using the In-Check Dial G16®. The primary outcome was the prevalence of misused inhalers, defined as an inhaler used with a critical error and/or insufficient PIF. Secondary outcomes included the prevalence of inhalers unsuitable to patients' characteristics and of patients using at least one misused inhaler.

Results: The study included 96 patients and 160 inhalers were assessed at admission. Among these inhalers, 111 (69.4%; 95% confidence interval [CI] 61.6-76.4) were misused; 105 (65.6%; 95% CI 57.7-72.9) due to the presence of a critical error in the inhalation technique and 22 (13.8%; 95% CI 8.8-20.1) due to insufficient PIF. Concerning the secondary outcome, 27 inhalers (16.9%) were unsuitable, and 79 patients (82.3%) used at least one misused inhaler.

Conclusion: Among patients hospitalized with a diagnosis of COPD, two-thirds of inhalers were misused. Suboptimal use was mainly due to the presence of critical errors, but also to the presence of an insufficient PIF and unsuitable inhalers.

Keywords: chronic obstructive pulmonary disease; critical error; hospital; inhaler; peak inspiratory flow.

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Chronic Obstr Pulm Dis

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. 2024 Jul 25;11(4):396-405.

doi: 10.15326/jcopdf.2024.0500.

Biomarkers of Inflammation and Longitudinal Evaluation of Lung Function, Physical Activity, and Grip Strength: A Secondary Analysis in the CASCADE Study

David M MacDonald [1 2], Sarah Samorodnitsky [3], Eric F Lock [3], Vincent Fan [4], Zijing Chen [5], Huong Q Nguyen [6], Chris H Wendt [1 2]

Affiliations expand

- **PMID: 38838254**

- **DOI: 10.15326/jcopdf.2024.0500**

Free article

Abstract

Rationale: Physical activity, lung function, and grip strength are associated with exacerbations, hospitalizations, and mortality in people with chronic obstructive pulmonary disease (COPD). We tested whether baseline inflammatory biomarkers were associated with longitudinal outcomes of these physiologic measurements.

Methods: The COPD Activity: Serotonin Transporter, Cytokines, and Depression (CASCADE) study was a prospective observational study of individuals with COPD. A total of 14 inflammatory biomarkers were measured at baseline. Participants were followed for 2 years. We analyzed associations between baseline biomarkers and forced expiratory volume in 1 second (FEV_1), physical activity, and grip strength. We used a hierarchical hypothesis testing procedure to reduce type I error. We used Pearson correlations to test associations between baseline biomarkers and longitudinal changes in the outcomes of interest. We used Fisher's linear discriminant analysis to test if linear combinations of baseline biomarkers predict rapid FEV_1 decline. Finally, we used linear mixed modeling to test associations between baseline biomarkers and outcomes of interest at baseline, year 1, and year 2; models were adjusted for age, smoking status, baseline biomarkers, and FEV_1.

Results: A total of 302 participants (age 67.5 ± 8.5 years, 19.5% female, 28.5% currently smoking) were included. Baseline biomarkers were not associated with longitudinal changes in grip strength, physical activity, or rapid FEV_1 decline. Higher interleukin-6 and C-reactive protein were associated with lower physical activity at baseline and these relationships persisted at year 1 and year 2.

Conclusion: Baseline inflammatory biomarkers did not predict changes in lung function or physical activity, but higher inflammatory biomarkers were associated with persistently low levels of physical activity.

Keywords: biomarkers; chronic obstructive pulmonary disease; exercise; hand strength; inflammation.

supplementary info

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Chronic Obstr Pulm Dis

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. 2024 Jul 25;11(4):382-385.

doi: 10.15326/jcopdf.2024.0489.

COPD With Lung Cancer Among Older United States Adults: Prevalence, Diagnostic Timeliness, and Association With Earlier Stage Tumors

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Affiliations expand

- PMID: 38838253

- DOI: 10.15326/jcopdf.2024.0489

Free article

Abstract

Rationale: Chronic obstructive pulmonary disease (COPD) is a common comorbidity among patients with lung cancer, and an important determinant of their outcomes, however, it is commonly underdiagnosed.

Objective: Our objective was to estimate the prevalence of COPD among a cohort of U.S. lung cancer patients, the timing of a COPD diagnosis relative to their lung cancer diagnosis, and the association between an earlier diagnosis of COPD and stage of lung cancer, with consideration of patient sociodemographic modifying factors.

Methods: We conducted an analysis of the Medicare-linked Surveillance, Epidemiology, and End Results database including patients aged 68+ years who were diagnosed with lung cancer between 2008 to 2017. Exposure: Prevalence of COPD was identified using claims and subclassified based on the timing of its diagnosis relative to the lung cancer diagnostic episode-"preexisting" if diagnosed > 3 months before lung cancer, and "concurrent" if diagnosed around the same time as the lung cancer (+/-3 months). Outcome: The stage of cancer at diagnosis (early versus late) was the outcome.

Results: Among 159,542 patients with lung cancer, 73.5% had COPD. Among those with COPD, 34.4% were diagnosed within 3 months of their lung cancer diagnosis and considered to have "concurrent COPD." We observed a positive association between preexisting COPD diagnosis and early-stage lung cancer (prevalence ratio= 1.27; 95% confidence interval= 1.23-1.30), in adjusted models which were stronger for male, non-Hispanic Black, and Hispanic patients.

Conclusions: Seven out of 10 patients with lung cancer have COPD, however, many do not receive their COPD diagnosis until around the time of their lung cancer diagnosis. Among these patients, an early COPD diagnosis may improve early detection of lung cancer.

Keywords: COPD; Medicare; epidemiology; lung cancer.

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Chronic Obstr Pulm Dis

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. 2024 Jul 25;11(4):416-426.

doi: 10.15326/jcopdf.2024.0501.

Chronic Obstructive Pulmonary Disease and Osteoporosis: A Two-Sample Mendelian Randomization Analysis

Zhanqqi Dou [1], Xinru Chen [2], Jun Chen [3], Hua Yang [1], Jiaqi Chen [4]

Affiliations expand

- **PMID: 38626346**

- **DOI: 10.15326/jcopdf.2024.0501**

Free article

Abstract

Background: There is a global increase in the prevalence of osteoporosis and chronic obstructive pulmonary disease (COPD). Studies based on observation revealed a higher incidence of osteoporosis in patients with COPD. We looked into the genetic relationship between COPD and osteoporosis using the Mendelian randomization (MR) technique.

Methods: The inverse variance-weighted (IVW) method was the primary technique used in this MR investigation. The sensitivity was assessed using the simple median, weighted median, penalized weighted median, and MR Egger regression analysis.

Results: The IVW model demonstrated that genetically determined COPD is causally associated with an elevated risk of osteoporosis (odds ratio [OR] fixed-effect, 1.010; 95% confidence interval [CI], 1.001-1.019, *P*=0.021; OR random-effect, 1.010; 95% CI, 1.001-1.020, *P*=0.039). It was also found that this correlation held valid for the simple and weighted median, Penalized weighted, MR-Egger, and MR Egger (bootstrap) approaches. No heterogeneity was found in the IVW or MR-Egger analysis results (Q=131.374, *P*=0.061 and Q=128.895, *P*=0.069, respectively). Furthermore, no pleiotropic influence via genetic variations was revealed by MR-Egger regression (intercept, -0.0002; *P*=0.160). No one single nucleotide polymorphism was found to have a substantial impact on the relationship between COPD and osteoporosis by the leave-one-out sensitivity analysis.

Conclusion: Our MR analysis demonstrated a substantial positive impact of COPD on the risk of osteoporosis.

Keywords: chronic obstructive pulmonary disease; genetics; mendelian randomization; osteoporosis.

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Respirology

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. 2024 Jul 24.

doi: 10.1111/resp.14804. Online ahead of print.

Breathless and heart broken in COPD

John R Hurst [1]

Affiliations expand

- PMID: 39048924

- DOI: 10.1111/resp.14804

No abstract available

Keywords: COPD; cardiovascular disease; multi-morbidity.

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Sci Rep

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. 2024 Jul 24;14(1):17106.

doi: 10.1038/s41598-024-67617-2.

Time series analysis of the interaction between ambient temperature and air pollution on hospitalizations for AECOPD in Ganzhou, China

Chenyang Shi [1], Jinyun Zhu [2], Guoliang Liu [3], Zhicheng Du [4], Yanbin Hao [5]

Affiliations expand

- PMID: 39048614

- DOI: 10.1038/s41598-024-67617-2

Abstract

This study aimed to investigate the univariate and bivariate effects of ambient temperature and air pollutants on 57,251 inpatients with AECOPD (Acute Exacerbation of Chronic Obstructive Pulmonary Disease) in Ganzhou from January 1, 2016, to December 31, 2019. We categorized the daily mean temperature and air pollutant variables based on the exposure-response curve of the Distributed Lag Non-Linear Model. Poisson regression model was used for interaction and stratification analysis. The Relative Excess Risk due to Interaction (RERI) with 95%

confidence intervals (95% CI) between daily mean temperature (Tmean) and air pollutants including NO_2, $PM_{2.5}$, and PM_{10} were - 0.428 (95% CI - 0.637, - 0.218), -- 0.227 (95% CI - 0.293, - 0.161), and - 0.119 (95% CI - 0.159, - 0.079). Further stratification analysis showed the relative risk (RR) (95% CI) of high NO_2 (> 33 $\mu g/m^3$) at low Tmean (≤ 28 °C) was 1.119 (95% CI 1.096, 1.142). Low temperatures with high PM_{10} in men and high $PM_{2.5}$ in women were associated with a higher risk of AECOPD hospitalization. The results indicate a higher risk of hospitalization for AECOPD when there is with high concentrations of air pollution at low temperatures.

Keywords: AECOPD; Air pollution; Distributed lag nonlinear model; Interaction; Temperature.

- 38 references

supplementary info

MeSH terms, Substances, Grants and fundingexpand

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Randomized Controlled Trial

Respir Care

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. 2024 Jul 24;69(8):946-952.

doi: 10.4187/respcare.11396.

Direct Health Care Costs Associated With a Multicomponent COPD Exacerbation Intervention

Louise Rose [1], Laura Istanboulian [2], Shaghayegh Rezaie [3], Ian Fraser [4]

Affiliations expand

- PMID: 38565305

- DOI: 10.4187/respcare.11396

Abstract

Background: Health care costs attributed to COPD have been estimated at $4.7 trillion globally in the next 30 years. With the global burden of COPD rising, identification of interventions that might lead to health care cost savings is an imperative. Although many studies report the effect of COPD self-management interventions on subject outcomes and health care utilization, few data describe their effect on health care costs.

Methods: Using data linkage and established case-costing methods with provincial Canadian health databases, we established public health care costs (acute and community) for 12 months following randomization for the 462 participants enrolled in our randomized controlled trial of the Program of Integrated Care for Patients with COPD and Multiple Comorbidities.

Results: Total median (interquartile range) in-hospital costs in the 12 months follow-up for all (intervention and control) 462 trial participants were CAD $4,769 ($417-16,834) (equivalent to US $3,566 [$312-12,588]). Total costs incurred in the community were higher at CAD $8,011 ($4,749-13,831) (equivalent to US $5,990 [$3,551-10,342]). Controlling for sex, income quintile, Johns Hopkins Aggregated Diagnosis Groups score, and living in an urban locality, we found lower community health care costs but no differences in acute care costs for participants receiving our multicomponent COPD exacerbation prevention management intervention compared to usual care.

Conclusions: Controlling for important confounders, we found lower public community health care costs but no difference in acute health care costs with our multicomponent COPD exacerbation prevention management intervention compared to usual care. Community health care costs were almost double those incurred compared to acute health care costs. Given this finding, although most COPD exacerbation management interventions generally focus on reducing the use of acute care, interventions that enable health care cost savings in the community require further exploration.

Keywords: COPD; data linkage; health administrative databases; health care costs; self-management.

Conflict of interest statement

The authors have disclosed no conflicts of interest.

supplementary info

Publication types, MeSH termsexpand

full text links

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Expert Rev Respir Med

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. 2024 Jul 23.

doi: 10.1080/17476348.2024.2384702. Online ahead of print.

A clinician's guide to single vs multiple inhaler therapy for COPD

Mario Cazzola [1], Josuel Ora [2], Mauro Maniscalco [3 4], Paola Rogliani [1 2]

Affiliations expand

- PMID: 39044348

- DOI: 10.1080/17476348.2024.2384702

Abstract

Introduction: In the management of chronic obstructive pulmonary disease (COPD), inhalation therapy plays a pivotal role. However, clinicians often face the dilemma of choosing between single and multiple inhaler therapies for their patients. This choice is critical because it can affect treatment efficacy, patient adherence, and overall disease management.

Areas covered: This article examines the advantages and factors to be taken into consideration when selecting between single and multiple inhaler therapies for COPD.

Expert opinion: Both single and multiple inhaler therapies must be considered in COPD management. While single inhaler therapy offers simplicity and convenience, multiple inhaler therapy provides greater flexibility and customization. Clinicians must carefully evaluate individual patient needs and preferences to determine the most appropriate inhaler therapy regimen. Through personalized treatment approaches and shared decision-making, clinicians can optimize COPD management and improve patient well-being. Nevertheless, further research is required to compare the effectiveness of single versus multiple inhaler strategies

through rigorous clinical trials, free from industry bias, to determine the optimal inhaler strategy. Smart inhaler technology appears to have the potential to enhance adherence and personalized management, but the relative merits of smart inhalers in single inhaler regimens versus multiple inhaler regimens remain to be determined.

Keywords: Chronic obstructive pulmonary disease; cost-effectiveness; inhaler therapy; multiple inhalers; patient adherence; shared decision-making; single inhaler; treatment customization; treatment goals.

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Antioxidants (Basel)

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. 2024 Jul 22;13(7):882.

doi: 10.3390/antiox13070882.

The Double-Edged Sword of ROS in Muscle Wasting and COPD: Insights from Aging-Related Sarcopenia

S M H Chan [1], S Selemidis [1], R Vlahos [1]

Affiliations expand

- PMID: 39061950

- DOI: 10.3390/antiox13070882

Abstract

An elevation in reactive oxygen species (ROS) is widely accepted to be a key mechanism that drives chronic obstructive pulmonary disease (COPD) and its major co-morbidity, skeletal muscle wasting. However, it will be perhaps a surprise to many that an elevation in ROS in skeletal muscle is also a critical process for normal skeletal muscle function and in the adaptations to physical exercise. The key message here is that ROS are not solely detrimental. This duality of ROS

suggests that the mere use of a broad-acting antioxidant is destined to fail in alleviating skeletal muscle wasting in COPD because it will also be influencing critical physiological ROS-dependent processes. Here, we take a close look at this duality of ROS in skeletal muscle physiology and pathophysiology pertaining to COPD and will aim to gain critical insights from other skeletal muscle wasting conditions due to aging such as sarcopenia.

Keywords: COPD comorbidities; antioxidants; inflammaging; microRNAs; oxidative stress.

14

Arch Phys Med Rehabil

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. 2024 Jul 22:S0003-9993(24)01128-6.

doi: 10.1016/j.apmr.2024.07.009. Online ahead of print.

Is the Rehabilitation Complexity Scale useful in individuals undergoing in-hospital pulmonary rehabilitation?

Michele Vitacca [1], Luca Bianchi [2], Piero Ceriana [3], Francesco Gigliotti [4], Rodolfo Murgia [5], Alessia Fumagalli [6], Antonio Spanevello [7], Giuseppe LA Piana [8], Sara Forlani [9], Maria Aliani [10], Gianfranco Beghi [11], Mauro Maniscalco [12], Giuseppe Fiorentino [13], Paolo Banfi [14], Mara Paneroni [15], Nicolino Ambrosino [5]; Rehabilitation Complexity Scale for respiratory patients - Italian network

Affiliations expand

- PMID: 39047855

- DOI: 10.1016/j.apmr.2024.07.009

Abstract

Objective: To assess validity and responsiveness of the Extended Rehabilitation Complexity Scale (RCS-Ev13) to in-hospital pulmonary rehabilitation (PR) in individuals with chronic respiratory diseases (CRD).

Design: cross-sectional multicentric study. Assessments in individuals attending units on two non-consecutive days.

Setting: 14 Italian in-hospital PR units.

Participants: Five hundred forty-seventh individuals (59.2% male, age 72 [65-78] years): 317 with Chronic Respiratory Failure due to various causes (CRF group); 96 with chronic obstructive pulmonary disease without CRF (COPD), 39 Tracheostomized and Ventilated (Tx/V), and 95 with other diseases (Miscellaneous).

Intervention: Assessment of RCS-Ev13 before and after the PR program.

Main outcome measures: RCS-Ev13 and outcome measures: Barthel Index (BI), Barthel Index Dyspnoea (BiD), Medical Research Council Scale for dyspnoea (MRC), COPD Assessment Test (CAT), Short Physical Performance Battery (SPPB), Six-Minute Walking Test (6MWT).

Results: The highest RCS-Ev13 admission values (median; IQR) were found in TX/V (17; 15-18) as compared to other groups (8; 7-10, 10; 9-12, 8; 8-10 in COPD, CRF and Miscellaneous respectively, p<0.001). At admission and discharge, RCS-Ev13 correlated strongly with BI, 6MWT, and SPPB and moderately with MRC and BiD (r: 0.43 to 0.60). After the program RCS-Ev13 as well as all outcome measures improved significantly in all groups (p< 0.001 for all). The size of improvement was different among groups according to the different variables. In the overall group the effect size was high for changes in RCS-E v13 (Cohen's d = -2.0984), CAT = (-1.1937), MRC (- 1.0505), BiD (- 0.9364) and SPPB (0.9231) while moderate for 6MWT (0.7670) and BI (0.6574).

Conclusions: RCS-E v13 varies according to different CRDs, is responsive to PR, has good construct and concurrent validity, and correlates with most of the accepted outcome measures of PR. Its scoring may provide useful information on the care burden of individuals undergoing PR.

Keywords: COPD; Chronic respiratory diseases; disability; outcomes.

Eur J Intern Med

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. 2024 Jul 22:S0953-6205(24)00315-7.

doi: 10.1016/j.ejim.2024.07.020. Online ahead of print.

Precision medicine in COPD: A possible contribution of vitamin D?

Gianluca Azzellino [1], Lia Ginaldi [2], Massimo De Martinis [3]

Affiliations expand

- PMID: 39043530

- DOI: 10.1016/j.ejim.2024.07.020

No abstract available

Conflict of interest statement

Declaration of competing interest The authors declare they have no conflict of interest.

supplementary info

Publication typesexpand

full text links

doi: 10.1183/23120541.00108-2024. eCollection 2024 Jul.

Physical capacity and inactivity in obstructive airway diseases: a "can do, do do" analysis

Paola D Urroz Guerrero [1 2 3], Hayley Lewthwaite [1 2 3], Peter G Gibson [1 3 4 5], Vanessa L Clark [1 2 3], Laura Cordova-Rivera [6 7], Vanessa M McDonald [1 2 3 4]

Affiliations expand

- PMID: 39040591
- PMCID: PMC11261380
- DOI: 10.1183/23120541.00108-2024

Abstract

Introduction: Physical capacity is an important determinant of physical activity in people with obstructive airway disease (OAD). This study aimed to extend the "can do, do do" concept in people with OAD, to identify if people categorised into quadrants based on physical capacity and activity differ by clinical and movement behaviour characteristics.

Methods: A total of 281 participants (bronchiectasis n=60, severe asthma n=93, COPD n=70 and control n=58) completed assessments to characterise physical capacity as "can do" *versus* "can't do" (6-min walk distance < or ≥70% pred) and physical activity as "do do" *versus* "don't do" (accelerometer-derived moderate to vigorous intensity physical activity (MVPA) < or ≥150 min·week^{-1}).

Results: The control group had a greater proportion of people in the "can do, do do" quadrant compared with the OAD groups (76% *versus* 10-33%). People with OAD in the "can't do, don't do" quadrant had worse clinical characteristics (airflow limitation, comorbidities, quality of life and functional dyspnoea) and spent less time doing light-intensity physical activity (LPA) and more time being sedentary compared with the "can do, do do" quadrant.

Discussion: This study highlights that many people with OAD may be inactive because they do not have the physical capacity to participate in MVPA, which is further impacted by greater disease severity. It is important to consider the potential benefits of addressing LPA and sedentary behaviour due to suboptimal levels of these movement behaviours across different quadrants. Future research is needed to investigate if tailoring intervention approaches based on quadrant allocation is effective in people with OAD.

Conflict of interest statement

Conflict of interest: P.D. Urroz Guerrero declares no conflict of interest. H. Lewthwaite reports consulting fees from Boehringer Ingelheim, grants from HMRI and Diabetes Australia, speaking fees from Lung Foundation Australia, TSANZ,

Exercise and Sports Science Australia, and European Respiratory Society, and shares in 4DMedical, outside the submitted work. P.G. Gibson reports personal fees from AstraZeneca, GlaxoSmithKline and Novartis, grants from AstraZeneca and GlaxoSmithKline, outside the submitted work. V.L. Clark declares no conflict of interest. Laura Cordova-Rivera declares no conflict of interest. V.M. McDonald reports speaker and advisory board fees from AstraZeneca, GlaxoSmithKline and Boehringer Ingelhiem, and other grants from AstraZeneca, GlaxoSmithKline and Cyclomedica, outside the submitted work.

- 47 references
- 5 figures

17

Review

ERJ Open Res

. 2024 Jul 22;10(4):00139-2024.

doi: 10.1183/23120541.00139-2024. eCollection 2024 Jul.

Antitrypsin deficiency: still more to learn about the lung after 60 years

Robert A Stockley [1], David G Parr [2]

Affiliations expand

- PMID: 39040588
- PMCID: PMC11261379
- DOI: 10.1183/23120541.00139-2024

Abstract

The past 60 years have seen multiple publications related to lung disease in α_1-antitrypsin deficiency largely reflecting the pathophysiology, biochemical effect and outcomes of augmentation therapy. However, the complexity of disease phenotype and the impact of the natural history presents problems of patient management, study design and hence interpretation of outcome. Although many national and some international registries exist, the lack of consistent in-depth assessment and importantly, the impact of augmentation therapy likely influences our perception of the true natural history. Development of new therapeutic strategies, and even assessment of the role and efficacy of augmentation, remain a challenge as powering such studies for conventional COPD outcomes is impractical due to relative rarity of the genetic condition and the presence of clinical phenotypic variation. The current review approaches these issues, discusses the nature and complexity of assessing patient variability, and provides guidance on further studies required to address them.

Conflict of interest statement

Conflict of interest: R.A. Stockley reports a grant for an investigator-led biomarker project from CSL Behring and a PhD studentship from Mereo Biopharma; consulting advice for Mereo Biopharma, Vertex and CSL Behring; an honorarium for an educational lecture from GSK; has acted as a data safety monitoring board (DSMB) chair for Kamada and a DSMB member for Aramata; and has received a therapeutic agent for in vitro studies from Mereo Biopharma, all in the past 36 months. Conflict of interest: D.G. Parr reports consulting fees from Mereo Biopharma in the past 36 months.

- **73 references**
- **5 figures**

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ERJ Open Res

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. 2024 Jul 22;10(4):00087-2024.

doi: 10.1183/23120541.00087-2024. eCollection 2024 Jul.

Increased bronchiectasis risk and related risk factors in inflammatory bowel disease: a 10-year Korean national cohort study

Jun Su Lee [1 2], Bumhee Yang [3 2], Hye Soon Shin [4], Heajung Lee [5], Hyun Gyung Chai [6], Hayoung Choi [7], Joung-Ho Han [1], Jai Hoon Yoon [8], Eung-Gook Kim [9], Hyun Lee [10]

Affiliations expand

- PMID: 39040586
- PMCID: PMC11261352
- DOI: 10.1183/23120541.00087-2024

Abstract

Background: The association between inflammatory bowel disease (IBD) and an increased risk of bronchiectasis, as well as contributing factors, remains unclear. Additionally, whether bronchiectasis increases disease burden in IBD remains unknown. Therefore, this study aimed to: 1) assess whether IBD increases the risk of incident bronchiectasis; 2) compare the risk of bronchiectasis between individuals with Crohn's disease (CD) and those with ulcerative colitis (UC); 3) identify risk factors for bronchiectasis in individuals with IBD; and 4) examine the disease burden in individuals with IBD and bronchiectasis *versus* those without.

Methods: We conducted a population-based matched cohort study involving adults aged ≥20 years with IBD, using data acquired from the Korean National Health Insurance Service-National Sample Cohort database between 2002 and 2012.

Results: During the mean follow-up of 9.6 years, the incidence rate of bronchiectasis was 419.63 out of 100 000 person-years (PY) and 309.65 out of 100 000 PY in the IBD and matched cohorts (adjusted hazard ratio (aHR) 1.21, 95% CI 1.05-1.39), respectively. UC was associated with increased bronchiectasis risk (aHR 1.42, 95% CI 1.19-1.69), but CD was not. Multivariate Cox regression analyses showed that age, male sex, medical aid, underweight status, COPD and diabetes mellitus were associated with an increased risk of bronchiectasis in the IBD cohort ($p<0.05$). The mortality, emergency department visit and hospitalisation rates were significantly higher for individuals with IBD and bronchiectasis compared with those without bronchiectasis ($p<0.05$).

Conclusion: IBD is associated with increased risk of bronchiectasis, which results in a greater disease burden in individuals with IBD.

Conflict of interest statement

Conflict of interest: J.S. Lee, B. Yang, H.S. Shin, H. Lee, H.G. Chai, H. Choi, J-H. Han, J.H. Yoon, E-G. Kim and H. Lee have no conflicts of interest to declare.

- 45 references
- 3 figures

19

ERJ Open Res

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. 2024 Jul 22;10(4):00968-2023.

doi: 10.1183/23120541.00968-2023. eCollection 2024 Jul.

Enhancing COPD classification using combined quantitative computed tomography and texture-based radiomics: a CanCOLD cohort study

Kalysta Makimoto [1], James C Hogg [2], Jean Bourbeau [3 4], Wan C Tan [2], Miranda Kirby [1 2]; CanCOLD Collaborative Research Group

Affiliations expand

- PMID: 39040582
- PMCID: PMC11261383
- DOI: 10.1183/23120541.00968-2023

Abstract

Background: Recent advances in texture-based computed tomography (CT) radiomics have demonstrated its potential for classifying COPD.

Methods: Participants from the Canadian Cohort Obstructive Lung Disease (CanCOLD) study were evaluated. A total of 108 features were included: eight quantitative CT (qCT), 95 texture-based radiomic and five demographic features. Machine-learning models included demographics along with texture-based radiomics and/or qCT. Combinations of five feature selection and five classification methods were evaluated; a training dataset was used for feature selection and to train the models, and a testing dataset was used for model evaluation. Models for classifying COPD status and severity were evaluated using the area under the receiver operating characteristic curve (AUC) with DeLong's test for comparison. SHapely Additive exPlanations (SHAP) analysis was used to investigate the features selected.

Results: A total of 1204 participants were evaluated (n=602 no COPD; n=602 COPD). There were no differences between the groups for sex (p=0.77) or body mass index (p=0.21). For classifying COPD status, the combination of demographics, texture-based radiomics and qCT performed better (AUC=0.87) than the combination of demographics and texture-based radiomics (AUC=0.81, p<0.05) or qCT alone (AUC=0.84, p<0.05). Similarly, for classifying COPD severity, the combination of demographics, texture-based radiomics and qCT performed better (AUC=0.81) than demographics and texture-based radiomics (AUC=0.72, p<0.05) or qCT alone (AUC=0.79, p<0.05). Texture-based radiomics and qCT features were among the top five features selected (15th percentile of the CT density histogram, CT total airway count, pack-years, CT grey-level distance zone matrix zone distance entropy, CT low-attenuation clusters) for classifying COPD status.

Conclusion: Texture-based radiomics and conventional qCT features in combination improve machine-learning models for classification of COPD status and severity.

Conflict of interest statement

Conflict of interest: We would like to note that there is no overlap with our study and other previously published CanCOLD studies. Further, there are no conflicts of interest or industry support in relation to this project for any of the authors. M. Kirby is a consultant for VIDA Diagnostics Inc. (Coralville, IA, USA).

- **35 references**
- **5 figures**

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. 2024 Jul 22;10(4):00064-2024.

doi: 10.1183/23120541.00064-2024. eCollection 2024 Jul.

Lung cancer among outpatients with COPD: a 7-year cohort study

Margrethe Bang Henriksen [1 2], Torben Frøstrup Hansen [1 2], Lars Henrik Jensen [1], Claus Lohman Brasen [2 3], Morten Borg [4], Ole Hilberg [2 4], Anders Løkke [2 4]

Affiliations expand

- PMID: 39040576
- PMCID: PMC11261374
- DOI: 10.1183/23120541.00064-2024

Abstract

Introduction: Lung cancer (LC) is the most common cause of cancer-related deaths worldwide, and its prognosis upon metastasis remains poor. Patients with COPD face a significantly elevated LC risk, up to six times greater than those with normal lung function. We aimed to investigate LC prevalence and stage distribution among COPD outpatients. Furthermore, we aimed to outline the COPD-related variables associated with referral for LC examination.

Methods: We conducted a retrospective analysis encompassing the period from 1 January 2012 to 31 December 2018 on all outpatients with COPD and LC and individuals referred for LC examinations.

Results: Among all COPD outpatients, 2231 patients (18%) were referred for LC examinations and 565 (4.6%) were diagnosed with LC. LC patients with COPD were more likely to be stage I-II, in contrast to the non-COPD LC population (46% *versus* 26%, p<0.001 for all). Patients referred for LC examinations exhibited higher use of COPD-related medications, reported more severe dyspnoea (69% *versus* 66% with Medical Research Council dyspnoea score >2) and experienced a greater frequency of exacerbations (30% *versus* 24% with two or more exacerbations).

Conclusion: Our study revealed a notably high LC incidence among COPD outpatients. LC patients with COPD were diagnosed at earlier stages, and

outpatients with more pronounced COPD symptoms were more inclined to undergo LC diagnostics. The overrepresentation of LC cases among COPD outpatients emphasises the importance of tailoring specific screening initiatives for this demographic.

Conflict of interest statement

Conflict of interest: The authors have nothing to disclose.

- 38 references
- 4 figures

full text links

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

Review

Hormones (Athens)

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. 2024 Jul 26.

doi: 10.1007/s42000-024-00587-2. Online ahead of print.

Testosterone therapy for functional hypogonadism in middle-aged and elderly males: current evidence and future perspectives

Nikolaos Theodorakis [1 2], Georgios Feretzakis [3], Georgia Vamvakou [1], Vassilios S Verykios [4], Antonis Polymeris [5], Maria Nikolaou [1]

Affiliations expand

- PMID: 39060901

- DOI: 10.1007/s42000-024-00587-2

Abstract

Population aging is a global phenomenon driving research focus toward preventing and managing age-related disorders. Functional hypogonadism (FH) has been defined as the combination of low testosterone levels, typically serum total testosterone below 300-350 ng/dL, together with manifestations of hypogonadism, in the absence of an intrinsic pathology of the hypothalamic-pituitary-testicular (HPT) axis. It is usually seen in middle-aged or elderly males as a product of aging and multimorbidity. This age-related decline in testosterone levels has been associated with numerous adverse outcomes. Testosterone therapy (TTh) is the mainstay of treatment for organic hypogonadism with an identifiable intrinsic pathology of the HPT axis. Current guidelines generally make weak recommendations for TTh in patients with FH, mostly in the presence of sexual dysfunction. Concerns about long-term safety have historically limited TTh use in middle-aged and elderly males with FH. However, recent randomized controlled trials and meta-analyses have demonstrated safe long-term outcomes regarding prostatic and cardiovascular health, together with decreases in all-cause mortality and improvements in various domains, including sexual function, body composition, physical strength, bone density, and hematopoiesis. Furthermore, there are numerous insightful studies suggesting additional benefits of TTh, for instance in cardio-renal-metabolic conditions. Specifically, future trials should investigate the role of TTh in improving symptoms and prognosis in various clinical contexts, including sarcopenia, frailty, dyslipidemia, arterial hypertension, diabetes mellitus, fracture risk, heart failure, stable angina, chronic kidney disease, mood disorders, and cognitive dysfunction.

Keywords: Aging; Benefits; Functional hypogonadism; Late-onset hypogonadism; Safety; Testosterone therapy.

- **110 references**

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Am J Hypertens

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. 2024 Jul 26:hpae098.

doi: 10.1093/ajh/hpae098. Online ahead of print.

State-of-the-Art Review for the American Journal of Hypertension Cardio-Rheumatology insights into hypertension: Intersection of inflammation, arteries, and heart

Shadi Akhtari [1 2 3], Paula J Harvey [1 2 3], Lihi Eder [4 2 3]

Affiliations expand

- PMID: 39056266

- DOI: 10.1093/ajh/hpae098

Abstract

There is an increased prevalence of atherosclerotic cardiovascular disease (ASCVD) in patients with inflammatory rheumatic diseases (IRD) including rheumatoid arthritis, systemic lupus erythematosus, psoriatic arthritis, and systemic sclerosis. The mechanism for development of ASCVD in these conditions has been linked not only to a higher prevalence and undertreatment of traditional cardiovascular (CV) risk factors, but importantly to chronic inflammation and a dysregulated immune system which contribute to impaired endothelial and microvascular function, factors that may contribute to accelerated atherosclerosis. Accurate ASCVD risk stratification and optimal risk management remains challenging in this population with many barriers that include lack of validated risk calculators, the remitting and relapsing nature of underlying disease, deleterious effect of medications used to manage rheumatic diseases, multimorbidity, decreased mobility due to joint pain, and lack of clarity about who bears the responsibility of performing CV risk assessment and management (rheumatologist vs primary care provider vs cardiologist). Despite recent advances in this field, there remains significant gaps in knowledge regarding the best diagnostic and management approach. The evolving field of Cardio-Rheumatology focuses on optimization of cardiovascular care and research in this patient population through collaboration and coordination of care between rheumatologists, cardiologists, radiologists, and primary care providers. This review aims to provide an overview of current state of knowledge about ASCVD risk stratification in patients with IRD, contributing factors including effect of medications, and review of the current recommendations for cardiovascular risk management in patients with inflammatory disease with a focus on hypertension as a key risk factor.

Keywords: Atherosclerotic Cardiovascular Risk; Cardio-Rheumatology; Hypertension; Inflammation; Inflammatory Rheumatic Diseases.

3

Diabetes Obes Metab

. 2024 Jul 23.

doi: 10.1111/dom.15777. Online ahead of print.

Glucagon-like peptide-1 receptor agonists in adolescents with overweight or obesity with or without type 2 diabetes multimorbidity-a systematic review and network meta-analysis

Muhammad Aaqib Shamim [# 1], Amol N Patil [# 2], Ulfat Amin [# 3], Tuli Roy [4], Krishna Tiwari [1], Noor Husain [5], Jogender Kumar [6], Santenna Chenchula [7], Priyanka Rao [8], Venkata Ganesh [9], Shoban Babu Varthya [1], Surjit Singh [1], Ravindra Shukla [10], Ashu Rastogi [11], Aravind P Gandhi [12], Prakisini Satapathy [13 14], Ranjit Sah [15 16 17], Bijaya Kumar Padhi [18], Pradeep Dwivedi [1 19], Kamlesh Khunti [20 21]

Affiliations expand

- PMID: 39044306

- DOI: 10.1111/dom.15777

Abstract

Aim: To synthesize the evidence on the effects of glucagon-like peptide-1 receptor agonists (GLP-1RAs) in adolescents with overweight or obesity.

Materials and methods: For this systematic review and network meta-analysis, we searched five databases and registries until 2 March 2024 for eligible randomized controlled trials (RCTs). The primary outcome was weight change. We did a pairwise meta-analysis to compare GLP-1RAs and placebo, followed by a drug-wise network meta-analysis (NMA) to compare GLP-1RAs against each other.

Results: We screened 770 records to include 12 RCTs with 883 participants. The evidence suggests that GLP-1RAs reduced weight (mean difference -4.21 kg, 95% confidence interval [CI] -7.08 to -1.35) and body mass index (BMI; mean difference -

2.11 kg/m^2, 95% CI -3.60 to -0.62). The evidence on waist circumference, body fat percentage and adverse events (AEs) was very uncertain. The results remained consistent with subgroup analyses for coexisting type 2 diabetes. Longer therapy duration led to a greater reduction in weight and BMI. In the NMA, semaglutide led to the greatest weight reduction, followed by exenatide, liraglutide and lixisenatide.

Conclusions: The evidence suggests that GLP-1RAs reduce most weight-related outcomes in adolescents, with semaglutide being the most efficacious. There is uncertain evidence on body fat and serious AEs, probably due to fewer studies and low incidence, respectively. Larger RCTs with head-to-head comparisons, pragmatic design, adiposity-related outcomes, and economic evaluation can further guide the use and choice of GLP-1RAs.

Keywords: adolescent/teen; glucagon-like peptide-1 receptor agonists; metabolic control; overweight; weight loss.

- **80 references**

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Published Erratum

BMJ Open

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. 2024 Jul 23;14(7):e063216corr1.

doi: 10.1136/bmjopen-2022-063216corr1.

Correction: Prevalence of multimorbidity and its associations with hospitalisation or death in Japan 2014-2019: a retrospective cohort study using nationwide medical claims data in the middle-aged generation

No authors listed

- **PMID: 39043601**

- DOI: 10.1136/bmjopen-2022-063216corr1

Free article

No abstract available

Erratum for

- Prevalence of multimorbidity and its associations with hospitalisation or death in Japan 2014-2019: a retrospective cohort study using nationwide medical claims data in the middle-aged generation.

Saito Y, Igarashi A, Nakayama T, Fukuma S.BMJ Open. 2023 May 9;13(5):e063216. doi: 10.1136/bmjopen-2022-063216.PMID: 37160390 Free PMC article.

supplementary info

Publication typesexpand

full text links

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

1

Ann Med

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. 2024 Dec;56(1):2382377.

doi: 10.1080/07853890.2024.2382377. Epub 2024 Jul 25.

Relationship between fraction of exhaled nitric oxide and peripheral eosinophilia in asthma

Jane S Afriyie-Mensah [1], Philemon Domoyeri [2], Charles Antwi-Boasiako [2], Robert Aryee [2], Gifty B Dankwah [2], Mabel Ntiamoah [3], Bartholomew Dzudzor [4], Yaw Kusi-Mensah [2 5], Charles F Hayfron-Benjamin [2 5]

Affiliations expand

- PMID: 39051101

- DOI: 10.1080/07853890.2024.2382377

Abstract

Background: Achieving disease control is the goal of asthma management. Serum or sputum eosinophil counts have been known traditional means of assessing eosinophilic airway inflammation in asthma, which is vital in predicting response to corticosteroid therapy which ultimately promotes control of the disease. Evidence suggests that fraction of exhaled nitric oxide (FeNO) may be a more useful non-invasive surrogate biomarker for the assessment of eosinophilic airway inflammation and could help with the timely adjustment of inhaled corticosteroid therapy in the uncontrolled asthma patient. The relationship between FeNO and other markers of airway inflammation has been variable in literature, with limited data in sub-Saharan Africa where FeNO testing is very sparse. We sought to define the relationship between FeNO levels, serum eosinophil counts, spirometry measures and symptom control among asthma patients.

Materials and methods: The study was conducted at the Asthma Clinic of a large tertiary hospital. This study included 82 patients with physician-diagnosed asthma being regularly managed at the clinic. All participants were taken through the asthma control test (ACT), had FeNO and spirometry measurements taken according to the American Thoracic Society (ATS) guidelines. Blood samples were obtained from all participants for serum eosinophil counts. Correlation coefficient was used to ascertain the relationship between FeNO levels and serum eosinophil counts, ACT scores, and spirometry measurements. Logistic regression was used to examine the association between high FeNO and abnormal FEV_1 percentage predicted (<80%) with adjustments for age, sex, and BMI.

Results: A total of 82 patients with asthma were included in the study, with higher prevalence of females (72%). Majority (40.2%) of the patients were found in the 60 and above age category. The median FeNO level and ACT score was 42.00 (26.00-52.50) parts per billion (ppb) and 20.0 (18-23) respectively. The median serum eosinophil counts was 0.25(0.90-0.38) × 10^9/L. The median FeNO levels were significantly higher in patients with partly and very poorly controlled asthma than in the well-controlled group ($p < 0.001$). A total of 47(57%) of the patients were classified as having well controlled asthma and 35 (42%) uncontrolled. FeNO correlated with serum eosinophil counts ($r = 0.450$, $p < 0.001$), ACT ($r = -0.648$, $p < 0.001$), and FEV1 percentage predicted ($r = -0.353$, $p = 0.001$). High FeNO (>50 ppb) was associated with an over fivefold increased risk of having an abnormal FEV_1 percentage predicted.

Conclusion: FeNO levels significantly correlated with the ACT scores, serum eosinophil counts and FEV1% predicted among the asthma patients who were on inhaled corticosteroid therapy. High FeNO was significantly associated with abnormal FEV_1 percentage predicted. We suggest that the point of care assessment of FeNO is a reliable marker of eosinophilic inflammation in our cohort of patients and together with 'ACT scores' in our asthma clinics could increase asthma control rates.

Keywords: Asthma; asthma control test; eosinophil counts; fraction of exhaled nitric oxide; lung function.

supplementary info

MeSH terms, Substancesexpand

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Comment

Br J Gen Pract

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. 2024 Jul 25;74(745):347.

doi: 10.3399/bjgp24X739281. Print 2024 Aug.

Asthma deaths in children in the UK: the last straw!

Nigel J Masters [1]

Affiliations expand

- PMID: 39054102

- DOI: 10.3399/bjgp24X739281

No abstract available

Comment on

- Asthma deaths in children in the UK: the last straw!

Levy ML, Fleming L, Bush A.Br J Gen Pract. 2024 May 30;74(743):244-245. doi: 10.3399/bjgp24X738201. Print 2024 Jun.PMID: 38684376 Free PMC article. No abstract available.

supplementary info

Publication typesexpand

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3

Review

BMC Immunol

. 2024 Jul 26;25(1):50.

doi: 10.1186/s12865-024-00644-w.

Immunological factors, important players in the development of asthma

Yang Wang [1], Li Liu [2]

Affiliations expand

- PMID: 39060923

- DOI: 10.1186/s12865-024-00644-w

Abstract

Asthma is a heterogeneous disease, and its development is the result of a combination of factors, including genetic factors, environmental factors, immune dysfunction and other factors. Its specific mechanism has not yet been fully investigated. With the improvement of disease models, research on the pathogenesis of asthma has made great progress. Immunological disorders play an important role in asthma. Previously, we thought that asthma was mainly caused by an imbalance between Th1 and Th2 immune responses, but this theory cannot fully explain the pathogenesis of asthma. Recent studies have shown that T-cell subsets such as Th1 cells, Th2 cells, Th17 cells, Tregs and their cytokines contribute to asthma through different mechanisms. For the purpose of the present study, asthma was classified into distinct phenotypes based on airway inflammatory cells, such as eosinophilic asthma, characterized by predominant eosinophil aggregates, and neutrophilic asthma, characterized by predominant neutrophil aggregates. This paper will examine the immune mechanisms underlying different types of asthma,

and will utilize data from animal models and clinical studies targeting specific immune pathways to inform more precise treatments for this condition.

Keywords: Asthma; Imbalance; Immunologic; Monoclonal antibody.

- **94 references**

supplementary info

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Eur Respir J

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. 2024 Jul 26:2400512.

doi: 10.1183/13993003.00512-2024. Online ahead of print.

Benralizumab for allergic asthma: a randomised, double-blind, placebo-controlled, trial

Gail M Gauvreau [1], Roma Sehmi [2], J Mark FitzGerald [3 4], Richard Leigh [5], Donald W Cockcroft [6], Beth E Davis [6], Irvin Mayers [7], Louis-Philippe Boulet [8], Dhuha Al-Sajee [2], Brittany M Salter [2], Ruth Cusack [2], Terence Ho [2], Christiane Whetstone [2], Nadia Alsaji [2], Imran Satia [2], Kieran J Killian [2], Patrick D Mitchell [9], Iain P Magee [6], Celine Bergeron [3], Mohit Bhutani [7], Viktoria Werkström [10], Tomasz Durżyński [11], Kathryn Shoemaker [12], Rohit K Katial [13], Maria Jison [12], Paul Newbold [12], Christopher McCrae [11], Paul M O'Byrne [2]

Affiliations expand

- **PMID: 39060015**

- **DOI: 10.1183/13993003.00512-2024**

Abstract

Rationale and objective: Benralizumab induces rapid and near-complete depletion of eosinophils from blood and lung tissue. We investigated whether benralizumab could attenuate allergen-induced late asthmatic responses (LAR) in participants with allergic asthma.

Methods and measurements: Participants with allergic asthma who demonstrated increased sputum eosinophils and LAR at screening were randomised to benralizumab 30 mg or matched placebo given every 4 weeks for 8 weeks (3 doses). Allergen challenges were performed at weeks 9 and 12 when blood, sputum, bone marrow and bronchial tissue eosinophils and LAR were assessed.

Main results: Forty-six participants (mean age, 30.9 years) were randomised to benralizumab (*n* = 23) or placebo (*n* = 23). Eosinophils were significantly reduced in the benralizumab group compared with placebo in blood at 4 weeks and sputum and bone marrow at 9 weeks after treatment initiation. At 7 h after an allergen challenge at week 9, sputum eosinophilia was significantly attenuated in the benralizumab group compared to placebo (least squares mean difference -5.81% [95% CI, -10.69, -0.94]; *P* = 0.021); however, the LAR was not significantly different (least squares mean difference 2.54% [95% CI, 3.05, 8.12]; *P* = 0.363). Adverse events were reported for 7 (30.4%) and 14 (60.9%) participants in the benralizumab and placebo groups, respectively.

Conclusion: Benralizumab administration over 8 weeks resulted in a significant attenuation of blood, bone marrow and sputum eosinophilia in participants with mild allergic asthma; however, there was no change in the LAR, suggesting that eosinophils alone are not a key component of allergen-induced bronchoconstriction.

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PLoS One

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. 2024 Jul 26;19(7):e0308109.

doi: 10.1371/journal.pone.0308109. eCollection 2024.

Effects of using wearable devices to monitoring physical activity in pulmonary rehabilitation programs for chronic respiratory diseases: A systematic review protocol

Thaianne Rangel Agra Oliveira [1], Ana Tereza do Nascimento Sales Figueiredo Fernandes [2], Thayla Amorim Santino [2], Fernanda Elizabeth Pereira da Silva Menescal [3], Patrícia Angélica de Miranda Silva Nogueira [1]

Affiliations expand

- PMID: 39058745

- DOI: 10.1371/journal.pone.0308109

Abstract

Introduction: Pulmonary rehabilitation (PR) is an intervention aimed at the comprehensive care of individuals with chronic respiratory diseases. Patients with chronic obstructive pulmonary disease (COPD) and asthma present low levels of physical fitness because they avoid physical exercises due to the fear of triggering recurrent symptoms. Wearable devices have been integrated into behavioral modification interventions for physical activity in PR protocols. Therefore, this review aims to identify how wearable devices are being utilized for monitoring chronic respiratory diseases in pulmonary rehabilitation programs.

Methods and analysis: Searches will be conducted on Medline, Cochrane Central Register of Controlled Trials, Embase (CENTRAL), CINAHL and PEDro electronic databases, as well as a search in the grey literature. We will include baseline data from randomized clinical trials reporting the use of wearable devices for monitoring physical activity in protocols for pulmonary rehabilitation programs for chronic respiratory diseases. Studies that discuss only the development of algorithms or applications for the assessment of diseases or unavailable full texts will be excluded. The main reviewer will conduct the initial search and exclusion of duplicates, while two independent reviewers will select studies, extract data, and assess the methodological quality using the PEDro tool.

Prospero registration number: CRD42024504137.

Conflict of interest statement

The authors have declared that no competing interests exist.

6

Review

J Investig Allergol Clin Immunol

. 2024 Jul 26:0.

doi: 10.18176/jiaci.1012. Online ahead of print.

Role of Thymic Stromal Lymphopoietin in the Pathophysiology of Asthma and Clinical and Biological Effects of Blockade With Tezepelumab

C Venegas Garrido [1], P Nair [1], I Dávila [2 3 4], L Pérez de Llano [5 6]

Affiliations expand

- PMID: 39056463

- DOI: 10.18176/jiaci.1012

Abstract

The airway epithelium is the first line of defense of the respiratory system against the external environment. It plays an active role in the initiation of immune and allergic responses against potential hazards. Among the various specialized cells and cytokines that participate in epithelium-induced responses, alarmins are particularly interesting, given their ample role in mediating T2 and non-T2 inflammatory mechanisms involved in the pathogenesis of asthma. Thymic stromal lymphopoietin (TSLP) is an alarmin with broad effects in asthma that result from its widespread action on multiple cell types, including eosinophils, mast cells, dendritic cells, and group-2 innate lymphoid cells. Its role in allergy-mediated responses, eosinophilic inflammation, airway hyperresponsiveness, mucus hyperproduction, viral tolerance, and airway remodeling is of the utmost importance, as more comprehensive asthma assessments have been developed to explore these pathogenic features. Therefore, blockade with targeting molecules, such as monoclonal antibodies, has emerged as a promising therapeutic option, particularly in patients with multiple pathogenic pathways. In this review, we examine the roles of alarmins (mainly TSLP) in the pathogenesis of asthma and

clinical expression and discuss the effects of inhibiting TSLP on several inflammatory and clinical outcomes. We also review the literature supporting treatment with anti-TSLP biologics and the unanswered questions and unmet needs associated with targeting alarmins in asthma.

Keywords: Airway epithelium; Alarmins; Biologicals; Severe asthma; TSLP; Tezepelumab.

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Review

Eur Respir J

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. 2024 Jul 26:2400462.

doi: 10.1183/13993003.00462-2024. Online ahead of print.

Global herpes zoster burden in adults with asthma: a systematic review and meta-analysis

Kevin J Mortimer [1 2 3], Alvaro A Cruz [4], Ingrid T Sepúlveda-Pachón [5], Anamaria Jorga [6], Hilde Vroling [7], Charles Williams [8]

Affiliations expand

- PMID: 38901886

- DOI: 10.1183/13993003.00462-2024

Abstract

Background: Asthma is a common respiratory disease, which may be associated with an increased risk of herpes zoster (HZ), often a debilitating disease associated with severe pain. This was the first systematic review with the objective of summarizing evidence on HZ burden in adults with asthma.

Methods: A global systematic literature review (SLR) and meta-analysis was conducted (Medline and Embase, 2003-2024), on HZ burden (incidence, risk, complications) in adults (≥18 years) with asthma.

Results: There were 19 studies included on HZ outcomes in adults with asthma. Pooled HZ incidence per 1000 person-years was 5.71 (95% confidence interval [CI] 4.68-6.96) in ≥18-year-olds (4.20 [3.09-5.70] in <60-year-olds *versus* 10.33 [9.17-11.64] in ≥60-year-olds). The pooled rate ratio for developing HZ was 1.23 [1.11-1.35] in ≥18-year-olds, and 1.36 [1.15-1.61] in ≥50-year-olds. The risk of HZ was higher in people with asthma using systemic corticosteroids; long-acting beta-agonists plus inhaled corticosteroids; and "add-on therapy". Asthma was also associated with an increased risk of post-herpetic neuralgia (odds ratio, OR 1.21 [1.06-1.37]) and HZ ophthalmicus (OR 1.9 [1.1-3.2]).Differences in study design, setting, case definitions, and follow-up durations led to heterogeneity.

Conclusions: This SLR and meta-analysis found that adults with asthma have an increased risk of HZ, with higher risks in older age groups, and in those on certain treatments, such as oral corticosteroids. HZ vaccines are available for adults, including those with comorbidities such as asthma, and can be considered as part of integrated respiratory care.

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Eur Respir J

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. 2024 Jul 26:2400242.

doi: 10.1183/13993003.00242-2024. Online ahead of print.

Missing airways, ventilation defects and conductive airway physiology in asthma

Sylvia Verbanck [1], Rachel L Eddy [2], Marrissa J McIntosh [3], Grace Parraga [3 4], Brody H Foy [5]

Affiliations expand

- **PMID: 38843912**

- **DOI: 10.1183/13993003.00242-2024**

No abstract available

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Eur Respir J

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. 2024 Jul 26:2400404.

doi: 10.1183/13993003.00404-2024. Online ahead of print.

OPTIMAL: Titration of anti-IL5 biologics in severe asthma - An open label randomised controlled trial

Marianne Baastrup Soendergaard [1], Anne-Sofie Bjerrum [2], Linda Makowska Rasmussen [3], Sofie Lock-Johansson [4], Ole Hilberg [5], Susanne Hansen [6 7], Anna von Bulow [6], Celeste Porsbjerg [6]

Affiliations expand

- **PMID: 38843910**

- DOI: 10.1183/13993003.00404-2024

Abstract

Background: Anti-interleukin 5 (anti-IL5) biologics effectively reduce exacerbations and the need for maintenance oral corticosteroids (mOCS) in severe eosinophilic asthma. However, it is unknown how long anti-IL5 treatment should be continued. Data from clinical trials indicate a gradual but variable loss of control after treatment cessation. In this pilot study of titration, we evaluated a dose-titration algorithm in patients who had achieved clinical control on an anti-IL5 biologic.

Methods: In this open-label randomised controlled trial conducted over 52 weeks, patients with clinical control (no exacerbations or mOCS) on anti-IL5 treatment were randomised to continue with unchanged intervals or have dosing intervals adjusted according to a titration algorithm that gradually extended dosing intervals and reduced them again at signs of loss of disease control. The OPTIMAL algorithm was designed to down-titrate dosing until signs of loss of control, to enable assessment of the longest dosing interval possible.

Results: Among 73 patients enrolled, 37 patients were randomised to the OPTIMAL titration arm; 78% of patients tolerated down-titration of treatment. Compared to the control arm, the OPTIMAL arm tended to have more exacerbations during the study (32% *versus* 17% (p=0.13)). There were no severe adverse events related to titration, and lung function and symptoms scores remained stable and comparable in both study arms throughout.

Conclusions: This study serves as a proof-of-concept for titration of anti-IL5 biologics in patients with severe asthma with clinical control on treatment, and the OPTIMAL algorithm provides a potential framework for individualising dosing intervals in the future.

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Eur Respir J

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. 2024 Jul 26:2400169.

doi: 10.1183/13993003.00169-2024. Online ahead of print.

Genetic predisposition to high BMI increases risk of early life respiratory infections and episodes of severe wheeze and asthma

Signe Kjeldgaard Jensen [1], Casper-Emil Tingskov Pedersen [1], Kasper Fischer-Rasmussen [1], Mathias Elsner Melgaard [1], Nicklas Brustad [1], Julie Nyholm Kyvsgaard [1 2], Nilo Vahman [1], Ann-Marie Malby Schoos [1 2 3], Jakob Stokholm [1 2 4], Bo Chawes [1 3], Anders Eliasen [1 5 6 7], Klaus Bønnelykke [8 3 7]

Affiliations expand

- PMID: 38811044

- DOI: 10.1183/13993003.00169-2024

Abstract

Background: High BMI is an established risk factor for asthma, but the underlying mechanisms remain unclear.*Objective:* To increase understanding of the BMI-asthma relationship by studying the association between genetic predisposition to higher body mass index (BMI) and asthma, infections, and other asthma-traits during childhood.

Methods: Data was obtained from the two ongoing COPSAC mother-child cohorts. Polygenic risk score (PRS) for adult BMI were calculated for each child. Replication was done in the large-scale iPSYCH cohort using data on hospitalization for asthma and infections.

Results: In the COPSAC cohorts (n=974), the adult BMI PRS was significantly associated with lower respiratory tract infections (LRTI) (IRR 1.20 95% CI 1.08-1.33, FDR=0.005) age 0-3 years and episodes of severe wheeze (IRR 1.30, 1.06-1.60, FDR=0.04) age 0-6 years. LRTI partly mediated the association between the adult BMI PRS and severe wheeze (proportion mediated: 0.59, 0.28-2.24, pACME 2E-16). In contrast, these associations were not mediated through the child's current BMI and the PRS was not associated with an asthma diagnosis or reduced lung function up to age 18. The associations were replicated in iPSYCH (n=114 283), where the adult BMI PRS significantly increased the risk of hospitalizations for LRTI and wheeze or asthma during childhood to age 18 years.

Conclusion: Children with genetic predisposition to higher BMI had increased risk of LRTI and severe wheeze, independent of the child's current BMI. These results shed further light on the complex relationship between BMI and asthma.

Review

Eur Respir J

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. 2024 Jul 26:2300826.

doi: 10.1183/13993003.00826-2023. Online ahead of print.

Advances in Non-Type 2 Asthma in the Severe Cases: from molecular insights to novel treatment strategies

Tao Liu [1 2 3], Woodruff G Prescott [4], Xiaobo Zhou [5]

Affiliations expand

- PMID: 38697650

- DOI: 10.1183/13993003.00826-2023

Abstract

Asthma is a prevalent pulmonary disease that affects nearly 300 million people worldwide and imposes a substantial economic burden. While medication can effectively control symptoms in some patients, severe asthma attacks, driven by airway-inflammation induced by environmental and infectious exposures, continue to be a major cause of asthma-related mortality. Heterogenous phenotypes of asthma include type 2 (T2) and non-T2 asthma. Non-T2 asthma is often observed in patients with severe and/or steroid-resistant asthma. This review will cover the molecular mechanisms, clinical phenotypes, causes and promising treatment of non-T2 severe asthma. Specifically, we will discuss the signaling pathways for non-T2 asthma including the activation of inflammasomes, interferon responses, and IL-17 pathways, and their contributions to the subtypes, progression, and severity of non-T2 asthma. Understanding the molecular mechanisms and genetic determinants underlying non-T2 asthma could form the basis for precision medicine in severe asthma treatment.

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Clin Exp Allergy

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. 2024 Jul 25.

doi: 10.1111/cea.14548. Online ahead of print.

Asthma is Underdiagnosed and Often Uncontrolled in Preoperative Patients With Chronic Rhinosinusitis With Nasal Polyps

Emma Genberg [1], Paula Kauppi [1], Johanna Sahlman [2], Anu Laulajainen-Hongisto [3], Markus Lilja [3], Sari Hammarén-Malmi [3], Lena Hafrén [3], Antti Mäkitie [3], Seija Vento [3], Sanna Toppila-Salmi [4 5 6], Paula Virkkula [3]

Affiliations expand

- PMID: 39054578

- DOI: 10.1111/cea.14548

No abstract available

Keywords: asthma; asthma control; chronic rhinosinusitis with nasal polyps; comorbidity; endoscopic sinus surgery.

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13

Comment

Eur Respir J

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. 2024 Jul 25;64(1):2400628.

doi: 10.1183/13993003.00628-2024. Print 2024 Jul.

Mendelian randomisation supports no evidence of the association between asthma and coronary heart disease in East Asians

Jiawen Lu [1], Zhengian Wang [2]

Affiliations expand

- PMID: 39054043

- DOI: 10.1183/13993003.00628-2024

No abstract available

Conflict of interest statement

Conflict of interest: The authors have no potential conflicts of interest to disclose.

Comment on

- Asthma and incident coronary heart disease: an observational and Mendelian randomisation study.

Valencia-Hernández CA, Del Greco M F, Sundaram V, Portas L, Minelli C, Bloom CI.Eur Respir J. 2023 Nov 29;62(5):2301788. doi: 10.1183/13993003.01788-2023. Print 2023 Nov.PMID: 37945032 Free PMC article.

supplementary info

Publication types, MeSH termsexpand

full text links

14

Respirology

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. 2024 Jul 25.

doi: 10.1111/resp.14805. Online ahead of print.

The Olympics have arrived: The challenge of exercise-induced bronchoconstriction in athletes

John D Brannan [1], Martin R Lindley [2]

Affiliations expand

- PMID: 39053913

- DOI: 10.1111/resp.14805

No abstract available

Keywords: asthma; athletes; exercise-induced bronchoconstriction; indirect bronchial provocation tests; inhaled corticosteroids.

- 15 references

15

PLoS One

. 2024 Jul 25;19(7):e0307750.

doi: 10.1371/journal.pone.0307750. eCollection 2024.

Prostaglandin D2 receptor 2 downstream signaling and modulation of type 2 innate lymphoid cells from patients with asthma

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Affiliations expand

- PMID: 39052598

- DOI: 10.1371/journal.pone.0307750

Abstract

Increased production of Prostaglandin D2 (PGD2) is linked to development and progression of asthma and allergy. PGD2 is rapidly degraded to its metabolites, which initiate type 2 innate lymphoid cells (ILC2) migration and IL-5/IL-13 cytokine secretion in a PGD2 receptor 2 (DP2)-dependent manner. Blockade of DP2 has shown therapeutic benefit in subsets of asthma patients. Cellular mechanisms of ILC2 activity in response to PGD2 and its metabolites are still unclear. We hypothesized that ILC2 respond non-uniformly to PGD2 metabolites. ILC2s were isolated from peripheral blood of patients with atopic asthma. ILC2s were stimulated with PGD2 and four PGD2 metabolites (Δ12-PGJ2, Δ12-PGD2, 15-deoxyΔ12,14-PGD2, 9α,11β-PGF2) with or without the selective DP2 antagonist fevipiprant. Total RNA was sequenced, and differentially expressed genes (DEG) were identified by DeSeq2. Differential gene expression analysis revealed an upregulation of pro-inflammatory DEGs in ILC2s stimulated with PGD2 (14 DEGs), Δ12-PGD2 (27 DEGs), 15-deoxyΔ12,14-PGD2 (56 DEGs) and Δ12-PGJ2 (136 DEGs), but not with 9α,11β-PGF2. Common upregulated DEGs were i.e. ARG2, SLC43A2, LAYN, IGFLR1, or EPHX2. Inhibition of DP2 via fevipiprant mainly resulted in downregulation of pro-inflammatory genes such as DUSP4, SPRED2, DUSP6, ETV1, ASB2, CD38, ADGRG1, DDIT4, TRPM2, or CD69. DEGs were related to migration and various immune response-relevant pathways such as "chemokine (C-C motif) ligand 4 production", "cell migration", "interleukin-13 production", "regulation of receptor signaling pathway via JAK-STAT", or "lymphocyte apoptotic process", underlining the pro-inflammatory effects of PGD2 metabolite-induced immune responses in ILC2s as well as the anti-inflammatory effects of DP2 inhibition via fevipiprant. Furthermore, PGD2 and metabolites showed distinct profiles in ILC2 activation. Overall, these results expand our understanding of DP2 initiated ILC2 activity.

Conflict of interest statement

The authors have declared that no competing interests exist.

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Chronic Obstr Pulm Dis

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. 2024 Jul 25;11(4):427-435.

doi: 10.15326/jcopdf.2024.0509.

Improving Wildfire Readiness Among Patients With Chronic Obstructive Pulmonary Disease and Asthma: Applying a Population Health Approach to Climate Change

Brooks T Kuhn [1], Reshma Gupta [2 3]

Affiliations expand

- **PMID: 38838252**

- **DOI: 10.15326/jcopdf.2024.0509**

Free article

Abstract

As a result of climate change, wildfire frequency, duration, and severity are increasing in the United States. Exposure to wildfire-related air pollutants can lead

to negative health outcomes, particularly among patients with preexisting respiratory diseases (e.g., asthma and chronic obstructive pulmonary disease) and those who are at higher risk for developing these conditions. Underserved communities are disproportionately affected for multiple reasons, including lack of financial and social resources, increased exposure to air pollutants at home and at work, and impaired access to health care. To best serve clinically high-risk and underserved populations, health systems must leverage community public health data, develop and mobilize a wildfire preparedness action plan to identify populations at high risk, and implement interventions to mitigate the consequences of poor air quality. University of California, Davis Health, located at the epicenter of the largest wildfires in California's history, has developed the 5 pillar Wildfire Population Health Approach: (1) identify clinically at-risk and underserved patient populations using well-validated, condition-targeted registries; (2) assemble multidisciplinary care teams to understand the needs of these communities and patients; (3) create custom analytics and wildfire-risk stratification; (4) develop care pathways based on wildfire-risk tiers by disease, risk of exposure, and health care access; and (5) identify outcome measures tailored to interventions with a commitment to continuous, iterative improvement efforts. The Wildfire Population Health Approach provides an action plan for health systems and care teams to meet the needs of clinically at-risk and underserved patients affected by the increasing health threat posed by climate change-related wildfires.

Keywords: air pollution; alpha-1 antitrypsin deficiency; chronic obstructive pulmonary disease; climate change; wildfires.

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17

Review

J Leukoc Biol

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. 2024 Jul 25;116(2):288-296.

doi: 10.1093/jleuko/qiae100.

Eosinophil biology from the standpoint of metabolism: implications for metabolic disorders and asthma

Nana-Fatima Haruna [1], Sergejs Berdnikovs [1], Zhenying Nie [2]

Affiliations expand

- PMID: 38700084

- DOI: 10.1093/jleuko/qiae100

Abstract

Eosinophils, recognized for their immune and remodeling functions and participation in allergic inflammation, have recently garnered attention due to their impact on host metabolism, especially in the regulation of adipose tissue. Eosinophils are now known for their role in adipocyte beiging, adipokine secretion, and adipose tissue inflammation. This intricate interaction involves complex immune and metabolic processes, carrying significant implications for systemic metabolic health. Importantly, the interplay between eosinophils and adipocytes is bidirectional, revealing the dynamic nature of the immune-metabolic axis in adipose tissue. While the homeostatic regulatory role of eosinophils in adipose tissue is appreciated, this relationship in the context of obesity or allergic inflammation is much less understood. Mechanistic details of eosinophil-adipose interactions, especially the direct regulation of adipocytes by eosinophils, are also lacking. Another poorly understood aspect is the metabolism of the eosinophils themselves, encompassing metabolic shifts during eosinophil subset transitions in different tissue microenvironments, along with potential effects of host metabolism on the programming of eosinophil hematopoiesis and the resulting plasticity. This review consolidates recent research in this emerging and fascinating frontier of eosinophil investigation, identifying unexplored areas and presenting innovative perspectives on eosinophil biology in the context of metabolic disorders and associated health conditions, including asthma.

Keywords: adipocytes; asthma; eosinophils; metabolism; obesity.

Conflict of interest statement

Conflict of interest statement. All authors declare no conflict of interest.

supplementary info

Publication types, MeSH terms, Grants and fundingexpand

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18

J Leukoc Biol

. 2024 Jul 25;116(2):409-423.

doi: 10.1093/jleuko/qiae061.

Eosinophil expression of triggering receptor expressed on myeloid cells 1 (TREM-1) restricts type 2 lung inflammation

Jayden L Bowen [1 2 3], Kathy Keck [1], Sankar Baruah [1 4], Kathy H Nguyen [1 2], Andrew L Thurman [1], Alejandro A Pezzulo [1], Julia Klesney-Tait [1]

Affiliations expand

- PMID: 38547428

- DOI: 10.1093/jleuko/qiae061

Abstract

Asthma affects 25 million Americans, and recent advances in treatment are effective for only a portion of severe asthma patients. TREM-1, an innate receptor that canonically amplifies inflammatory signaling in neutrophils and monocytes, plays a central role in regulating lung inflammation. It is unknown how TREM-1 contributes to allergic asthma pathology. Utilizing a murine model of asthma, flow cytometry revealed TREM-1+ eosinophils in the lung tissue and airway during allergic airway inflammation. TREM-1 expression was restricted to recruited, inflammatory eosinophils. Expression was induced on bone marrow-derived eosinophils by incubation with interleukin 33, lipopolysaccharide, or granulocyte-macrophage colony-stimulating factor. Compared to TREM-1- airway eosinophils, TREM-1+ eosinophils were enriched for proinflammatory gene sets, including migration, respiratory burst, and cytokine production. Unexpectedly, eosinophil-specific ablation of TREM-1 exacerbated airway interleukin (IL) 5 production, airway MUC5AC production, and lung tissue eosinophil accumulation. Further investigation of transcriptional data revealed apoptosis and superoxide generation-related gene sets were enriched in TREM-1+ eosinophils. Consistent with these

findings, annexin V and caspase-3/7 staining demonstrated higher rates of apoptosis among TREM-1+ eosinophils compared to TREM-1- eosinophils in the inflammatory airway. In vitro, Trem1/3-/- bone marrow-derived eosinophils consumed less oxygen than wild-type in response to phorbol myristate acetate, suggesting that TREM-1 promotes superoxide generation in eosinophils. These data reveal protein-level expression of TREM-1 by eosinophils, define a population of TREM-1+ inflammatory eosinophils, and demonstrate that eosinophil TREM-1 restricts key features of type 2 lung inflammation.

Keywords: TREM-1; asthma; eosinophils; innate immunity.

Conflict of interest statement

Conflict of interest statement. None declared.

supplementary info

MeSH terms, Substancesexpand

full text links

Ali H Ziyab [1], Yaser Ali [2], Dina Zein [3], Manal Al-Kandari [4], John W Holloway [5], Wilfried Karmaus [6]

Affiliations expand

- PMID: 39049040

- DOI: 10.1186/s13223-024-00907-6

Abstract

Background: Associations between psoriasis and allergic diseases (asthma, rhinitis, and eczema) in children have been reported in a limited number of studies, and the association between psoriasis and multimorbidity (co-occurrence) of allergic diseases remains unclear. Hence, this study aimed to assess the association between psoriasis and the co-occurrence of asthma, rhinitis, and eczema in adolescents.

Methods: This school-based cross-sectional study enrolled adolescents (n = 3,864) aged 11-14 years. Parents completed a questionnaire on doctor-diagnosed psoriasis as well as symptoms and clinical history of asthma, rhinitis, and eczema. Eight nonoverlapping groups comprising single and co-occurring current (past 12 months) asthma, rhinitis, and eczema were identified. A multinomial logistic regression model was used to estimate the adjusted odds ratios (aOR) and 95% confidence intervals (CI).

Results: In the analytical sample (n = 3,710; 1,641 male and 2,069 female participants), 3.5% reported doctor-diagnosed psoriasis, and 15.7%, 15.0%, and 10.3% had current asthma, rhinitis, and eczema symptoms, respectively. Doctor-diagnosed psoriasis was associated with "asthma only" (aOR = 2.11, 95% CI: 1.15-3.89), "eczema only" (6.65, 4.11-10.74), "asthma + eczema" (5.25, 2.36-11.65), "rhinitis + eczema" (3.60, 1.07-12.15), and "asthma + rhinitis + eczema" (7.38, 2.93-18.58). Doctor-diagnosed psoriasis was not statistically significantly associated with "rhinitis only" (1.42, 0.71--2.84) and "asthma + rhinitis" (1.78, 0.69-4.56).

Conclusion: Our findings indicate that psoriasis is associated with the co-occurrence of allergic diseases among adolescents. However, further studies are required to investigate which biological mechanisms may be shared between psoriasis and allergic diseases.

Keywords: Adolescents; Asthma; Eczema; Multimorbidity; Psoriasis; Rhinitis.

- 51 references

supplementary info

Grants and fundingexpand

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Respir Care

. 2024 Jul 24;69(8):975-981.

doi: 10.4187/respcare.11478.

Pulmonologist Education of the Teach-to-Goal Inhaler Technique for Those With Asthma and COPD

Vaishali Mehta [1], Najia Sayedy [2], Joshua Fogel [3], Eric Lam [4], Pratap Upadrista [4], Bruno Okoro [4], Hira Tahir [4], Jagadish Akella [2]

Affiliations expand

- PMID: 38688545

- DOI: 10.4187/respcare.11478

Abstract

Background: Inhaler education for patients with asthma and patients with COPD is typically provided by non-pulmonologists. We studied inhaler education by pulmonologists to determine changes in clinical outcomes and inhaler use.

Methods: This was a retrospective study of 296 subjects diagnosed with asthma, COPD, or both that evaluated use of inhaler technique education and its impact on (1) inhaler/dosage change consisting of dosage change in the same class of inhaler and/or change in number of inhalers, (2) forced expiratory volume in one second/forced vital capacity (FEV_1/FVC%), (3) disease symptom control, (4) out-patient visits, (5) urgent care visits (6) emergency department visits, and (7) hospital admissions. One group received inhaler technique education by a pulmonologist while the other group did not.

Results: The pulmonologist inhaler technique-educated group had significantly decreased relative risk for inhaler/dosage increase (relative risk 0.57 [95% CI 0.34-0.96], *P* = .03) and significantly increased odds for symptom control (odds ratio 2.15 [95% CI 1.24-3.74], *P* = .01) at 1-y follow-up as compared to the no education group. No differences occurred for FEV_1/FVC%, out-patient visits, urgent care visits, emergency department visits, and hospital admissions.

Conclusions: Pulmonologist education of inhaler technique for patients with asthma and patients with COPD was associated with decreased relative risk for inhaler/dosage increase and increased odds for symptom control. We recommend pulmonologists provide education of inhaler technique to patients with asthma and patients with COPD and not rely on non-pulmonologist education alone. Prospective research is needed to confirm the importance of proper inhaler techniques.

Keywords: COPD; asthma; education; nebulizers and vaporizers; pulmonologists.

Conflict of interest statement

The authors have disclosed no conflicts of interest.

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MeSH terms, Substancesexpand

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Pediatr Pulmonol

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. 2024 Jul 23.

doi: 10.1002/ppul.27183. Online ahead of print.

Machine learning-enhanced HRCT analysis for diagnosis and severity assessment in pediatric asthma

Maria De Filippo [1 2], Salvatore Fasola [3], Federica De Matteis [4], Maria Sole Prevedoni Gorone [5], Lorenzo Preda [4 5], Martina Votto [1 2], Velia Malizia [3], Gian Luigi Marseglia [1 2], Stefania La Grutta [3], Amelia Licari [1 2]

Affiliations expand

- **PMID: 39041906**

- DOI: 10.1002/ppul.27183

Abstract

Objectives: Chest high-resolution computed tomography (HRCT) is conditionally recommended to rule out conditions that mimic or coexist with severe asthma in children. However, it may provide valuable insights into identifying structural airway changes in pediatric patients. This study aims to develop a machine learning-based chest HRCT image analysis model to aid pediatric pulmonologists in identifying features of severe asthma.

Methods: This retrospective case-control study compared children with severe asthma (as defined by ERS/ATS guidelines) to age- and sex-matched controls without asthma, using chest HRCT scans for detailed imaging analysis. Statistical analysis included classification trees, random forests, and conventional ROC analysis to identify the most significant imaging features that mark severe asthma from controls.

Results: Chest HRCT scans differentiated children with severe asthma from controls. Compared to controls (n = 21, mean age 11.4 years), children with severe asthma (n = 20, mean age 10.4 years) showed significantly greater bronchial thickening (BT) scores ($p < 0.001$), airway wall thickness percentage (AWT%, $p < 0.001$), bronchiectasis grading (BG) and bronchiectasis severity (BS) scores ($p = 0.016$), mucus plugging, and centrilobular emphysema ($p = 0.009$). Using AWT% as the predictor in conventional ROC analysis, an AWT% ≥ 38.6 emerged as the optimal classifier for discriminating severe asthmatics from controls, with 95% sensitivity, specificity, and overall accuracy.

Conclusion: Our study demonstrates the potential of machine learning-based analysis of chest HRCT scans to accurately identify features associated with severe asthma in children, enhancing diagnostic evaluation and contributing to the development of more targeted treatment approaches.

Keywords: Children; artificial intelligence; chest high-resolution computed tomography; machine learning; severe asthma.

- 28 references

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Review

Expert Rev Respir Med

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. 2024 Jul 23:1-14.

doi: 10.1080/17476348.2024.2380072. Online ahead of print.

Type 2 severe asthma: pathophysiology and treatment with biologics

Corrado Pelaia [1], James Melhorn [2], Timothy Sc Hinks [2], Simon Couillard [3], Alessandro Vatrella [4], Girolamo Pelaia [5], Ian D Pavord [2]

Affiliations expand

- PMID: 38994712

- DOI: 10.1080/17476348.2024.2380072

Abstract

Introduction: The hallmark of most patients with severe asthma is type 2 inflammation, driven by innate and adaptive immune responses leading to either allergic or non-allergic eosinophilic infiltration of airways. The cellular and molecular pathways underlying severe type 2 asthma can be successfully targeted by specific monoclonal antibodies.

Areas covered: This review article provides a concise overview of the pathophysiology of type 2 asthma, followed by an updated appraisal of the mechanisms of action and therapeutic efficacy of currently available biologic treatments used for management of severe type 2 asthma. Therefore, all reported information arises from a wide literature search performed on PubMed.

Expert opinion: The main result of the recent advances in the field of anti-asthma biologic therapies is the implementation of a personalized medicine approach, aimed to achieve clinical remission of severe asthma. Today this accomplishment is made possible by the right choice of the most beneficial biologic drug for the pathologic traits characterizing each patient, including type 2 severe asthma and its comorbidities.

Keywords: Anti-IgE; Anti-TSLP; Type 2 severe asthma; anti-IL-4/13 receptors; anti-IL-5 and anti-IL-5 receptor; proinflammatory cytokines.

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J Asthma

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. 2024 Jul 23:1-8.

doi: 10.1080/02770903.2024.2376919. Online ahead of print.

SANI clinical remission definition: a useful tool in severe asthma management

Giorgio Walter Canonica [1 2], Diego Bagnasco [3 4], Benedetta Bondi [3 4], Gilda Varricchi [5 6 7 8], Giovanni Paoletti [1 2], Francesco Blasi [9 10], Pierluigi Paggiaro [11], Fulvio Braido [3 4]; SANI study group

Affiliations expand

- PMID: 38984764

- DOI: 10.1080/02770903.2024.2376919

Abstract

In the field of severe asthma, the concept of disease control has recently been integrated by the one of clinical remission. With this new concept, we move on to analyze the efficacy of therapy on multiple parameters simultaneously, starting with the mandatory discontinuation of the systemic glucocorticoids, to which is added the effect on exacerbations, respiratory function, and symptoms control. The Italian severe asthma registry SANI (Severe Asthma Network Italy) drafted criteria for the definition of disease remission, allowing patients to be classified into two groups, partial and complete remission. The greater dynamism of the definition, provided by SANI, allows us to hypothesize its practical use, concerning therapy management of severe asthma patients, starting from the level of remission, with the aim to

facilitate the clinical decision on replacement, continuation or modulation of patients' therapy.

Keywords: AIT; SANI; Severe asthma; biologics; complete remission; partial remission; personalized therapy.

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ERJ Open Res

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. 2024 Jul 22;10(4):00108-2024.

doi: 10.1183/23120541.00108-2024. eCollection 2024 Jul.

Physical capacity and inactivity in obstructive airway diseases: a "can do, do do" analysis

Paola D Urroz Guerrero [1 2 3], Hayley Lewthwaite [1 2 3], Peter G Gibson [1 3 4 5], Vanessa L Clark [1 2 3], Laura Cordova-Rivera [6 7], Vanessa M McDonald [1 2 3 4]

Affiliations expand

- **PMID: 39040591**
- **PMCID: PMC11261380**
- **DOI: 10.1183/23120541.00108-2024**

Abstract

Introduction: Physical capacity is an important determinant of physical activity in people with obstructive airway disease (OAD). This study aimed to extend the "can do, do do" concept in people with OAD, to identify if people categorised into quadrants based on physical capacity and activity differ by clinical and movement behaviour characteristics.

Methods: A total of 281 participants (bronchiectasis n=60, severe asthma n=93, COPD n=70 and control n=58) completed assessments to characterise physical capacity as "can do" *versus* "can't do" (6-min walk distance < or ≥70% pred) and physical activity as "do do" *versus* "don't do" (accelerometer-derived moderate to vigorous intensity physical activity (MVPA) < or ≥150 min·week^{-1}).

Results: The control group had a greater proportion of people in the "can do, do do" quadrant compared with the OAD groups (76% *versus* 10-33%). People with OAD in the "can't do, don't do" quadrant had worse clinical characteristics (airflow limitation, comorbidities, quality of life and functional dyspnoea) and spent less time doing light-intensity physical activity (LPA) and more time being sedentary compared with the "can do, do do" quadrant.

Discussion: This study highlights that many people with OAD may be inactive because they do not have the physical capacity to participate in MVPA, which is further impacted by greater disease severity. It is important to consider the potential benefits of addressing LPA and sedentary behaviour due to suboptimal levels of these movement behaviours across different quadrants. Future research is needed to investigate if tailoring intervention approaches based on quadrant allocation is effective in people with OAD.

Conflict of interest statement

Conflict of interest: P.D. Urroz Guerrero declares no conflict of interest. H. Lewthwaite reports consulting fees from Boehringer Ingelheim, grants from HMRI and Diabetes Australia, speaking fees from Lung Foundation Australia, TSANZ, Exercise and Sports Science Australia, and European Respiratory Society, and shares in 4DMedical, outside the submitted work. P.G. Gibson reports personal fees from AstraZeneca, GlaxoSmithKline and Novartis, grants from AstraZeneca and GlaxoSmithKline, outside the submitted work. V.L. Clark declares no conflict of interest. Laura Cordova-Rivera declares no conflict of interest. V.M. McDonald reports speaker and advisory board fees from AstraZeneca, GlaxoSmithKline and Boehringer Ingelhiem, and other grants from AstraZeneca, GlaxoSmithKline and Cyclomedica, outside the submitted work.

- 47 references
- 5 figures

ERJ Open Res

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. 2024 Jul 22;10(4):00048-2024.

doi: 10.1183/23120541.00048-2024. eCollection 2024 Jul.

Dupilumab-associated hypereosinophilia in severe asthma

April Strong [1 2], Tiffany Lin [1 2], Asger Sverrild [3], Anna Mackay [1], Joy Lee [1 4 5], Celia Zubrinich [1], Jonathan Pham [1 6], Julian Bosco [1 5], Eve Denton [1 5], Monique Dols [1], Robert G Stirling [1 5], Eli Dabscheck [1 5], Jhanavi Iyer [1], Andrew Gillman [1], Mark Hew [1 4]

Affiliations expand

- **PMID: 39040583**

- **PMCID: PMC11261386**

- **DOI: 10.1183/23120541.00048-2024**

Abstract

Dupilumab has been associated with adverse reactions including symptomatic hypereosinophilia. This study reports the incidence of dupilumab-related eosinophilia and adverse reactions in severe asthma patients at an Australian tertiary centre. https://bit.ly/3JgZ5Ya.

Conflict of interest statement

Conflict of interest: Unrelated to this study, in the past 36 months, A. Sverrild has received research grants paid to their employer from AstraZeneca, and speaker fees from AstraZeneca and Sanofi. A. Sverrild serves on advisory boards for GlaxoSmithKline and Sanofi-Regeneron with honoraria made to their institution. Conflict of interest: Unrelated to this study, J. Lee has received speaker fees from AstraZeneca, Sanofi and GSK, as well as serving on the board of the National Allergy Centre of Excellence. Conflict of interest: Unrelated to this study, in the past 36 months, C. Zubrinich has received speaker fees and grants from Novartis, Mylan, Seqirus, Inovating and Inside Practice. Conflict of interest: Unrelated to this study, E. Denton declares project grants to her institution from AstraZeneca, GlaxoSmithKline, Novartis, Sanofi, Teva and Seqirus, and speaker fees from Sanofi. Conflict of interest: Unrelated to this study, M. Hew has received grants and personal fees from GlaxoSmithKline, AstraZeneca, Sanofi, Novartis, Teva and

Chiesi, all paid to his employer Alfred Health. Conflict of interest: The remaining authors have nothing to disclose.

- **10 references**

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Allergy

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. 2024 Jul 22.

doi: 10.1111/all.16237. Online ahead of print.

Clinical efficacy of tezepelumab in pre-selected non-type 2 asthma patients

T C Timothy Chin-See-Chong [1], J P M Johanna van der Valk [1 2], J A Janice Layhadi [3 4], M H Mohamed Shamji [3 4], J H Jasper Kappen [1 3 4]

Affiliations expand

- **PMID: 39034850**

- **DOI: 10.1111/all.16237**

No abstract available

- **6 references**

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Review

Curr Med Res Opin

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. 2024 Jul 21:1-10.

doi: 10.1080/03007995.2024.2380006. Online ahead of print.

Use of telerehabilitation platforms for delivering patient education among patients with asthma: a scoping review

Revati Amin [1], Vaishnavi Suvarna [1], Y V Raghava Neelapala [2], Sanjay Tejraj Parmar [3], K Vaishali [1]

Affiliations expand

- PMID: 38994747

- DOI: 10.1080/03007995.2024.2380006

Abstract

Objective: Use of tele-technology for monitoring symptoms, functional parameters, and quality-of-life of people with asthma is essential. Delivering this information among patients is mandated for a better outcome and made possible *via* patient education (PE). This review aims to summarize the types of telerehabilitation modalities, dosage, and outcome measures used to assess the effectiveness of PE among people with asthma.

Methods: We adopted a scoping review methodology. Thematic analysis was used to synthesize the data. The Preferred Reporting System for Meta-Analysis for Scoping Reviews (PRISMA-ScR) was followed during the review process.

Results: PubMed, Embase, and Scopus were searched, with 34 studies meeting inclusion criteria. Results are presented in three themes: telerehabilitation platforms used to deliver PE among patients with asthma; content, duration, and frequency of the PE administered; and patient-reported outcome measures used to evaluate the effectiveness of PE.

Conclusion: This scoping study detailed the types of telerehabilitation modalities, dosage, and outcome measures used to assess the effectiveness of PE in people with asthma. This review will be especially beneficial to those considering where additional research or implementation of telerehabilitation for asthma patients is required. The studies emphasized the involvement of several healthcare experts, emphasizing the significance of a multidisciplinary approach to efficient PE delivery and possible improvements in asthma management through telerehabilitation. Although a range of telerehabilitation platforms were generally accepted, hybrid models that integrate online and in-person sessions could further enhance patient satisfaction and quality-of-life. Comprehensive economic analyses are also required, and solving technology issues is essential to maximizing the efficacy of these initiatives.

Keywords: Asthma; content; effectiveness; patient education; scoping review; telerehabilitation platforms.

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

1

Allergy

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. 2024 Jul 26.

doi: 10.1111/all.16254. Online ahead of print.

Systemic reactions to house dust mite subcutaneous immunotherapy in patients with allergic rhinitis and/or asthma: A real-life, multi-center study

Qingxiu Xu [1], Jiaxin Jia [2], Hang Lin [3], Dan Liang [4], Hao Chen [1], Yin Wang [1], Xiang Gao [3], Wang Liao [5], Guohua Chen [5], Lihong Yang [4], Qianlan Zhou [6], Jun Bai [5], Zhihai Xie [2 7], Lishen Shan [6], Rongfei Zhu [1 8]

Affiliations expand

- **PMID: 39056450**

- DOI: 10.1111/all.16254

No abstract available

- 6 references

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Br J Sports Med

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. 2024 Jul 25:bjsports-2024-108129.

doi: 10.1136/bjsports-2024-108129. Online ahead of print.

Paris air quality monitoring for the 2024 Olympics and Paralympics: focus on air pollutants and pollen

Valerie Bougault [1], Richard Valorso [2], Roland Sarda-Esteve [3], Dominique Baisnee [3], Nicolas Visez [4 5], Gilles Oliver [5], Jordan Bureau [6], Fatine Abdoussi [6], Veronique Ghersi [6], Gilles Foret [2]

Affiliations expand

- PMID: 39054048

- DOI: 10.1136/bjsports-2024-108129

Abstract

Background: Exposure to air pollution can affect the health of individuals with respiratory disease, but may also impede the health and performance of athletes. This is potentially relevant for people travelling to and competing in the Olympic and Paralympic Games (OPG) in Paris. We describe anticipated air quality in Paris

based on historical monitoring data and describe the impact of the process on the development of monitoring strategies for future international sporting events.

Methods: Air pollutant data for July to September 2020-2023 and pollen data for 2015-2022 were provided by Airparif (particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2) and ozone (O_3)) and RNSA stations in the Paris region. Airparif's street-level numerical modelling provided spatial data for the OPG venues.

Results: The maximum daily mean $PM_{2.5}$ was 11±6 µg/m^3 at traffic stations, below the WHO recommended daily air quality threshold (AQT). Daily NO_2 concentrations ranged from 5±3 µg/m^3 in rural areas to 17±14 µgm^3 in urban areas. Near traffic stations, this rose to 40±24 µg/m^3 exceeding the WHO AQT. Both peaked around 06:00 and 20:00 UTC (coordinated universal time). The ambient O_3 level exceeded the AQT on 20 days per month and peaked at 14:00 UTC. The main allergenic taxa from June to September was Poaceae (ie, grass pollen variety).

Conclusion: Air pollutant levels are expected to be within accepted air quality thresholds at the Paris OPG. However, O_3 concentrations may be significantly raised in very hot and clear conditions and grass pollen levels will be high, prompting a need to consider and manage this risk in susceptible individuals.

Keywords: Athletes; Public health; Rhinitis, Allergic, Seasonal.

Conflict of interest statement

Competing interests: VB, RV, RSE, DB, GO and GF declare having no conflict of interest. A few authors declared they work for a non-profit organisation: NV is resident of the RNSA (French aerobiological monitoring network), is on the Board of the French Societies ATMO (no retribution – non-profit organisation), responsible for air quality monitoring in France, and APPA (association for the prevention of atmospheric pollution, non-profit organisation). He declared receiving funds from French ANSES and ARS (National Research Agency) for projects on pollen pollution and pollinators. VG, FA and JB from Airparif are involved in a project with SOLIDEO (Société de livraison d'ouvrages olympiques) to evaluate cleaning solutions implemented in the Olympic Village.

Immunol Invest

. 2024 Jul 23:1-17.

doi: 10.1080/08820139.2024.2382792. Online ahead of print.

The Role of Neuro-Immune Interactions in the Pathology and Pathogenesis of Allergic Rhinitis

Ya-An Lan [1], Jia-Xi Guo [1], Min-Hua Yao [1], Yi-Ting Kang [1], Zi-Rui Liao [1], Yu-Hong Jing [1 2]

Affiliations expand

- PMID: 39042045

- DOI: 10.1080/08820139.2024.2382792

Abstract

Background: Allergic rhinitis (AR) is a non-infectious inflammatory disease of the nasal mucosa mediated by IgE and involving a variety of immune cells such as mast cells. In previous studies, AR was considered as an isolated disease of the immune system. However, recent studies have found that the nervous system is closely related to the development of AR. Bidirectional communication between the nervous and immune systems plays an important role in AR.

Summary: The nervous system and immune system depend on the anatomical relationship between nerve fibers and immune cells, as well as various neurotransmitters, cytokines, inflammatory mediators, etc. to produce bidirectional connections, which affect the development of AR.

Key messages: This article reviews the impact of neuro-immune interactions in AR on the development of AR, including neuro-immune cell units.

Keywords: Allergic rhinitis; neuro-immune cell units (NICUs); neuron-immue interactions.

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. 2024 Jul 22:8:270-277.

doi: 10.5414/ALX02515E. eCollection 2024.

Protocol for the systematic reviews on the desirable and undesirable effects of pharmacological treatments of allergic rhinitis informing the ARIA 2024 guidelines

Rafael José Vieira [1 2], Maria Inês Torres [1 2], Antonio Bognanni [3 4], Sara Gil-Mata [1 2], Renato Ferreira-da-Silva [1 2], Nuno Lourenço-Silva [1 2], António Cardoso-Fernandes [1 2], André Ferreira [2 5 6], Henrique Ferreira-Cardoso [1 2], João Teles [1 2], Miguel Campos-Lopes [1 2], João A Fonseca [1 2], Juan José Yepes-Nuñez [3 7], Ludger Klimek [8 9], Torsten Zuberbier [10 11], Holger Schünemann [3], Jean Bousquet [10 11 12], Bernardo Sousa-Pinto [1 2]

Affiliations expand

- PMID: 39055747

- PMCID: PMC11270335

- DOI: 10.5414/ALX02515E

Abstract

There is insufficient evidence regarding the comparative efficacy and safety of pharmacological treatments of allergic rhinitis (AR). In the context of informing the 2024 revision of the Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines, we plan to perform three systematic reviews of randomized controlled trials (RCTs) comparing the desirable and undesirable effects (i) between intranasal and oral medications for AR; (ii) between combinations of intranasal and oral medications versus nasal or oral medications alone; and (iii) among different intranasal specific medications. We will search four electronic bibliographic databases and three clinical trials databases for RCTs examining patients ≥ 12 years old with seasonal or perennial AR. Assessed outcomes will include the Total Nasal Symptom Score, the Total Ocular Symptom Score, and the Rhinoconjunctivitis Quality-of-Life Questionnaire. We will assess the methodological quality of included primary

studies by using the Cochrane risk-of-bias tool. If appropriate, we will perform a pairwise random-effects meta-analysis for each pair of assessed medication classes and outcomes, as well as a network meta-analysis to assess the comparative efficacy of intranasal medications among each other. Heterogeneity will be explored by sensitivity and subgroup analyses. This set of systematic reviews will allow for a comprehensive assessment of the effectiveness and safety of pharmacological interventions for AR and inform recommendations in the context of the ARIA guidelines.

Keywords: allergic rhinitis; allergy; antihistamines; corticosteroids; quality of life.

Conflict of interest statement

LK reports grants from Allergopharma, MEDA/Mylan, ALK Abelló, LETI Pharma, Stallergenes, Sanofi, ASIT biotech, Lofarma Quintiles, AstraZeneca, GSK and Inmunotk, and personal fees from Allergopharma, MEDA/Mylan, HAL Allergie, LETI Pharma, Sanofi, Allergy Therapeut and Cassella Med, outside the submitted work. JAF reports grants from Astrazeneca and Mundipharma; and personal fees from AstraZeneca, Mundipharma, Sanofi, GSK and Teva, outside the submitted work. TZ reports grants from Novartis and Henkel; personal fees from Bayer Health Care, FAES, Novartis, Henkel, AstraZeneca, AbbVie, ALK, Almirall, Astellas, Bencard, Berlin Chemie, HAL, Leti, Meda, Menarini, Merck, MSD, Pfizer, Sanofi, Stallergenes, Takeda, Teva, UCB, Kryolan and L'Oréal, outside the submitted work. JB reports personal fees from Chiesi, Cipla, Hikma, Menarini, Mundipharma, Mylan, Novartis, Purina, Sanofi-Aventis, Takeda, Teva and Noucor and other from Kyomed-Innov, outside the submitted work.

- **25 references**

full text links

chronic cough

PLoS One

. 2024 Jul 24;19(7):e0303804.

doi: 10.1371/journal.pone.0303804. eCollection 2024.

Characteristics, demographics, and epidemiology of possible chronic cough in Sweden: A nationwide register-based cohort study

Lotta Walz [1], Kristoffer Illergård [2], Johannes Arpegård [2], Cristian Dorbesi [2], Henrik Johansson [3 4], Össur Ingi Emilsson [5 6]

Affiliations expand

- PMID: 39047005

- DOI: 10.1371/journal.pone.0303804

Abstract

Aim: To show clinical characteristics, treatments, and comorbidities in chronic cough in a nationwide cohort.

Methods: Two cohorts were created. A national cohort with individuals from two population-based databases; the National Patient Register and Swedish Prescribed Drug Register. Secondly, a regional cohort including primary care data. Adults with at least one cough diagnosis (ICD-10 R05) and/or individuals with ≥2 dispensed prescriptions for relevant cough-medication within the inclusion period, 2016-2018, were identified. Individuals on medications which may instigate cough or suggest acute infection or diagnosed with conditions where cough is a cardinal symptom, were excluded. Those remaining were defined as having possible refractory or unexplained chronic cough (RCC/UCC).

Results: Altogether 62,963 individuals were identified with possible RCC/UCC, giving a national prevalence of about 1%. Mean age was 56 years and 60% were females. Many (44%) of the individuals with possible RCC/UCC visited cough relevant specialist clinics during the study period, but less than 20% received a cough diagnosis. A majority (63%) had evidence of RCC/UCC in the 10 years prior to inclusion in the study. In the regional cohort, including primary care data, the prevalence of RCC/UCC was doubled (2%). Cough medicines were mainly prescribed by primary care physicians (82%).

Conclusion: Most individuals with possible RCC/UCC sought medical care in primary care, and had a long history of cough, with various treatments tried, indicating a substantial burden of the condition. Referrals to specialist care were very rare. The results underline the need for a structured multidisciplinary approach and future therapeutic options.

Conflict of interest statement

Conflicts of interest: The authors report no conflicts of interest in this work, except that LW is employed by MSD (Sweden) AB, but with no stock ownership. ÖE has received honoraria

from MSD and AstraZeneca for advisory work, unrelated to this manuscript. This does not alter our adherence to PLOS ONE policies on sharing data and materials.

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

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Review

Med Clin (Barc)

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. 2024 Jul 26;163(2):81-90.

doi: 10.1016/j.medcli.2024.01.023. Epub 2024 Apr 17.

Bronchiectasis not due to cystic fibrosis

[Article in English, Spanish]

Rosa Girón [1], Rafael Golpe [2], Miguel Ángel Martínez-García [3]

Affiliations expand

- **PMID: 38637217**

- **DOI: 10.1016/j.medcli.2024.01.023**

Abstract

Bronchiectasis is a clinical-radiological condition composed of irreversible bronchial dilation due to inflammation and infection of the airways, which causes respiratory symptoms, usually productive cough and infectious exacerbations. Bronchiectasis can have multiple causes, both pulmonary and extrapulmonary, and its clinical presentation is very heterogenous. Its prevalence is unknown, although up to 35-50% of severe COPD and 25% of severe asthma present them, so their underdiagnosis is evident. Chronic bacterial bronchial infection is common, and Pseudomonas aeruginosa is the pathogen that has been found to imply a worse prognosis. Treatment of bronchiectasis has three fundamental characteristics: it must be multidisciplinary (involvement of several specialties), pyramidal (from

primary care to the most specialized units) and multidimensional (management of all aspects that make up the disease).

Keywords: Antibióticos inhalados; Bronchial infection; Bronchiectasis; Bronquiectasias; Infección bronquial; Inhaled antibiotics; Macrolides; Macrólidos; Pseudomonas aeruginosa.

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Eur Respir J

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. 2024 Jul 25;64(1):2351689.

doi: 10.1183/13993003.51689-2023. Print 2024 Jul.

"Airway clearance management in people with bronchiectasis: data from the European Bronchiectasis Registry (EMBARC)." A. Spinou, B. Hererro-Cortina, S. Aliberti, *et al*. *Eur Respir J* 2024; 63: 2301689

No authors listed

- PMID: 39054041

- DOI: 10.1183/13993003.51689-2023

No abstract available

Erratum for

- Airway clearance management in people with bronchiectasis: data from the European Bronchiectasis Registry (EMBARC).

Spinou A, Hererro-Cortina B, Aliberti S, Goeminne PC, Polverino E, Dimakou K, Haworth CS, Loebinger MR, De Soyza A, Vendrell M, Burgel PR, McDonnell M, Sutharsan S, Škrgat S, Maiz-Carro L, Sibila O, Stolz D, Kauppi P, Bossios A, Hill AT, Clifton I, Crichton ML, Walker P, Menendez R, Borecki S, Obradovic D, Nowinski A, Amorim A, Torres A, Lorent N, Welte T, Blasi F, Jankovic Makek M, Shteinberg M, Boersma W, Elborn JS, Chalmers JD, Ringshausen FC; EMBARC Registry Collaborators.Eur Respir J. 2024 Jun 6;63(6):2301689. doi: 10.1183/13993003.01689-2023. Print 2024 Jun.PMID: 38609097 Free PMC article.

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Eur Respir J

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. 2024 Jul 25;64(1):2301504.

doi: 10.1183/13993003.01504-2023. Print 2024 Jul.

Diagnostic delay and access to care in bronchiectasis: data from the EMBARC/ELF patient survey

Arietta Spinou [1 2], Marta Almagro [3], Bridget Harris [3], Jeanette Boyd [4], Tove Berg [3], Beatriz Herrero-Cortina [5 6], Annette Posthumous [3], Stefano Aliberti [7], Barbara Crossley [3], Thomas F Ruddy [3], Nili Stein [8], Megan L Crichton [9], Pieter C Goeminne [10], James D Chalmers [9], Michal Shteinberg [11]

Affiliations expand

- **PMID: 38843909**

- **PMCID: PMC11269821**

- DOI: 10.1183/13993003.01504-2023

Abstract

The EMBARC/ELF patient survey shows a need for increasing the availability of and access to expert bronchiectasis care and services https://bit.ly/3QTWY0E

Conflict of interest statement

Conflict of interest: B. Harris and A. Posthumous are patients with bronchiectasis and members of the European Lung Foundation (ELF) Bronchiectasis Patient Advisory Group; this is an unpaid, voluntary role. J. Boyd is an employee of ELF. B. Herrero-Cortina reports payment or honoraria for lectures, presentations, manuscript writing or educational events from SEPAR (Spanish Respiratory Society). B. Crossley is a voluntary member of the ELF Bronchiectasis Patient Advisory Group. M.L. Crichton reports consultancy fees from Boxer Capital LLC. J.D. Chalmers has received research grants from AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Gilead Sciences, Grifols, Novartis, Insmed and Trudell; and received consultancy or speaker fees from Antabio, AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Insmed, Janssen, Novartis, Pfizer, Trudell and Zambon. M. Shteinberg reports grants from GSK and Novartis, personal fees from Boehringer Ingelheim, GSK, Novartis, AstraZeneca, Kamada, Teva, GSK, Zambon, Airphysio, Bonus Biogroup and Syncrony Medical, and non-financial support from GSK, Boehringer Ingelheim, Actelion, GSK and Rafa. The remaining authors have no potential conflicts of interest to disclose.

- 12 references

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Publication types, MeSH termsexpand

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Review

Eur Respir Rev

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. 2024 Jul 24;33(173):240085.

doi: 10.1183/16000617.0085-2024. Print 2024 Jul.

Exacerbations of bronchiectasis

Alessandro De Angelis [1 2], Emma D Johnson [3], Sivagurunathan Sutharsan [4], Stefano Aliberti [5 2]

Affiliations expand

- PMID: 39048130

- DOI: 10.1183/16000617.0085-2024

Abstract

Bronchiectasis presents a significant challenge due to its rising prevalence, associated economic burden and clinical heterogeneity. This review synthesises contemporary understanding and literature of bronchiectasis exacerbations, addressing the transition from stable state to exacerbations, underlining the importance of early and precise recognition, rigorous severity assessment, prompt treatment, and prevention measures, as well as emphasising the need for strategies to assess and improve early and long-term patient outcomes. The review highlights the interplay between stable state phases and exacerbations in bronchiectasis, introducing the concept of "exogenous and endogenous changes in airways homeostasis" and the "adapted island model" with a particular focus on "frequent exacerbators", a group of patients associated with specific clinical characteristics and worse outcomes. The pathophysiology of exacerbations is explored through the lens of microbial and nonmicrobial triggers and the presence and the activity of comorbidities, elaborating on the impact of both exogenous insults, such as infections and pollution, and endogenous factors such as inflammatory endotypes. Finally, the review proposes a multidisciplinary approach to care, integrating advancements in precision medicine and biomarker research, paving the way for tailored treatments that challenge the traditional antibiotic paradigm.

Conflict of interest statement

Previous articles in this series: No. 1: Perea L, Faner R, Chalmers JD, et al. Pathophysiology and genomics of bronchiectasis. Eur Respir Rev 2024; 33: 240055. No. 2: Mac Aogáin M, Dicker AJ, Mertsch P, et al. Infection and the microbiome in bronchiectasis. Eur Respir Rev 2024; 33: 240038. No. 3: Van Braeckel E, Bosteels C. Growing from common ground: nontuberculous mycobacteria and bronchiectasis. Eur Respir Rev 2024; 33: 240058.Conflict of interest: A. De Angelis and E.D. Johnson have nothing to disclose. S. Sutharsan reports payment or honoraria for lectures, presentations, manuscript writing or educational events from Vertex Pharamceuticals, Insmed and Boehringer Ingelheim, and participation on a data

safety monitoring board or advisory board with Vertex Pharamceuticals. S. Alberti reports grants from INSMED Incorporated, Chiesi, Fisher & Paykel and GSK, royalties or licences from McGraw Hill, consultancy fees from INSMED Incorporated, INSMED Italy, INSMED Ireland Ltd, INSMED Netherlands BV, ZAMBON Spa, AstraZeneca UK Limited, AstraZeneca Pharmaceutical LP, CSL Behring GmbH, Grifols, Fondazione Internazionale Menarini, Moderna Italy, Moderna TX, Boehringer Ingelheim, Chiesi farmaceutica Spa, MSD Italia S.r.l., Vertex Pharmaceuticals, BRAHMS GMBH, Physioassist SAS, AN2 Therapeutics and GlaxoSmithKline Spa, payment or honoraria for lectures, presentations, manuscript writing or educational events from GlaxoSmithKline Spa, Thermofisher Scientific, INSMED Italy, INSMED Ireland Ltd, Boehringer Ingelheim, Zambon, Vertex Pharmaceuticals and Fondazione Internazionale Menarini, and participation on a data safety monitoring board or advisory board with INSMED Incorporated, INSMED Italy, AstraZeneca UK Limited and MSD Italia S.r.l.

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. 2024 Jul 22;10(4):00087-2024.

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Increased bronchiectasis risk and related risk factors in inflammatory bowel disease: a 10-year Korean national cohort study

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Abstract

Background: The association between inflammatory bowel disease (IBD) and an increased risk of bronchiectasis, as well as contributing factors, remains unclear. Additionally, whether bronchiectasis increases disease burden in IBD remains unknown. Therefore, this study aimed to: 1) assess whether IBD increases the risk of incident bronchiectasis; 2) compare the risk of bronchiectasis between individuals with Crohn's disease (CD) and those with ulcerative colitis (UC); 3) identify risk factors for bronchiectasis in individuals with IBD; and 4) examine the disease burden in individuals with IBD and bronchiectasis *versus* those without.

Methods: We conducted a population-based matched cohort study involving adults aged ≥20 years with IBD, using data acquired from the Korean National Health Insurance Service-National Sample Cohort database between 2002 and 2012.

Results: During the mean follow-up of 9.6 years, the incidence rate of bronchiectasis was 419.63 out of 100 000 person-years (PY) and 309.65 out of 100 000 PY in the IBD and matched cohorts (adjusted hazard ratio (aHR) 1.21, 95% CI 1.05-1.39), respectively. UC was associated with increased bronchiectasis risk (aHR 1.42, 95% CI 1.19-1.69), but CD was not. Multivariate Cox regression analyses showed that age, male sex, medical aid, underweight status, COPD and diabetes mellitus were associated with an increased risk of bronchiectasis in the IBD cohort ($p<0.05$). The mortality, emergency department visit and hospitalisation rates were significantly higher for individuals with IBD and bronchiectasis compared with those without bronchiectasis ($p<0.05$).

Conclusion: IBD is associated with increased risk of bronchiectasis, which results in a greater disease burden in individuals with IBD.

Conflict of interest statement

Conflict of interest: J.S. Lee, B. Yang, H.S. Shin, H. Lee, H.G. Chai, H. Choi, J-H. Han, J.H. Yoon, E-G. Kim and H. Lee have no conflicts of interest to declare.

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Total sputum nitrate/nitrite is associated with exacerbations and *Pseudomonas aeruginosa* colonisation in bronchiectasis

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Abstract

Background: Sputum nitrate/nitrite, which is the main component of reactive nitrogen species, is a potential biomarker of disease severity and progression in bronchiectasis. This study aimed to determine the association between nitrate/nitrite and exacerbations and airway microbiota in bronchiectasis.

Methods: We measured total nitrate/nitrite concentration in sputum samples collected from 85 patients with stable bronchiectasis, performed 16S ribosomal RNA sequencing of sputum samples and predicted the denitrification ability of airway microbiota using Phylogenetic Investigation of Communities by Reconstruction of Unobserved States (PICRUSt). Relationships between sputum total nitrate/nitrite and disease severity, exacerbations and airway microbiota were examined.

Results: Higher total sputum nitrate/nitrite was associated with more severe bronchiectasis defined by E-FACED (exacerbation, forced expiratory volume in 1 s, age, chronic colonisation by *Pseudomonas aeruginosa*, radiological extension and dyspnoea) (p=0.003) or Bronchiectasis Severity Index (p=0.006) and more exacerbations in the prior 12 months (p=0.005). Moreover, total sputum nitrate/nitrite was significantly higher in patients with worse cough score (p=0.03), worse sputum

purulence score (p=0.01) and worse Medical Research Council dyspnoea score (p=0.02). In addition, the total sputum nitrate/nitrite of the *P. aeruginosa* colonised (PA) group was higher than that of the non-*P. aeruginosa* colonised (NPA) group (p=0.04), and the relative abundance of *P. aeruginosa* was positively correlated with total nitrate/nitrite (r=0.337, p=0.002). Denitrification module (M00529) was also significantly enriched in the PA group compared to the NPA group through PICRUSt analyses. Using receiver-operating characteristic analysis, total nitrate/nitrite was associated with exacerbations during 1-year follow-up (area under the curve 0.741, p=0.014).

Conclusions: Sputum nitrate/nitrite is a biomarker of disease severity and associated with *P. aeruginosa* colonisation in bronchiectasis.

Conflict of interest statement

Conflict of interest: The authors report no conflicts of interest in this work.

- **47 references**
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Brensocatib in non-cystic fibrosis bronchiectasis: ASPEN protocol and baseline characteristics

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Affiliations expand

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Abstract

Introduction: Brensocatib is an investigational, oral, reversible inhibitor of dipeptidyl peptidase-1 shown to prolong time to first exacerbation in adults with bronchiectasis. Outlined here are the clinical trial design, and baseline characteristics and treatment patterns of adult patients enrolled in the phase 3 ASPEN trial (NCT04594369).

Methods: The ASPEN trial is a global study enrolling patients with a clinical history consistent with bronchiectasis (cough, chronic sputum production and/or recurrent respiratory infections), diagnosis confirmed radiologically and ≥2 exacerbations in the prior 12 months. It was designed to evaluate the impact of two brensocatib doses (10 mg and 25 mg) on exacerbation rate over a 52-week treatment period *versus* placebo. Comprehensive clinical data, including demographics, disease severity, lung function, *Pseudomonas aeruginosa* status and quality of life, were collected at baseline.

Results: 1682 adults from 35 countries were randomised from December 2020 to March 2023. Mean age was 61.3 years and 64.7% were female. ∼70% had moderate-to-severe Bronchiectasis Severity Index (BSI) scores, 29.3% had ≥3 exacerbations in the prior 12 months and 35.7% were positive for *P. aeruginosa*. Mean BSI scores were highest in Australia/New Zealand (8.3) and lowest in Latin America (5.9). Overall, the most common aetiology was idiopathic (58.4%). In *P. aeruginosa*-positive *versus P. aeruginosa*-negative patients, lung function was lower, with greater long-term macrolide (21.5% *versus* 14.0%) and inhaled corticosteroid use (63.5% *versus* 53.9%). There was wide regional variation in long-term antibiotic use in patients with bronchiectasis and *P. aeruginosa*.

Discussion: ASPEN baseline characteristics and treatment profiles were representative of a global bronchiectasis population.

Conflict of interest statement

Conflict of interest: J.D. Chalmers reports receiving grants and personal fees from AstraZeneca, Boehringer Ingelheim, GSK, Zambon and Insmed Incorporated, a grant from Gilead, and personal fees from Novartis and Chiesi. Conflict of interest: He is an Associate Editor of this journal. P-R. Burgel reports grants from Vertex and GSK, outside the submitted work. P-R. Burgel also reports clinical trials: acting as main investigator and advisory activity for AstraZeneca, Chiesi, GSK, Insmed Incorporated, MSD, Viatris, Vertex and Zambon. P-R. Burgel reports substantial financial contributions to the budget of an institution he is responsible for from GSK, Vertex, Association Vaincre la Mucoviscidose, Société Française de la Mucoviscidose and Filière MUCO-CFTR. Conflict of interest: C.L. Daley reports grant

support, advisory board fees and consulting fees from Insmed Incorporated; grant support from AN2 Therapeutics, Bugworks, Paratek Pharmaceuticals and Juvabis; advisory board work with AN2 Therapeutics, AstraZeneca, Cepheid, Hyfe, MannKind, Matinas Biopharma, NobHill, Spero Therapeutics and Zambon; consulting with Genentech and Pfizer; and data monitoring committee work with Otsuka Pharmaceutical, Eli Lilly and Company, and the Bill and Melinda Gates Foundation. Conflict of interest: A. De Soyza reports grants and fees from AstraZeneca, Boehringer Ingelheim, Bayer, Chiesi, Gilead Sciences, GSK, Insmed Incorporated and Zambon. Conflict of interest: C.S. Haworth reports receiving consultancy/speaker fees from 30 Technology, CSL Behring, Chiesi, Insmed Incorporated, Janssen, LifeArc, Meiji, Mylan, Novartis, Pneumagen, Shinogi, Teva, Vertex and Zambon. Conflict of interest: D. Mauger reports grants from NHLBI and drugs for NIH-funded clinical trials from Genentech, GSK, OM Pharma and Sanofi-Regeneron. Conflict of interest: Conflict of interest: K. Mange, A. Teper, C. Fernandez and D. Conroy are employees of and shareholders in Insmed Incorporated. Conflict of interest: M. Metersky reports receiving consulting fees from AN2 Therapeutics, Boehringer Ingelheim, Insmed Incorporated, Renovion, Tactile Inc. and Zambon. Conflict of interest: J.D. Chalmers, P-R. Burgel, C.L. Daley, A. De Soyza, C.S. Haworth, D. Mauger and M. Metersky served as members of the ASPEN trial steering committee. J.D. Chalmers, P-R. Burgel, C.L. Daley, A. De Soyza, C.S. Haworth and M. Metersky were investigators in the ASPEN trial.

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Increasing serum miR-223-3p indicates the onset, severe development, and adverse prognosis of bronchiectasis: a retrospective study

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Affiliations expand

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Abstract

Background: miR-223-3p has been demonstrated as a Pseudomonas aeruginosa colonization-related miRNA in bronchiectasis (BE), but its clinical value in BE has not been revealed, which is of great significance for the clinical diagnosis and monitoring of BE. This study aimed to identify a reliable biomarker for screening BE and predicting patients' outcomes.

Methods: The serum expression of miR-223-3p was compared between healthy individuals (n = 101) and BE patients (n = 133) and evaluated its potential in distinguishing BE patients. The severity of BE patients was estimated by BSI and FACED score, and the correlation of miR-223-3p with inflammation and severity of BE patients was evaluated by Pearson correlation analysis. BE patients were followed up for 3 years, and the predictive value of miR-223-3p in prognosis was assessed by logistic regression analysis.

Results: Significant upregulation of miR-223-3p was observed in BE patients, which significantly distinguished BE patients and showed positive correlations with C-reactive protein (CRP), procalcitonin (PCT), interleukin 6 (IL-6), and neutrophil-to-lymphocyte ratio (NLR) of BE patients. Additionally, miR-223-3p was also positively correlated with BSI and FACED scores, indicating its correlation with inflammation and severity of BE. BE patients with adverse prognoses showed a higher serum miR-223-3p level, which was identified as an adverse prognostic factor and discriminated patients with different prognoses.

Conclusion: Increasing serum miR-223-3p can be considered a biomarker for the onset, severity, and prognosis of BE.

Keywords: Diagnosis; Inflammation; Prognosis; Severity; Trachea and bronchial.

Conflict of interest statement

The authors declare no competing interests.

- 34 references

- 3 figures

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