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

1

Contemp Clin Trials

. 2023 Dec 21:107414.

doi: 10.1016/j.cct.2023.107414. Online ahead of print.

Marginal versus conditional rate estimation for count and recurrent event data with an estimand framework

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Affiliations expand

- PMID: 38141966

- DOI: 10.1016/j.cct.2023.107414

Abstract

Count and recurrent event endpoints are common key efficacy endpoints in clinical research. For example, in clinical research of pulmonary diseases such as chronic obstructive pulmonary disease (COPD) or asthma, the reduction of the occurrence of a recurrent event, pulmonary exacerbation (PEx) caused by acute respiratory symptoms, is often used to measure the treatment effect. The occurrence of PEx is often analyzed with nonlinear models, such as Poisson regression or Negative Binomial regression. It is observed that model-estimated within-group PEx rates are often lower than the descriptive statistics of within-group PEx rates. Motivated by this observation, we explore their relationship mathematically and demonstrate that it is due to the difference between conditional PEx rates and population-level PEx rates (marginal rates). Our findings corroborate the recent FDA guidance (2023) [1], which discusses considerations for covariate adjustment in nonlinear models, and that conditional or subgroup treatment effects with covariate adjustment may differ from marginal treatment effects. In this article, we demonstrate how covariate adjustment impacts the estimation of event rates and rate ratios with both closed form and simulation studies. Additionally, following the ICH E9 addendum on the estimand framework [2], we discuss the estimand framework for count and recurrent event data.

Keywords: Collapsibility; Estimand framework; G-computation; Generalized linear model; Marginal/conditional rate; Recurrent events.

2

Respir Med

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Breathing on the mind: Treating dyspnea and anxiety symptoms with biofeedback in chronic lung disease – A qualitative analysis

Anna Norweg[1], Brittany Hofferber[2], Sophia Maguire[2], Cheongeun Oh[3], Victoria H Raveis[4], Naomi M Simon[5]

Affiliations expand

- PMID: 38141864

- DOI: 10.1016/j.rmed.2023.107505

Abstract

Rationale: Chronic obstructive pulmonary disease (COPD) is characterized by dysfunctional breathing patterns that contribute to impaired lung function and symptoms of dyspnea, anxiety, and abnormal carbon dioxide (CO_2) levels.

Objective: The study objective was to measure the acceptability of a new mind-body intervention we developed called Capnography-Assisted, Learned Monitored (CALM) Breathing, implemented before pulmonary rehabilitation.

Methods: CALM Breathing is a 4-week (8-session) intervention designed to treat dyspnea and anxiety in adults with COPD by targeting dysfunctional breathing behaviors (guided by end-tidal CO_2 levels). CALM Breathing consists of ten core breathing exercises, CO_2 biofeedback, and motivational interviewing. Using qualitative methods and semi-structured interviews immediately post-intervention, we evaluated the acceptability and participation process of CALM Breathing. Themes were identified using constant comparative analysis.

Results: Sixteen participants were interviewed after receiving CALM Breathing. Three main themes of CALM Breathing were identified: (1) Process of learning self-regulated breathing, (2) Mechanisms of a mind-body intervention, (3) Clinical and implementation outcomes.

Conclusions: Positive themes supported the acceptability of CALM Breathing and described participants' process of learning more self-regulated breathing to manage their dyspnea and anxiety. Positive signals from qualitative participant feedback provided

support for CALM Breathing as an intervention for COPD, but larger scale efficacy trials are needed.

Keywords: Anxiety; COPD; Dysfunctional breathing; Dyspnea; Mind body; Symptom self-management.

Conflict of interest statement

Declaration of competing interest The authors have no competing interests to declare.
Proceed to details

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Review

Nutrients

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. 2023 Dec 18;15(24):5136.

doi: 10.3390/nu15245136.

Combined Exercise Training and Nutritional Interventions or Pharmacological Treatments to Improve Exercise Capacity and Body Composition in Chronic Obstructive Pulmonary Disease: A Narrative Review

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Affiliations expand

- PMID: 38140395

- DOI: 10.3390/nu15245136

Abstract

Chronic obstructive pulmonary disease (COPD) is a chronic respiratory disease that is associated with significant morbidity, mortality, and healthcare costs. The burden of respiratory symptoms and airflow limitation can translate to reduced physical activity, in turn contributing to poor exercise capacity, muscle dysfunction, and body composition abnormalities. These extrapulmonary features of the disease are targeted during pulmonary rehabilitation, which provides patients with tailored therapies to improve the physical and emotional status. Patients with COPD can be divided into metabolic phenotypes, including cachectic, sarcopenic, normal weight, obese, and sarcopenic with hidden obesity. To date, there have been many studies performed investigating the individual effects of exercise training programs as well as nutritional and pharmacological treatments to improve exercise capacity and body composition in patients with COPD. However, little research is available investigating the combined effect of exercise training with nutritional or pharmacological treatments on these outcomes. Therefore, this review focuses on exploring the potential additional beneficial effects of combinations of exercise training and nutritional or pharmacological treatments to target exercise capacity and body composition in patients with COPD with different metabolic phenotypes.

Keywords: COPD; exercise capacity; muscle perseverance; nutrition; nutritional supplements; pharmacological treatments; weight loss.

Conflict of interest statement

The authors declare no conflict of interest.

Lancet Public Health

. 2023 Dec 19:S2468-2667(23)00269-4.

doi: 10.1016/S2468-2667(23)00269-4. Online ahead of print.

Diagnostic yield of a proactive strategy for early detection of cardiovascular disease versus usual care in adults with type 2 diabetes or chronic obstructive pulmonary disease in primary care in the Netherlands (RED-CVD): a multicentre, pragmatic, cluster-randomised, controlled trial

Amy Groenewegen[1], Victor W Zwartkruis[2], Michiel Rienstra[2], Nicolaas P A Zuithoff[3], Monika Hollander[4], Hendrik Koffijberg[5], Martijn Oude Wolcherink[5], Maarten J Cramer[6], Yvonne T van der Schouw[7], Arno W Hoes[8], Frans H Rutten[4], Rudolf A de Boer[9]

Affiliations expand

- PMID: 38134944

- DOI: 10.1016/S2468-2667(23)00269-4

Abstract

Background: Progressive cardiovascular diseases (eg, heart failure, atrial fibrillation, and coronary artery disease) are often diagnosed late in high-risk individuals with common comorbidities that might mimic or mask symptoms, such as chronic obstructive pulmonary disease (COPD) and type 2 diabetes. We aimed to assess whether a proactive diagnostic strategy consisting of a symptom and risk factor questionnaire and low-cost and accessible tests could increase diagnosis of progressive cardiovascular diseases in patients with COPD or type 2 diabetes in primary care.

Methods: In this multicentre, pragmatic, cluster-randomised, controlled trial (RED-CVD), 25 primary care practices in the Netherlands were randomly assigned to usual care or a proactive diagnostic strategy conducted during routine consultations and consisting of a validated symptom questionnaire, followed by physical examination, N-terminal-pro-B-type natriuretic peptide measurement, and electrocardiography. We included adults (≥18 years) with type 2 diabetes, COPD, or both, who participated in a disease management programme. Patients with an established triple diagnosis of heart failure, atrial fibrillation, and coronary artery disease were excluded. In the case of abnormal findings, further work-up or treatment was done at the discretion of the general practitioner. The primary endpoint was the number of newly diagnosed cases of heart failure, atrial fibrillation, and coronary artery disease, adjudicated by an expert clinical outcome committee using international guidelines, at 1-year follow-up, in the intention-to-treat population.

Findings: Between Jan 31, 2019, and Oct 7, 2021, we randomly assigned 25 primary care centres: 11 to usual care and 14 to the intervention. We included patients between June 21, 2019, and Jan 31, 2022. Following exclusion of ineligible patients and those who did not give informed consent, 1216 participants were included: 624 (51%) in the intervention group and 592 (49%) in the usual care group. The mean age of participants was 68·4 years (SD 9·4), 482 (40%) participants were female, and 734 (60%) were male. During 1 year of follow-up, 50 (8%) of 624 participants in the intervention group and 18 (3%) of 592 in the control group were newly diagnosed with heart failure, atrial fibrillation, or coronary artery disease (adjusted odds ratio 2·97 [95% CI 1·66-5·33]). This trial is registered with the Netherlands Trial Registry, NTR7360, and was completed on Jan 31, 2023.

Interpretation: An easy-to-use, proactive, diagnostic strategy more than doubled the number of new diagnoses of heart failure, atrial fibrillation, and coronary artery disease in patients with type 2 diabetes or COPD in primary care compared with usual care. Although the effect on patient outcomes remains to be studied, our diagnostic strategy might contribute to improved early detection and timely initiation of treatment in individuals with cardiovascular disease.

Funding: Dutch Heart Foundation.

Conflict of interest statement

Declaration of interests RAdB has received research grants from AstraZeneca, Abbott, Boehringer Ingelheim, Cardior Pharmaceuticals, Novo Nordisk, and Roche; has had speaker engagements with Abbott, AstraZeneca, Bayer, Bristol Myers Squibb, Novartis, and Roche; has received honoraria from Abbott, AstraZeneca, Bristol Myers Squibb, Cardior Pharmaceuticals, NovoNordisk, and Roche; and has received travel support from Abbott, Cardior Pharmaceuticals, and NovoNordisk. FHR received a single fee from Novartis for speaker engagements in 2022. MR received consultancy fees from Bayer, Microport, and

InCarda Therapeutics to the Department of Cardiology, UMC Groningen. All other authors declare no competing interests.
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Ann Am Thorac Soc

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. 2023 Dec 22.

doi: 10.1513/AnnalsATS.202306-575RL. Online ahead of print.

Risk of COPD Hospitalizations and Deaths among Rural and Urban Veterans after Successive COPD Hospitalizations

Spyridon Fortis[1], Yubo Gao[2 3], Peter J Kaboli[4], Mary Vaughan Sarrazin[5 6]

Affiliations expand

- PMID: 38134432

- DOI: 10.1513/AnnalsATS.202306-575RL

No abstract available
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Review

J Cardiovasc Dev Dis

. 2023 Dec 16;10(12):498.

doi: 10.3390/jcdd10120498.

Pulmonary Vasodilator Therapy in Severe Pulmonary Hypertension Due to Chronic Obstructive Pulmonary Disease (Severe PH-COPD): A Systematic Review and Meta-Analysis

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Affiliations expand

- PMID: 38132665

- PMCID: PMC10743410

- DOI: 10.3390/jcdd10120498

Abstract

Background: Chronic obstructive pulmonary disease-associated pulmonary hypertension (PH-COPD) results in a significant impact on symptoms, quality of life, and survival. There is scant and conflicting evidence about the use of pulmonary hypertension (PH) specific therapy in patients with PH-COPD. **Study Design and Methods:** PubMed, OVID, CINAHL, Cochrane, Embase, and Web of Science were searched using various MESH terms to identify randomized controlled trials (RCTs) or observational studies investigating PH-specific therapies in patients with severe PH-COPD, defined by mean pulmonary artery pressure (mPAP) of more than 35 mm Hg or pulmonary vascular resistance (PVR) of more than 5 woods units on right heart catheterization. The primary outcome was a change in

mPAP and PVR. Secondary outcomes were changes in six-minute walk distance (6MWD), changes in the brain-natriuretic peptide (BNP), New York Heart Association (NYHA) functional class, oxygenation, and survival. **Results:** Thirteen studies satisfied the inclusion criteria, including a total of 328 patients with severe PH-COPD. Out of these, 308 patients received some type of specific therapy for PH. There was a significant reduction in mPAP (mean difference (MD) -3.68, 95% CI [-2.03, -5.32], $p < 0.0001$) and PVR (MD -1.40 Wood units, 95% CI [-1.97, -0.82], $p < 0.00001$). There was a significant increase in the cardiac index as well (MD 0.26 L/min/m^2, 95% CI [0.14, 0.39], $p < 0.0001$). There were fewer patients who had NYHA class III/IV symptoms, with an odds ratio of 0.55 (95% CI [0.30, 1.01], $p = 0.05$). There was no significant difference in the 6MWD (12.62 m, 95% CI [-8.55, 33.79], $p = 0.24$), PaO_2 (MD -2.20 mm Hg, 95% CI [-4.62, 0.22], $p = 0.08$), or BNP or NT-proBNP therapy (MD -0.15, 95% CI [-0.46, 0.17], $p = 0.36$). **Conclusion:** The use of PH-specific therapies in severe PH-COPD resulted in a significant reduction in mPAP and PVR and increased CI, with fewer patients remaining in NYHA functional class III/IV. However, no significant difference in the 6MWD, biomarkers of right ventricular dysfunction, or oxygenation was identified, demonstrating a lack of hypoxemia worsening with treatment. Further studies are needed to investigate the use of PH medications in patients with severe PH-COPD.

Keywords: COPD; endothelin receptor antagonists; phosphodiesterase 5 inhibitors; prostacyclin analogs; pulmonary hypertension; severe PH-COPD.

Conflict of interest statement

A.E., M.B.H., H.B., Z.A., C.I., H.T., C.N. and H.D. have no financial disclosures or conflict of interest related to this study. R.S. (Sulica) has received research support from Bayer, United Therapeutics, Acceleron, Bellerophon, Gossamer, Enzyvant, Aerovate, and Merck and served on advisory boards for Actelion, Janssen, Enzyvant, Merck, Bayer, Gossamer, and United Therapeutics.

- 48 references
- 8 figures

SUPPLEMENTARY INFO

Publication types, Grants and fundingexpand

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J Transl Int Med

. 2023 Dec 20;11(4):312-315.

doi: 10.2478/jtim-2023-0094. eCollection 2023 Dec.

Mucus hypersecretion in chronic obstructive pulmonary disease: From molecular mechanisms to treatment

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Affiliations expand

- PMID: 38130649

- PMCID: PMC10732574

- DOI: 10.2478/jtim-2023-0094

No abstract available

- 44 references

SUPPLEMENTARY INFO

Grants and fundingexpand

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8

Chest

. 2023 Dec 19:S0012-3692(23)05934-2.

doi: 10.1016/j.chest.2023.12.020. Online ahead of print.

Increased burden of pertussis among adolescents and adults with asthma or COPD in the US, 2007–2019

Sarah Naeger[1], Vitali Pool[1], Denis Macina[2]

Affiliations expand

- PMID: 38128608

- DOI: 10.1016/j.chest.2023.12.020

Abstract

Background: Individuals with chronic respiratory illnesses may be at higher risk of pertussis infection and severe pertussis than those without.

Research question: What is the incidence of pertussis and pertussis complications in cohorts with pre-existing asthma or COPD versus age- and sex-matched controls from the general population in the US?

Study design and methods: This observational, retrospective study included individuals ≥10 years of age from an administrative health claims system between 2007 and 2019. Individuals with pre-existing asthma or COPD were matched with controls from the general population. The incidence of pertussis infections and pertussis-related complications were assessed overall and by age. The incidence of asthma or COPD exacerbations was also assessed before and after diagnosis of pertussis.

Results: In the general population, incidence per 100,000 person-years of pertussis infection ranged from 5.33 in 2007 to 13.04 in 2012, with highest (all years) in those 10-17 years of age. The risk of pertussis was higher for the asthma (rate ratio [RR] 3.57, 95% confidence interval [CI]: 3.25-3.92), and COPD cohorts (RR 1.83, 95% CI: 1.57-2.12) than the general population. Those with asthma or COPD had a 4.12-fold (95% CI: 3.16, 5.38) and 2.82-fold (95% CI: 2.14, 3.27) increased risk of pertussis with complications than the general population, respectively. Exacerbations were most frequent 30 days before pertussis diagnosis (incidence rate [IR] 25%) in the asthma cohort and 30 days before (IR 26%) and after (IR 22%) pertussis diagnosis, remaining elevated for 180 days after diagnosis, in the COPD cohort.

Interpretation: Among these insured individuals, asthma or COPD increased the risk for pertussis disease and complications versus the general population. COPD and asthma exacerbations were observed most frequently within 30-days of receiving a pertussis diagnosis and remained elevated, suggesting a long-term effect of pertussis in the COPD cohort.

Keywords: COPD; Pertussis; adults; asthma; burden of disease; incidence.

Review

Ann Phys Rehabil Med

. 2023 Dec 20;67(2):101792.

doi: 10.1016/j.rehab.2023.101792. Online ahead of print.

Effect of different exercise programs on lung function in people with chronic obstructive pulmonary disease: A network meta-analysis of RCTs

Susana Priego-Jiménez[1], Iván Cavero-Redondo[2], Carlos Pascual-Morena[3], Irene Martínez-García[3], Vicente Martínez-Vizcaíno[4], Celia Álvarez-Bueno[5]

Affiliations expand

- PMID: 38128349

- DOI: 10.1016/j.rehab.2023.101792

Abstract

Background: Chronic obstructive pulmonary disease (COPD) has systemic consequences and causes structural abnormalities throughout the respiratory system. It is associated with a high clinical burden worldwide.

Aim: A network meta-analysis was performed to determine the effects of exercise programs on lung function measured by forced expiratory volume in the first second (FEV1), FEV1 as a percentage of the predicted value (FEV1%) and forced vital capacity in people with COPD.

Methods: A literature search was performed to March 2023. Randomized controlled trials on the effectiveness of exercise programs on lung function in people with COPD were included. A standard pairwise meta-analysis and a network meta-analysis for direct and indirect comparisons between intervention and control/nonintervention groups were carried out to calculate the standardized mean difference and 95 % CI. The risk of bias was assessed using the Cochrane Risk of Bias tool and the Grading of Recommendations, Assessment, Development, and Evaluation tool was used to assess the quality of the evidence.

Results: 35 studies with a total sample of 2909 participants were included in this network meta-analysis. The highest standardized mean difference was for active mind body movement therapy programs versus control for FEV1 and FEV1% (0.71; 95 % CI 0.32 to1.09; and 0.36; 95 % CI 0.15 to 0.58, respectively), and pulmonary rehabilitation+active mind body movements therapies versus control for forced vital capacity (0.45; 95 % CI 0.07 to 0.84).

Conclusions: active mind body movement therapy programs were the most effective type of exercise program to improve lung function measured by FEV1 and FEV1%; pulmonary rehabilitation+active mind body movements therapies had the greatest effects on FVC in people with COPD. Exercise programs in which the abdominal muscles are strengthened could improve lung emptying, helping to overcome airway resistance in people with COPD.

Keywords: Active mind-body movements therapies; COPD; FEV1; FVC; Lung function; Meta-analysis; Physical activity; Pulmonary rehabilitation; Systematic review.

Conflict of interest statement

Declaration of Competing Interest The authors declare no conflict of interest.

SUPPLEMENTARY INFO

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Review

Heart Lung

. 2023 Dec 20:64:107-116.

doi: 10.1016/j.hrtlng.2023.12.003. Online ahead of print.

Comparison of the effects of high and low-moderate load lower limb resistance training on muscle strength and exercise capacity in individuals with COPD: A systematic review and meta-analysis

Ceyhun Topcuoğlu [1], Melda Sağlam [2], Naciye Vardar Yağlı [2]

Affiliations expand

- PMID: 38128253

- DOI: 10.1016/j.hrtlng.2023.12.003

Abstract

Background: Extrapulmonary changes also occur in COPD. Resistance training can increase muscle strength and exercise capacity.

Objective: The objective of this systematic review was to examine and compare the effectiveness of high and low-moderate load lower limb resistance training on muscle strength and exercise capacity in individuals with stable chronic obstructive pulmonary disease (COPD).

Methods: The PubMed/Medline, Scopus, Cochrane Library, ClinicalTrials.gov, Web of Science, EBSCO, and CINAHL databases were searched to identify the articles published in English between January 1970 and July 2023.

Results: Seven randomized controlled trials with a total of 188 individuals with COPD (RT: 100, CG: 88) met the inclusion criteria. A significant difference was revealed (favoring high load) in the change in knee extensor muscle strength and leg press strength in the high load resistance training group compared to the low-moderate load resistance training group (MD 21.90 Nm, 95 % CI 17.46-26.34 Nm, $p < 0.00001$; MD 5.80 kg, 95 % CI 3.87-7.73 kg, $p < 0.00001$). A significant difference was observed in the change in 6 MWT (six minute walk test) distance (favoring low-moderate load) and VO_{2peak} (peak oxygen uptake) (favoring high load) in the high load resistance training group compared to the low-moderate load resistance training group (MD -16.90 m, 95 % CI -29.76- -4.04 m, $p < 0.010$; MD 3.10 ml/kg/min, 95 % CI 2.65-3.55 ml/kg/min, $p < 0.00001$).

Conclusion: This systematic review and meta-analysis demonstrated that both high-load and low-moderate load resistance training increased muscle strength and might increase exercise capacity.

Keywords: Chronic obstructive pulmonary disease; Exercise capacity; High load resistance training; Low-moderate load resistance training; Meta-analysis; Muscle strength.

Conflict of interest statement

Declaration of Competing Interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

SUPPLEMENTARY INFO

Publication typesexpand

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Am J Respir Crit Care Med

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. 2023 Dec 21.

doi: 10.1164/rccm.202307-1122OC. Online ahead of print.

Temporal Risk of Non-Fatal Cardiovascular Events Post COPD Exacerbation: A Population-based Study

Emily L Graul[1], Clementine Nordon[2], Kirsty Rhodes[2], Jonathan Marshall[2], Shruti Menon[3], Constantinos Kallis[4 5], Anne E Ioannides[4 5], Hannah R Whittaker[4 5], Nicholas S Peters[5], Jennifer K Quint[4 6]

Affiliations expand

- PMID: 38127850

- DOI: 10.1164/rccm.202307-1122OC

Abstract

Rationale: Cardiovascular events following COPD exacerbations are recognised. Studies to date have been post-hoc analyses of trials, did not differentiate exacerbation severity, included death in the cardiovascular outcome, or had insufficient power to explore individual outcomes temporally. **Objectives:** We explore temporal relationships between moderate and severe exacerbations with incident, non-fatal hospitalised cardiovascular events, in a primary care-derived COPD cohort. **Methods:** We included people with COPD in England from 2014-2020, using Clinical Practice Research Datalink(CPRD) Aurum primary care database. Index date was first COPD exacerbation, or for those without exacerbation, date upon eligibility. We determined composite and individual cardiovascular events (acute coronary syndrome, arrhythmia, heart failure, ischaemic stroke, pulmonary hypertension) from linked hospital data. Adjusted Cox Regression models estimated average and time-

stratified hazard ratios(aHR). **Measurements and Main Results:** Among 213,466 patients, 146,448 (68.6%) had any exacerbation;119,124 (55.8%) moderate exacerbation and 27,324 (12.8%) a severe exacerbation. 40,773 cardiovascular events were recorded. There was an immediate period of cardiovascular relative rate post any exacerbation (1-14 days,aHR=3.19,95%CI 2.71-3.76), followed by progressively declining yet maintained effects, elevated after one year(aHR=1.84,1.78-1.91). HRs were highest 1-14 days following severe exacerbations (aHR=14.5,12.2-17.3) but highest 14-30 days following moderate exacerbations (aHR=1.94,1.63-2.31). Cardiovascular outcomes with greatest two-week effects post severe exacerbation were arrhythmia (aHR=12.7,10.3-15.7) and heart failure (aHR=8.31,6.79-10.2). **Conclusions:** Cardiovascular events following moderate exacerbations occur slightly later than severe exacerbations; heightened relative rates remain beyond one year irrespective of severity. The period immediately following exacerbation presents a critical opportunity for clinical intervention and treatment optimisation to prevent future cardiovascular events.

Keywords: Cardiovascular Disease; Chronic Obstructive Pulmonary Disease; Electronic Health Records; Epidemiology.

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Editorial

J Bras Pneumol

. 2023 Dec 22;49(6):e20230360.

doi: 10.36416/1806-3756/e20230360.

Eosinophils and therapeutic responses to steroids and biologics in COPD: a complex relationship

[Article in English, Portuguese]

Parameswaran Nair[1]

Affiliations expand

- PMID: 38126684

- DOI: 10.36416/1806-3756/e20230360

No abstract available

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

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Review

Eur Respir Rev

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. 2023 Dec 20;32(170):230004.

doi: 10.1183/16000617.0004-2023. Print 2023 Dec 31.

Surgical and bronchoscopic pulmonary function-improving procedures in lung emphysema

Stephanie Everaerts[1,2], Christelle M Vandervelde[2,3], Pallav Shah[4,5,6], Dirk-Jan Slebos[7,8], Laurens J Ceulemans[2,3,8]

Affiliations expand

- PMID: 38123230
- PMCID: PMC10731473
- DOI: 10.1183/16000617.0004-2023

Free PMC article

Abstract

COPD is a highly prevalent, chronic and irreversible obstructive airway disease without curative treatment. Standard therapeutic strategies, both non-pharmacological and pharmacological, have only limited effects on lung function parameters of patients with severe disease. Despite optimal pharmacological treatment, many patients with severe COPD still have a high burden of dyspnoea and a poor quality of life. If these patients have severe lung emphysema, with hyperinflation as the driver of symptoms and exercise intolerance, lung volume reduction may be an effective treatment with a significant impact on lung function, exercise capacity and quality of life. Currently, different lung volume reduction approaches, both surgical and bronchoscopic, have shown encouraging results and have been implemented in COPD treatment recommendations. Nevertheless, choosing the optimal lung volume reduction strategy for an individual patient remains challenging. Moreover, there is still room for improving durability of effect and safety in all available procedures. Ongoing and innovative research is essential to push this field forwards. This review provides an overview of results and limitations of the current lung volume reduction options for patients with severe lung emphysema and hyperinflation.

Conflict of interest statement

Conflict of interest: S. Everaerts, C.M. Vandervelde and P. Shah have no conflicts of interest related to the content of the manuscript. D-J. Slebos reports grants or contracts, study material, registration fees and travel costs, and participation on a Data and Safety Monitoring Board for Pulmonx, Corp., BTG/PneumRx Inc, FreeFlowMedical, Nuvaira, PulmAir, GALA, CSA Medical and Apreo, most of them paid to his institution. L.J. Ceulemans received an unrestricted university chair from Medtronic and a philanthropic grant from Gunze.

Comment in

- doi: 10.1183/16000617.0028-2023

- 150 references
- 3 figures

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Publication types, MeSH termsexpand

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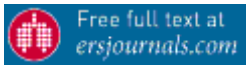

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Toxicology

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. 2023 Dec 18:153709.

doi: 10.1016/j.tox.2023.153709. Online ahead of print.

Multiomics was used to clarify the mechanism by which air pollutants

affect chronic obstructive pulmonary disease: A human cohort study

Huijun Li[1], Yanting Yang[1], Yanpeiyue Yang[1], Chengkai Zhai[2], Juan Yao[2], Wei Liao[2], Yongbin Wang[1], Jing Wang[2], Chenlong Cao[2], Hany W Darwish[3], Wei Wu[4], Wenlong Li[5], Beilei Ge[2], You Ma[1], Hui Wu[1], Weidong Wu[1], Fei Zhai[6]

Affiliations expand

- PMID: 38123012

- DOI: 10.1016/j.tox.2023.153709

Abstract

Exposure to air pollutants has been associated with various adverse health outcomes, including chronic obstructive pulmonary disease (COPD). However, the precise underlying mechanism by which air pollution impacts COPD through remains insufficiently understood. To elucidated the molecular mechanism by which air pollutant exposure contributes to alterations in the gut microbiome and metabolism in AECOPD patients, we employed metagenomics and untargeted metabolomics to analyse the gut microbial, faecal, and serum metabolites. The correlations among air pollutants, gut microbes, serum metabolites, and blood biochemical markers were assessed using generalized additive mixed models and Spearman correlation analysis. The findings revealed that for every 10μg/m^3 increase in $PM_{2.5}$ concentration, the α-diversity of the gut flora decreased by 2.16% (95% CI: 1.80%-2.53%).We found seven microorganisms that were significantly associated with air pollutants, of which Enterococcus faecium, Bacteroides fragilis, Ruthenibacterium lactatiformans, and Subdoligranulum sp.4_3_54A2FAA were primarily associated with glycolysis. We identified 13 serum metabolites and 17 faecal metabolites significantly linked to air pollutants. Seven of these metabolites, which were strongly associated with air pollutants and blood biochemical indices, were found in both serum and faecal samples. Some of these metabolites, such as 2,5-furandicarboxylic acid, C-8C1P and melatonin, were closely associated with disturbances in lipid and fatty acid metabolism in AECOPD patients. These findings underscore the impact of air pollutants on overall metabolism based on influencing gut microbes and metabolites in AECOPD patients. Moreover, these altered biomarkers establish the biologic connection between air pollutant exposure and AECOPD outcomes.The identification of pertinent biomarkers provides valuable insights for the development of precision COPD prevention strategies.

Keywords: COPD; air pollutants; gut microbiota; metabolome.

Conflict of interest statement

Declaration of Competing Interesta The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

15

Ann Phys Rehabil Med

. 2023 Dec 19;67(3):101800.

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Integrated Text Messaging (ITM) for people attending cardiac and pulmonary rehabilitation: A multicentre randomised controlled trial

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Affiliations expand

- PMID: 38118248

- DOI: 10.1016/j.rehab.2023.101800

Abstract

Background: People living with cardiac and respiratory disease require improved post-hospital support that is readily available and efficient.

Objectives: To 1) test the effectiveness of an automated, semi-personalised text message support program on clinical and lifestyle outcomes amongst people attending cardiac and pulmonary rehabilitation. Also, 2) to evaluate the program's acceptability and utility using patient-reported outcome and experience measures.

Methods: Multicentre randomised controlled trial (3:1, intervention:control) amongst cardiac and pulmonary rehabilitation attendees. Control received usual care (no message program). Intervention also received a 6-month text message lifestyle and support program. Primary outcome was 6-minute walk distance (6MWD). Secondary outcomes included clinical measures, lifestyle, patient-reported outcome and experience measures, medication adherence and rehabilitation attendance.

Results: A total of 316 participants were recruited. They had a mean age of 66.7 (SD 10.1) years. Sixty percent were male (190/316) and 156 were cardiac rehabilitation participants. The cohort's mean baseline 6MWD was higher in the intervention than the control group. At 6 months, 6MWD improved in both groups; it was significantly greater amongst intervention than control participants (unadjusted mean difference of 43.4 m, 95 % CI 4.3 to 82.4; P = 0.0296). After adjustment for baseline values, there was no significant difference between intervention and control groups for 6MWD (adjusted mean difference 2.2 m, -21.2 to 25.6; P = 0·85), medication adherence, or cardiovascular risk factors. At 6-month follow-up, intervention participants reported significantly lower depression scores (adjusted mean difference -1.3, 95 % CI -2.2 to -0.3; P = 0.0124) and CAT scores (adjusted mean difference -3.9, 95 % CI -6.6 to -1.3; P = 0.0038), and significantly lower anxiety (adjusted mean difference -1.1, 95 %CI -2.1 to 0; P = 0.0456). Most participants (86 %) read most of their messages and strongly/agreed that the intervention was easy to understand (99 %) and useful (86 %).

Conclusions: An educational and supportive text message program for cardiac and pulmonary rehabilitation attendees improved anxiety and depression plus program attendance. The program was acceptable to, and useful for, participants and would be suitable for implementation alongside rehabilitation programs.

Trial registration number: ACTRN12616001167459.

Keywords: Cardiac rehabilitation; Chronic obstructive pulmonary disease; Digital health; Heart disease; Pulmonary rehabilitation; Text message.

16

Rev Med Suisse

. 2023 Dec 20;19(855):2390-2394.

doi: 10.53738/REVMED.2023.19.855.2390.

[Early palliative care for the management of breathlessness in pulmonary diseases]

[Article in French]

Ivan Guerreiro[1], Sophie Pautex[2], Anne Bergeron[1], Filipa Baptista Peixoto Befecadu[3], Lisa Hentsch[2]

Affiliations expand

- PMID: 38117107

- DOI: 10.53738/REVMED.2023.19.855.2390

Abstract

in English, French

Dyspnoea in chronic respiratory disease is a very frequent symptom with a significant impact on quality of life (QoL). The aim of palliative care is to improve and maintain the QoL of patients with life-threatening diseases and its early implementation is now recommended in many evolving pulmonary diseases. The effectiveness of symptomatic treatments to relieve refractory breathlessness (morphine, oxygen supply, hypnosis,

pulmonary rehabilitation) is often limited. These measures are more effective if offered early in the holistic management of the patient. This article illustrates and describes, with the help of a clinical situation, these treatments options and the collaborations established between the palliative care and pneumology divisions.

Conflict of interest statement

Les auteurs n'ont déclaré aucun conflit d'intérêts en relation avec cet article.

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

FULL TEXT LINKS

17

Clin Pharmacol Ther

. 2023 Dec 19.

doi: 10.1002/cpt.3147. Online ahead of print.

A randomized phase 1 study of the anti-interleukin-33 antibody tozorakimab in healthy adults and patients with chronic obstructive pulmonary disease

Fred Reid[1], Dave Singh[2], Muna Albayaty[3], Rachel Moate[4], Eulalia Jimenez[5], Muhammad Waqas Sadiq[6], David Howe[7], Monica Gavala[8], Helen Killick[9], Adam Williams[10], Surekha Krishnan[11], Alex Godwood[7], Animesh Shukla[11], Lisa Hewitt[11], Alejhandra Lei[12], Chris Kell[7], Hitesh Pandya[1], Paul Newcombe[9], Nicholas White[10], Ian C Scott[9], E Suzanne Cohen[13]

Affiliations expand

- PMID: 38115209

- DOI: 10.1002/cpt.3147

Abstract

Tozorakimab is a human monoclonal antibody that neutralizes interleukin (IL)-33. IL-33 is a broad-acting epithelial 'alarmin' cytokine upregulated in lung tissue of patients with chronic obstructive pulmonary disease (COPD). This first-in-human, phase 1, randomized, double-blind, placebo-controlled study (NCT03096795) evaluated the safety, tolerability, pharmacokinetics, immunogenicity, target engagement, and pharmacodynamics of tozorakimab. This was a three-part study. In part 1, 56 healthy participants with a history of atopy received single escalating doses of either intravenous or subcutaneous tozorakimab or placebo. In part 2, 24 patients with COPD received multiple escalating doses of subcutaneous tozorakimab or placebo. In part 3, 8 healthy Japanese participants received a single intravenous dose of tozorakimab or placebo. The safety data collected included treatment-emergent adverse events (TEAEs), vital signs, and clinical laboratory parameters. Biological samples for pharmacokinetics, immunogenicity, target engagement, and pharmacodynamic biomarker analyses were collected. No meaningful differences in the frequencies of TEAEs were observed between the active and placebo arms. Three tozorakimab-treated participants with COPD experienced treatment-emergent serious adverse events. Subcutaneous or intravenous tozorakimab demonstrated linear, time-independent pharmacokinetics with a mean half-life of 11.7-17.3 days. Treatment-emergent anti-drug antibody frequency was low. Engagement of tozorakimab with endogenous IL-33 in serum and nasal airways was demonstrated. Tozorakimab significantly reduced serum IL-5 and IL-13 levels in patients with COPD compared with placebo. Overall, tozorakimab was well-tolerated, with a linear, time-independent serum pharmacokinetic profile. Additionally, biomarker studies demonstrated proof of mechanism. Overall, these data support the further clinical development of tozorakimab in COPD and other inflammatory diseases.

18

Sci Rep

. 2023 Dec 18;13(1):22601.

doi: 10.1038/s41598-023-50055-x.

Mendelian randomization study reveals the relationship between dietary factors and respiratory diseases

Wei Lai[#1], Guorui Li[#1], Dunyu Peng[#2], Ning Li[1], Wei Wang[3]

Affiliations expand

- PMID: 38114639

- PMCID: PMC10730871

- DOI: 10.1038/s41598-023-50055-x

Free PMC article

Abstract

The existence of causal relationship between dietary factors and respiratory diseases is uncertain. We comprehensively investigated the association between dietary factors and respiratory diseases by using Mendelian randomization (MR). Genetic variants linked to dietary factors were selected as instrumental variables with genome-wide significance. These instrumental variables were obtained from large GWAS databases. These databases include Biobank, the FinnGen study, and other large consortia. We used multivariate MR analyses to control the effects of smoking and education. Median analysis was conducted to evaluate whether body mass index (BMI) played a role in dietary factors in respiratory diseases. Dried fruit intake was found to be associated with a decreased risk of chronic obstructive pulmonary disease (COPD) (OR: 0.211; 95% CI 0.117-0.378; P < 0.001) and asthma (OR: 0.539; 95% CI 0.357-0.815; P = 0.003). Conversely, pork intake was associated

with an increased risk of international pharmaceutical federation (IPF) (OR: 1.051*10^{2}, 95% CI 4.354-2.56*10^{3}, P = 0.004). However, no significant associations were observed between the 20 dietary factors and obstructive sleep apnea (OSA). In addition, multivariate MR analyses showed that the above results were unchanged in smoking and nonsmoking populations, while the effect of dried fruit intake on asthma was significantly attenuated after corrective education. The results of the mediator variable analysis indicated that BMI could serve as a mediator of the above results. This study found that dried fruits slowed the progression of COPD and asthma, while pork promoted IPF. However, no effect of dietary factors on OSA was found. Meanwhile, we showed that the above results were unchanged in smoking and non-smoking populations. In contrast, education could influence the role of diet on asthma, and BMI could be used as a mediating variable to influence the above results.

Conflict of interest statement

The authors declare no competing interests.

- 48 references
- 3 figures

SUPPLEMENTARY INFO

MeSH termsexpand

FULL TEXT LINKS

nature portfolio

Proceed to details

Cite

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19

Chronic Obstr Pulm Dis

. 2023 Dec 19.

doi: 10.15326/jcopdf.2023.0422. Online ahead of print.

Relationship Between Tobacco Product Use and Health-Related Quality of Life Among Individuals With COPD in Waves 1–5 (2013–2019) of the Population Assessment of Tobacco and Health Study

Laura M Paulin[1], Michael J Halenar[2], Kathryn C Edwards[2], Kristin Lauten[2], Kristie Taylor[2], Mary Brunette[1], Susanne Tanski[1], Todd MacKenzie[1], Cassandra A Stanton[2], Dorothy Hatsukami[3], Andrew Hyland[4], Martin C Mahoney[4], Ray Niaura[5], Dennis Trinidad[6], Carlos Blanco[7], Wilson Compton[7], Lisa D Gardner[8], Heather L Kimmel[7], K Michael Cummings[9], Dana Lauterstein[8], Ester J Roh[8], Daniela Marshall[7,10], James D Sargent[1]

Affiliations expand

- PMID: 38113525

- DOI: 10.15326/jcopdf.2023.0422

Free article

Abstract

Introduction: We examined the association between tobacco product use and health-related quality of life (HRQOL) among individuals with COPD in Waves 1-5 of the Population Assessment of Tobacco and Health (PATH) Study.

Methods: Adults ≥40 years with an ever COPD diagnosis were included in cross-sectional (Wave 5) and longitudinal analyses (Waves 1 to 5). Tobacco use included 13 mutually exclusive categories of past 30-day (P30D) single use and polyuse with P30D exclusive cigarette use and ≥5 year cigarette cessation as reference groups. Multivariable linear regression and generalized estimating equations (GEE) were used to examine the association between tobacco use and HRQOL as measured by the PROMIS Global-10 questionnaire.

Results: Of 1,670 adults, 79.4% ever used cigarettes; mean (SE) pack-years was 30.9 (1.1). In cross-sectional analysis, P30D exclusive cigarette use and e-cigarette/cigarette dual use were associated with worse HRQOL compared to ≥5-year cigarette cessation. Compared to P30D exclusive cigarette use, never tobacco use and ≥5 year cigarette cessation were

associated with better HRQOL, while e-cigarette/cigarette dual use had worse HRQOL. Longitudinally (n=686), e-cigarette/cigarette dual use was associated with worsening HRQOL compared to both reference groups; only never tobacco use was associated with higher HRQOL over time compared to P30D exclusive cigarette use.

Conclusions: E-cigarette/cigarette dual use was associated with worse HRQOL compared to ≥5-year cigarette cessation and exclusive cigarette use. Never use and ≥5-year cigarette cessation were the only categories associated with higher HRQOL compared to exclusive cigarette use. Findings highlight importance of complete smoking cessation for individuals with COPD.

Keywords: COPD; cigarette; e-cigarette; epidemiology; prevention.

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

Proceed to details

Cite

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20

Chronic Obstr Pulm Dis

. 2023 Dec 19.

doi: 10.15326/jcopdf.2023.0445. Online ahead of print.

Respiratory Microbiome Profiles Associated With Distinct Inflammatory

Phenotype and Clinical Indexes in Chronic Obstructive Pulmonary Disease

Tao Yu[1], Yunru Chen[2], Xiaoxia Ren[1], Ting Yang[1]

Affiliations expand

- PMID: 38113524

- DOI: 10.15326/jcopdf.2023.0445

Free article

Abstract

Respiratory microbiome studies have fostered our understanding of the various phenotypes and endotypes of heterogeneous chronic obstructive pulmonary disease (COPD). This study aimed to identify microbiome-driven clusters that reflect the clinical features and dominant microbiota of COPD. This cross-sectional study included 32 patients with stable COPD between December 2019 and December 2020 from the outpatient clinic of China-Japan Friendship Hospital. Sputum samples were tested for 16S rRNA. Patients were classified according to the species level using an unsupervised clustering method to compare the inflammatory phenotypes of two clusters and analyze the correlation between the main bacteria and clinical indicators in each cluster. Patients were further divided into two clusters according to microorganisms. Neutrophils in cluster 1 were significantly increased compared with cluster 2. Cluster 1 was predominantly Bacteroides, while cluster 2 was dominated by Prevotella and Fusobacterium at the genus level. Fusobacterium was negatively correlated with the COPD Assessment Test (CAT) score, and Bacteroides was positively correlated with the number of acute exacerbations of COPD. This study found that differential flora was negatively associated with CAT scores and the number of acute exacerbations of COPD. This microbiome-driven unbiased clustering method for COPD can help identify new endotype-related COPD phenotypes.

Keywords: chronic obstructive pulmonary disease; cluster analysis; microbiome.

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

21

Pulm Ther

. 2023 Dec 19.

doi: 10.1007/s41030-023-00248-6. Online ahead of print.

Delphi Consensus on Clinical Applications of GOLD 2023 Recommendations in COPD Management: How Aligned are Recommendations with Clinical Practice?

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Affiliations expand

- PMID: 38112909

- DOI: 10.1007/s41030-023-00248-6

Free article

Abstract

Introduction: The objective of this Delphi study was to understand and assess the level of consensus among respiratory experts on the clinical application of GOLD 2023 recommendations in management of patients with chronic obstructive pulmonary disease (COPD).

Methods: The study comprised two online surveys and a participant meeting with 34 respiratory experts from 16 countries. Responses of 73 questions were recorded using a Likert scale ranging from 0 (disagreement) to 9 (agreement). The consensus threshold was 75%.

Results: Survey 1 and survey 2 had 34 and 32 participants, respectively; and 25 attended the participant meeting. Consensus was reached on survey 1: 28/42; survey 2: 18/30 close-ended questions. A consensus was reached on the clinical relevance of most updates in definitions and diagnosis of COPD. Mixed results for the treatment recommendations by GOLD were noted: 74% agreed with the recommendation to initiate treatment with dual bronchodilators for group E patients; 63% agreed for including inhaled corticosteroids (ICS)/long-acting β_2 agonist(LABA)/ Long-acting muscarinic receptor antagonists (LAMA) as a treatment option for GOLD B patients. Also, consensus lacked on removing ICS + LABA as an initial therapeutic option, in countries with challenges in access to other treatment option;. 88% agreed that they use GOLD recommendations in their daily clinical practice.

Conclusions: This Delphi study demonstrated a high level of consensus regarding key concepts of GOLD 2023 report, with most participants favoring recent updates in definitions, diagnosis, management, and prevention of COPD. More evidence on the etiotype based management and treatment options for group B and E are required which could further strengthen clinical application of the GOLD report.

Keywords: COPD; Clinical practice; Delphi procedure; GOLD 2023.

Plain language summary

The goal of this Delphi study was to understand and assess the level of alignment among the respiratory experts on the application of key changes and recommendations proposed by the GOLD 2023 report in their routine clinical practice for the management of patients with chronic obstructive pulmonary disease (COPD). There were two online surveys in this study, and experts from 16 countries (primarily focused on developing countries) were invited to participate. Using the Delphi method, expert representatives shared their insights with the aim of optimizing patient care. The alignment was assessed in six well-defined themes: 1) Overall view on GOLD/other recommendations; 2) Assessing patients with COPD; 3) Initial pharmacological treatment in patients with COPD; 4) Vaccination for patients with COPD; 5) Follow-up pharmacological treatment in patients with COPD; and 6) Survival evidence in patients with COPD. Participants expressed a high level of agreement regarding key concepts of the GOLD 2023 report, with most of them agreeing with recent updates in definitions, diagnosis, management, and prevention of COPD. The results also

highlighted the need to publish GOLD reports in multiple languages and in a shorter, pocket-sized format to increase awareness and adaptation among healthcare providers.

- 30 references

FULL TEXT LINKS

Proceed to details

Cite

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22

Review

Cureus

. 2023 Dec 18;15(12):e50738.

doi: 10.7759/cureus.50738. eCollection 2023 Dec.

High-Flow Nasal Cannula Oxygen Therapy in the Management of Respiratory Failure: A Review

Deyashini Mukherjee[1], Rahul Mukherjee[2,3]

Affiliations expand

- PMID: 38111819

- PMCID: PMC10727693

- DOI: 10.7759/cureus.50738

Free PMC article

Abstract

High-flow nasal cannula (HFNC) oxygen therapy is gaining traction globally as a treatment for respiratory failure. There are several physiological benefits, and there is a growing body of evidence showing improved quality of life and patient comfort with HFNC, both in acute and home settings. Due to the increased burden of long-term respiratory conditions such as chronic obstructive pulmonary disease (COPD) on healthcare systems worldwide, the role of ward-based and post-discharge interventions in the prevention of hospital readmissions is an area of increasing interest. In this narrative review, we outline the physiological effects of HFNC and assess its applications in both the hospital and home settings for acute and chronic respiratory failure. We also consider the evidence of non-invasive ventilation (NIV) versus HFNC in the hospital setting and the application of HFNC at home in stable hypercapnic respiratory failure to improve the quality of life and prevent readmissions. We also look at applications of HFNC in specific circumstances, such as the perioperative period, emergency department, and acute (mainly critical care) setting including in immunocompromised patients and palliative care.

Keywords: copd; critical care; hfnc; ltot; niv; respiratory failure; respiratory support.

Conflict of interest statement

The authors have declared that no competing interests exist.

- 79 references
- 1 figure

23

ERJ Open Res

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. 2023 Dec 18;9(6):00423-2023.

doi: 10.1183/23120541.00423-2023. eCollection 2023 Nov.

Impaired autophagy in the lower airways and lung parenchyma in stable COPD

Stefano Levra[1], Umberto Rosani[2], Isabella Gnemmi[3], Paola Brun[4], Andrea Leonardi[5], Vitina Carriero[1], Francesca Bertolini[1], Bruno Balbi[6], Mirella Profita[7], Fabio Luigi Massimo Ricciardolo[1,7,8,9], Antonino Di Stefano[3,9]

Affiliations expand

- PMID: 38111541

- PMCID: PMC10726222

- DOI: 10.1183/23120541.00423-2023

Free PMC article

Abstract

Background: There is increasing evidence of autophagy activation in COPD, but its role is complex and probably regulated through cell type-specific mechanisms. This study aims to investigate the autophagic process at multiple levels within the respiratory system, using different methods to clarify conflicting results reported so far.

Methods: This cross-sectional study was performed on bronchial biopsies and peripheral lung samples obtained from COPD patients (30 and 12 per sample type, respectively) and healthy controls (25 and 22 per sample type, respectively), divided by smoking history. Subjects were matched for age and smoking history. We analysed some of the most

important proteins involved in autophagosome formation, such as LC3 and p62, as well as some molecules essential for lysosome function, such as lysosome-associated membrane protein 1 (LAMP1). Immunohistochemistry was used to assess the autophagic process in both sample types. ELISA and transcriptomic analysis were performed on lung samples.

Results: We found increased autophagic stimulus in smoking subjects, regardless of respiratory function. This was revealed by immunohistochemistry through a significant increase in LC3 ($p<0.01$) and LAMP1 ($p<0.01$) in small airway bronchiolar epithelium, alveolar septa and alveolar macrophages. Similar results were obtained in bronchial biopsy epithelium by evaluating LC3B ($p<0.05$), also increased in homogenate lung tissue using ELISA ($p<0.05$). Patients with COPD, unlike the others, showed an increase in p62 by ELISA ($p<0.05$). No differences were found in transcriptomics analysis.

Conclusions: Different techniques, applied at post-transcriptional level, confirm that cigarette smoke stimulates autophagy at multiple levels inside the respiratory system, and that autophagy failure may characterise COPD.

Conflict of interest statement

Conflict of interest: None declared.

- 37 references
- 4 figures

24

Allergy

-
-
-

. 2023 Dec 18.

doi: 10.1111/all.15977. Online ahead of print.

Metabolic pathways in immune senescence and inflammaging: Novel therapeutic strategy for chronic inflammatory lung diseases. An EAACI position paper from the Task Force for Immunopharmacology

F Roth-Walter[1,2], I M Adcock[3], C Benito-Villalvilla[4], R Bianchini[1], L Bjermer[5], G Caramori[6], L Cari[7], K F Chung[8], Z Diamant[9,10,11], I Eguiluz-Gracia[12], E F Knol[13], M Jesenak[14], F Levi-Schaffer[15], G Nocentini[7], L O'Mahony[16,17,18], O Palomares[4], F Redegeld[19], M Sokolowska[20,21], B C A M Van Esch[19], C Stellato[22]

Affiliations expand

- PMID: 38108546

- DOI: 10.1111/all.15977

Abstract

The accumulation of senescent cells drives inflammaging and increases morbidity of chronic inflammatory lung diseases. Immune responses are built upon dynamic changes in cell metabolism that supply energy and substrates for cell proliferation, differentiation, and activation. Metabolic changes imposed by environmental stress and inflammation on immune cells and tissue microenvironment are thus chiefly involved in the pathophysiology of allergic and other immune-driven diseases. Altered cell metabolism is also a hallmark of cell senescence, a condition characterized by loss of proliferative activity in cells that remain metabolically active. Accelerated senescence can be triggered by acute or chronic stress and inflammatory responses. In contrast, replicative senescence occurs as part of the physiological aging process and has protective roles in cancer surveillance and wound healing. Importantly, cell senescence can also change or hamper response to diverse therapeutic treatments. Understanding the metabolic pathways of senescence in immune and structural cells is therefore critical to detect, prevent, or revert detrimental aspects of senescence-related immunopathology, by developing specific diagnostics and targeted therapies. In this paper, we review the main changes and metabolic alterations occurring in senescent immune cells (macrophages, B cells, T cells). Subsequently, we present the metabolic footprints described in translational studies in patients with chronic asthma and chronic obstructive pulmonary disease (COPD), and review the ongoing preclinical studies and clinical trials of therapeutic approaches aiming at targeting

metabolic pathways to antagonize pathological senescence. Because this is a recently emerging field in allergy and clinical immunology, a better understanding of the metabolic profile of the complex landscape of cell senescence is needed. The progress achieved so far is already providing opportunities for new therapies, as well as for strategies aimed at disease prevention and supporting healthy aging.

Keywords: cell metabolism; immune senescence; immunometabolism; inflammaging; senolytic drugs; senomorphic drugs.

- 396 references

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

Proceed to details

Cite

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25

Review

J Evid Based Med

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. 2023 Dec 16.

doi: 10.1111/jebm.12570. Online ahead of print.

Efficacy and safety of pharmacological intervention for smoking cessation in

smokers with diseases: A systematic review and network meta-analysis

Xin Xing[1,2,3], Xue Shang[4], Xinxin Deng[1,2,5], Kangle Guo[6], E Fenfen[1,2,5], Liying Zhou[1,2,5], Yongsheng Wang[1,2,5], Chaoqun Yang[1,2,5], Kehu Yang[1,2], Xiuxia Li[5]

Affiliations expand

- PMID: 38102895

- DOI: 10.1111/jebm.12570

Abstract

Objective: To investigate the most effective and best-tolerated drugs for treating diseased smokers.

Methods: Eight databases were searched for randomized controlled trials (RCTs) involving different pharmacological interventions for smoking cessation in disease patients (January 2023). Network meta-analysis was performed using STATA 15.1 software. The Cochrane Risk of Bias Tool assessed the risk of bias, and confidence in evidence was assessed using CINeMA.

Results: A total of 60 RCTs involving 13,009 patients of 12 disease categories were included. All trials reported 13 interventions, resulting in 78 comparisons. Network meta-analysis showed that varenicline (OR = 2.30, 95% CI (1.77, 3.00)) and bupropion (OR = 1.65, 95% CI (1.29, 2.11)) showed favorable abstinence effects compared to placebo in the cardiovascular disease population. Nicotine replacement therapy (NRT) had better withdrawal advantages than placebo (OR = 11.18, 95% CI (2.25, 55.54)) in the chronic obstructive pulmonary disease (COPD) population. Some combination treatments showed better results than monotherapy, such as bupropion + NRT was superior to bupropion (OR = 8.45, 95% CI (1.84, 38.89)) and NRT (OR = 4.98, 95% CI (1.25, 19.78)) in mental illness population. The final surface under the cumulative ranking curve indicated that bupropion + NRT achieved the best smoking cessation effect. Overall confidence in the evidence was low. In a comparison of drugs, the results showed that bupropion + NRT had the best safety.

Conclusions: Most interventions show the benefit of quitting smoking compared with placebo, including monotherapy and combination therapy. Moreover, varenicline or bupropion combined with NRT is superior to some monotherapies.

Keywords: network meta-analysis; pharmacotherapy; smoking cessation; systematic review.

- 50 references

SUPPLEMENTARY INFO

Publication types, Grants and fundingexpand

FULL TEXT LINKS

WILEY Full Text Article

Proceed to details

Cite

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26

Curr Opin Pulm Med

-
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. 2023 Dec 18.

doi: 10.1097/MCP.0000000000001042. Online ahead of print.

Selected updates on chronic obstructive pulmonary disease

Jordina Mah[1], Andrew I Ritchie[1,2], Lydia J Finney[1,3]

Affiliations expand

- PMID: 38099447

- DOI: 10.1097/MCP.0000000000001042

Abstract

Purpose of review: Chronic obstructive pulmonary disease (COPD) is preventable disease and yet it remains the third greatest cause of death worldwide. This review focuses on recent updates in COPD research which have had an impact on our understanding of the epidemiology and pathophysiology of COPD.

Recent findings: Epidemiological studies of COPD have moved towards trying to understand the global impact of COPD particularly in low- and middle-income countries where disease prevalence continues to increase. In addition, we are beginning to uncover the impact of air pollution on COPD development with recent work showing a relationship between air pollution and COPD exacerbations. Advances in understanding early origins and early development of COPD have the potential to intervene earlier in the disease course to prevent disease progression. Although biomarkers such as peripheral blood eosinophilia have led to trials of biologic agents in COPD suggesting we may be entering an exciting new biologic era in COPD.

Summary: Recent advances suggest there may be a relationship between air pollution and COPD exacerbations. This requires further research to influence environmental policy. New clinical trials of biologics targeting TH2 inflammation in COPD suggest that targeted treatments with biologics may be a possibility COPD.

- 35 references

27

Fam Pract

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. 2023 Dec 22;40(5-6):698-706.

doi: 10.1093/fampra/cmad025.

Continuity of care and mortality for patients with chronic disease: an observational study using Norwegian registry data

Sahar Pahlavanyali[1], Øystein Hetlevik[1], Valborg Baste[2], Jesper Blinkenberg[1,2], Steinar Hunskaar[1,2]

Affiliations expand

- PMID: 37074143
- PMCID: PMC10745252
- DOI: 10.1093/fampra/cmad025

Free PMC article

Abstract

Background: Research on continuity of care (CoC) is mainly conducted in primary care and has received little acknowledgment in other levels of care. This study sought to investigate CoC across care levels for patients with selected chronic diseases, along with its association with mortality.

Methods: In a registry-based cohort study, patients with ≥1 consultation in primary or specialist healthcare or hospital admission with asthma, chronic obstructive pulmonary disease (COPD), diabetes mellitus, or heart failure in 2012 were linked to disease-related consultation data in 2013-2016. CoC was measured by Usual Provider of Care index (UPC) and Bice-Boxermann continuity of care score (COCI). Values equal to one were categorized into one group and the rest into three equal groups (tertiles). The association with mortality was determined by Cox regression models.

Results: The highest mean UPCtotal was measured for patients with diabetes mellitus (0.58) and the lowest for those with asthma (0.46). The population with heart failure had the highest death rate (26.5). In adjusted Cox regression analyses for COPD, mortality was 2.6 times higher (95% CI 2.25-3.04) for patients in the lowest tertile of continuity compared to those with UPCtotal = 1. Patients with diabetes mellitus and heart failure showed similar results.

Conclusion: CoC was moderate to high for disease-related contacts across care levels. A higher mortality associated with lower CoC was observed for patients with COPD, diabetes mellitus, and heart failure. A similar, but not statistically significant trend was found for patients with asthma. This study suggests that higher CoC across levels of care can decrease mortality.

Keywords: chronic disease; continuity of care; general practice; healthcare system; mortality; observational study.

Conflict of interest statement

Authors declare that they have no competing interests.

- 37 references
- 2 figures

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

OXFORD ACADEMIC

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

1
Eur J Heart Fail

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. 2023 Dec 22.

doi: 10.1002/ejhf.3112. Online ahead of print.

The role of multimorbidity in patients with heart failure across the left ventricular ejection fraction spectrum:

data from the Swedish Heart Failure Registry

Daniela Tomasoni[1,2], Cristiana Vitale[3], Federica Guidetti[2], Lina Benson[2], Frieder Braunschweig[2,4], Ulf Dahlström[5], Michael Melin[4,6], Giuseppe M C Rosano[7], Lars H Lund[2,4], Marco Metra[1], Gianluigi Savarese[2,4]

Affiliations expand

- PMID: 38131248

- DOI: 10.1002/ejhf.3112

Abstract

Aims: The aim of this analysis was to provide data on the overall comorbidity burden, both cardiovascular (CV) and non-CV, in a large real-world heart failure (HF) population across the ejection fraction (EF).

Methods and results: Patients with HF from the Swedish HF Registry between 2000-2021 were included. Of 91,463 patients (median age 76 years [IQR 67-82]), 98% had at least one among the 17 explored comorbidities (94% at least one CV and 85% at least one non-CV comorbidity). All comorbidities, except for coronary artery disease (CAD), were more frequent in HF with preserved EF (HFpEF). Patients with multiple comorbidities were older, more likely female, inpatients, with HFpEF, worse NYHA class and higher NT-proBNP levels. In a multivariable Cox model, 12 comorbidities were independently associated with a higher risk of death from any cause. The highest risk was associated with dementia (hazard ratio [HR] 1.55, 95% confidence interval [CI] 1.45-1.65), chronic kidney disease (HR 1.37, 95%CI 1.34-1.41), chronic obstructive pulmonary disease (HR 1.32, 95%CI 1.28-1.35). Obesity was associated with a lower risk of all-cause death (HR 0.81, 95%CI 0.79-0.84). CAD and valvular heart disease were associated with a higher risk of all-cause and CV mortality, but not non-CV mortality, whereas cancer and muscolo-skeletal disease increased the risk of non-CV mortality. A significant interaction with EF was observed for several comorbidities. Occurrence of CV and non-CV outcomes was related to the number of CV and non-CV comorbidities, respectively.

Conclusion: The burden of both CV and non-CV comorbidities was high in HF regardless of EF, but overall higher in HFpEF. Multimorbidity was associated with a high risk of death with a different burden on CV or non-CV outcomes. This article is protected by copyright. All rights reserved.

Keywords: cardiovascular; comorbidities; heart failure; mortality; non cardiovascular; outcome.

2

J Multimorb Comorb

. 2023 Dec 17:13:26335565231220204.

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Commentary on the systematic review: Models of care for improving health-related quality of life, mental health, or mortality in persons with multimorbidity: A systematic review of randomized controlled trials

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Affiliations expand

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- PMCID: PMC10729638
- DOI: 10.1177/26335565231220204

Free PMC article

No abstract available

Keywords: Multimorbidity; healthcare organization; integrated care; multiple chronic conditions; systematic review.

Conflict of interest statement

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

3

BJGP Open

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Treatment burden in multiple long-term conditions: a mixed-methods study protocol

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Affiliations expand

- PMID: 37295796

- DOI: 10.3399/BJGPO.2023.0097

Free article

Abstract

Background: Treatment burden represents the work patients undertake because of their health care, and the impact of that effort on the patient. Most research has focused on older adults (aged >65 years) with multiple long-term conditions (multimorbidity) (MLTC-M), but there are now more

younger adults (aged 18-65 years) living with MLTC-M and they may experience treatment burden differently. Understanding experiences of treatment burden, and identifying those most at risk of high treatment burden, are important for designing primary care services to meet their needs.

Aim: To understand the treatment burden associated with MLTC-M, for people aged 18-65 years, and how primary care services affect this burden.

Design & setting: Mixed-methods study in up to 33 primary care practices in two UK regions.

Method: The following two approaches will be used: (i) in-depth qualitative interviews with adults living with MLTC-M (approximately 40 participants) to understand their experiences of treatment burden and the impact of primary care, with a think-aloud aspect to explore face validity of a novel short treatment burden questionnaire (STBQ) for routine clinical use in the initial 15 interviews; (ii) cross-sectional patient survey (approximately 1000 participants), with linked routine medical record data to examine the factors associated with treatment burden for people living with MLTC-M, and to test the validity of STBQ.

Conclusion: This study will generate in-depth understanding of the treatment burden experienced by people aged 18-65 years living with MLTC-M, and how primary care services affect this burden. This will inform further development and testing of interventions to reduce treatment burden, and potentially influence MLTC-M trajectories and improve health outcomes.

Keywords: general practice; multimorbidity; primary health care; primary healthcare; young adult.

4

Fam Pract

. 2023 Dec 22;40(5-6):810-819.

doi: 10.1093/fampra/cmad039.

Recruiting general practitioners and older patients with multimorbidity to randomized trials

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Affiliations expand

- PMID: 37014975
- PMCID: PMC10745264
- DOI: 10.1093/fampra/cmad039

Free PMC article

Abstract

Background: Older patients with multimorbidity are under-represented in experimental research.

Objective: To explore the barriers and facilitators to general practitioner (GP) and older patient recruitment and retention in a cluster randomized controlled trial (RCT).

Method: This descriptive study uses qualitative and quantitative data from a cluster RCT, designed to evaluate the effectiveness of a medicines optimization intervention. The SPPiRE cluster RCT enrolled 51 general practices and 404 patients aged ≥65 years and prescribed ≥15 medicines. Quantitative data were collected from all recruited practices and 32 additional practices who were enrolled, but unable to recruit sufficient participants. Qualitative data were collected from purposive samples of intervention GPs (18/26), patients (27/208), and researcher logs and analysed thematically using inductive coding.

Results: Enrolment rates for practices and patients were 37% and 25%, respectively. Barriers to GP recruitment were lack of resources and to patient recruitment were difficulty understanding trial material and concern about medicines being taken away. GPs' primary motivation was perceived importance of the research question, whereas patients' primary motivation was trust in their GP. All general practices were retained. Thirty-five patients (8.6%) were lost to follow-up for primary outcomes, mainly because they had died and 45% did not return patient-reported outcome measures (PROMs).

Conclusion: Patient retention for the primary outcome was high, as it was collected directly from patient records. Patient completion of PROM data was poor, reflecting difficulty in understanding trial material. Recruiting older patients with multimorbidity to clinical trials is possible but requires significant resource and planning.

Trial registration: ISRCTN Registry ISRCTN12752680.

Keywords: multimorbidity; polypharmacy; process evaluation; randomized controlled trial; research design.

Plain language summary

Randomized controlled trials (RCTs) often exclude older people with multiple medical conditions. The aim of this study was to explore how and why participants took part in a primary care based RCT that included 51 general practitioners (GPs) and 404 older patients prescribed ≥15 medicines. The RCT was designed to assess the usefulness of a supported medication review. The study team assessed information that was already collected as part of the RCT, to describe the process of inviting and enrolling GPs and older people. This included information on the numbers invited and enrolled and interviews from a smaller sample of GPs (18) and older people (27). The study successfully enrolled the required number of participants but it took 26 months more than planned. 37% of invited GPs and 25% of invited patients took part. GPs felt the research was important but they identified lack of time and resources as barriers to participation. Older people predominantly took part because they trusted their GP but some were wary of having medicines taken away and were put off by trial documentation. It is important that RCTs including older people with multiple medical conditions carefully plan recruitment and pay careful attention to trial documentation.

Conflict of interest statement

None declared.

- 44 references
- 2 figures

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

OXFORD ACADEMIC

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

1
Pulmonology

. 2023 Dec 22:S2531-0437(23)00202-7.

doi: 10.1016/j.pulmoe.2023.11.004. Online ahead of print.

Are we overlooking the lung function in the definition of severe asthma remission?

S Nolasco[1], R Campisi[2], N Crimi[3], C Crimi[4]

Affiliations expand

- PMID: 38142155

- DOI: 10.1016/j.pulmoe.2023.11.004

No abstract available

Keywords: Asthma; Lung function; Remission; Severe asthma.

Conflict of interest statement

Declaration of Competing Interest Claudia Crimi has received honoraria for lectures from ResMed, Fisher&Paykel, Sanofi, AstraZeneca, GlaxoSmithKline and Menarini. The other authors declare no conflicts of interest.

Review

Respir Med

. 2023 Dec 21:107504.

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Effect of dietary interventions on markers of type 2 inflammation in asthma: A systematic review

Edith Visser[1], Anneke Ten Brinke[2], Dionne Sizoo[3], Janneke J S Pepels[4], Lianne Ten Have[5], Erica van der Wiel[6], Tim van Zutphen[7], Huib A M Kerstjens[8], Kim de Jong[9]

Affiliations expand

- PMID: 38141862

- DOI: 10.1016/j.rmed.2023.107504

Abstract

Introduction: Type 2 (T2) inflammation is a key mechanism in the pathophysiology of asthma. Diet may have immunomodulatory effects, and a role for diet in T2 inflammation has been suggested in the literature. Indeed, diet and food allergies play a role in children with atopic asthma, but less is known about diet in relation to adult asthma, which is often non-atopic.

Objective: To review the effect of dietary interventions on markers of T2 inflammation in adults with asthma.

Methods: The databases PubMed, Embase, Cochrane Library, and CINAHL were searched for eligible studies until December 2022. We included studies of all types of foods, nutrients, diets or supplements, either as an exposure or as an intervention, in adults and adolescents with asthma. Outcomes of interest included the T2 biomarkers FeNO, eosinophils, IL-4, IL-5, IL-13, eosinophil cationic protein and eosinophil peroxidase. The

methodological quality of eligible studies was systematically evaluated, and the results were summarised according to dietary clusters.

Results: The systematic search identified studies on the dietary clusters antioxidants (n = 14), fatty acids, (n = 14), Mediterranean-style diets (n = 5), phytotherapy (n = 7), prebiotics & probiotics (n = 8), vitamin D (n = 7), and other dietary factors (n = 5). Studies within the phytotherapy and omega-3 poly-unsaturated fatty acids (PUFA) clusters showed possible improvements in T2 inflammation. Furthermore, we found little evidence for an effect of antioxidants, prebiotics & probiotics, and Mediterranean-style diets on T2 inflammation. However, heterogeneity in study protocols, methodological shortcomings and limited power of almost all studies make it difficult to fully determine the impact of different dietary approaches on T2 inflammation in asthma.

Conclusions: Overall, the current evidence does not support a specific dietary intervention to improve T2 inflammation in asthma. Interventions involving phytotherapy and omega-3 PUFA currently have the best evidence and warrant further evaluation in well-designed and adequately powered studies, while taking into account T2-high phenotypes of asthma.

Conflict of interest statement

Declaration of competing interest There is no conflict of interest.

SUPPLEMENTARY INFO

Publication typesexpand

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3

J Allergy Clin Immunol Pract

. 2023 Dec 21:S2213-2198(23)01372-7.

doi: 10.1016/j.jaip.2023.12.021. Online ahead of print.

Burden of Uncontrolled Severe Asthma With and Without Elevated Type-2 Inflammatory Biomarkers

Bo Ding[1], Stephanie Chen[2], Eleni Rapsomaniki[3], Anna Quinton[4], William Cook[2], Helen K Reddel[5], Alberto Papi[6]; NOVELTY Scientific Community and the NOVELTY study investigators

Affiliations expand

- PMID: 38141721

- DOI: 10.1016/j.jaip.2023.12.021

Abstract

Background: Many patients with asthma have Type-2 airway inflammation, identified by the presence of biomarkers, including history of allergy, high blood eosinophil (EOS) count, and high fractional exhaled nitric oxide (FeNO) levels.

Objective: To assess disease burden in relation to Type-2 inflammatory biomarker status (history of allergy, blood EOS count, and FeNO level) in patients with uncontrolled and controlled severe asthma in the NOVEL observational longiTudinal studY (NOVELTY) (NCT02760329).

Methods: Asthma diagnosis and severity were physician-reported. Control was defined using Asthma Control Test (ACT) score (uncontrolled <20, controlled ≥20) and/or ≥1 severe physician-reported exacerbation in the previous year. Biomarker distribution (history of allergy, blood EOS count, and FeNO level), symptom burden (ACT score, modified Medical Research Council [mMRC] dyspnea scale), health status (St George's Respiratory Questionnaire [SGRQ]), exacerbations, and healthcare resource utilization were assessed.

Results: Of 647 patients with severe asthma, 446 had uncontrolled and 123 had controlled asthma. Among uncontrolled asthma: 196 (44%) had ≥2 positive biomarkers; 187 (42%) had one positive biomarker; 325 (73%) had low blood EOS; and 63 (14%) were triple-negative. Disease burden was similarly high across uncontrolled subgroups, irrespective of biomarker status, with poor symptom control (ACT score 14.9-16.6), impaired health status (SGRQ total score 46.7-49.4), clinically important breathlessness (mMRC grade ≥2 in 47.3-57.1%), and ≥1 severe exacerbation (70.6-76.2%).

Conclusion: Type-2 inflammatory biomarkers did not differentiate disease burden in patients with severe asthma. Patients with low Type-2 inflammatory biomarker levels have few biologic therapy options; their needs should be addressed.

Keywords: Allergy; Asthma; Disease burden; Eosinophil; Exacerbations; Fractional exhaled nitric oxide; Health status; Healthcare resource utilization; Symptom control; Type-2 inflammatory biomarkers.

SUPPLEMENTARY INFO

Associated dataexpand

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Rev Recent Clin Trials

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. 2023 Dec 20.

doi: 10.2174/0115748871263396231121060901. Online ahead of print.

Potential Indications of Dupilumab in Th-2 Inflammatory Disease

Proietti Ilaria[1], Skroza Nevena[1], Tolino Ersilia[1], Bernardini Nicoletta[1], Federica Trovato[1], Marco Di Fraia[1], Dybala Agniezska[1], Potenza Concetta[1]

Affiliations expand

- PMID: 38141197

- DOI: 10.2174/0115748871263396231121060901

Abstract

Dupilumab is a fully humanized IgG4 monoclonal antibody, inhibiting IL-4 and IL-13 signaling, which are the main cytokines involved in type 2 inflammatory diseases. Its introduction was a breakthrough in the treatment of moderate-to-severe atopic dermatitis, but it is also used in other inflammatory diseases, including asthma, eosinophilic esophagitis and chronic rhinosinusitis with nasal polyposis. Recent advances in the understanding of inflammatory pathways have revealed that Th2-type inflammation is involved in a wider range of diseases than previously thought. The aim of our review is to examine off-label therapeutic indications of dupilumab, including bullous dermatoses (pemphigus, bullous pemphigoid) and alopecia areata, and to investigate its potential applications in cancer patients on anti-PD1 therapy.

Keywords: alopecia areata; atopic dermatitis; bullous disease; dupilumab; inflammatory disease; th2.

5

Osteoporos Int

. 2023 Dec 23.

doi: 10.1007/s00198-023-07004-1. Online ahead of print.

Higher risk of osteoporosis in adult-onset asthma than childhood-onset asthma: from genetic and prospective evidence

Weizhong Ding[1], Yong Huang[2], Guanghui Li[1], Yimin Dong[1], Xiaochen Li[3], Minglong Wu[1], Kehan Song[4], Feng Li[5]

Affiliations expand

- PMID: 38141141

- DOI: 10.1007/s00198-023-07004-1

Abstract

Both COA and AOA have a genetically causal effect on osteoporosis. COA and AOA were independently associated with incident osteoporosis, and the risk was greatly higher in AOA. Besides corticosteroids, the increased risk of osteoporosis among asthma patients should be attributed to genetic susceptibility and other asthma medications.

Purpose/introduction: Childhood-onset asthma (COA) differs with adult-onset asthma (AOA) on genetic susceptibility, severity, and co-morbidities. Whether COA or AOA is independently associated with osteoporosis is unexplored. We aimed to determine the effects of COA and AOA on osteoporosis at genetic and individual level.

Methods: We used two-sample Mendelian randomization analysis to explore the causal effects of COA and AOA on osteoporosis. In the UK Biobank cohort, we included 478,289 osteoporosis-free participants at baseline (2006-2010). Participants were classified as non-asthma, COA, and AOA at recruitment. Multivariate Cox regression analysis was used to evaluate the effects of COA, AOA, and multiple asthma medications on incident osteoporosis risk.

Results: COA and AOA were causally related to osteoporosis, with odds ratio of 1.007 (95% confidence interval (CI), 1.0003-1.0132) and 1.012 (95% CI, 1.002-1.023), respectively. Multivariate Cox regression analysis suggested that COA (hazard ratio (HR), 1.46; 95% CI, 1.32-1.61) and AOA (HR, 1.70; 95% CI, 1.61-1.80) were independently associated with incident osteoporosis, and the risk was greatly higher in AOA (HR, 1.51; 95% CI, 1.34-1.70). In addition to corticosteroids, monotherapy with leukotriene modifiers (HR, 1.70; 95% CI, 1.20-2.42), long-acting beta agonists (HR, 1.49; 95% CI, 1.18-1.87), and short-acting beta agonists (HR, 1.72; 95% CI1.01-2.93) were independently associated with a higher risk of osteoporosis.

Conclusions: Both COA and AOA have a genetically causal effect on osteoporosis, and the risk of osteoporosis is greatly higher in AOA. Besides corticosteroids, the increased risk of osteoporosis among asthma patients should be attributed to genetic susceptibility and other asthma medications.

Keywords: Adult-onset asthma; Childhood-onset asthma; Mendelian randomization; Osteoporosis; UK Biobank.

- 53 references

SUPPLEMENTARY INFO

Grants and fundingexpand

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6

Respir Med

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. 2023 Dec 20:107508.

doi: 10.1016/j.rmed.2023.107508. Online ahead of print.

Trends and sex differences in atrial fibrillation among patients hospitalized due to asthma: Insights from a nationwide population-based discharge database in Spain, 2016-2021

Javier de-Miguel-Diez[1], Natalia Gutierrez-Albaladejo[2], Francisco J Caballero-Segura[1], Ana Lopez-de-Andres[3], Rodrigo Jimenez-Garcia[4], José J Zamorano-Leon[4], David Carabantes-Alarcon[4], Ricardo Omaña-Palanco[4], Valentín Hernández-Barrera[5], Natividad Cuadrado-Corrales[4]

Affiliations expand

- PMID: 38135195

- DOI: 10.1016/j.rmed.2023.107508

Abstract

Aims: To analyze changes in the prevalence of atrial fibrillation (AF) in patients hospitalized due to asthma; to compare hospital outcomes in asthma patients with and without AF, assessing sex differences; to identify variables associated with the presence of AF; and to analyze the factors associated with in-hospital mortality (IHM) among asthma patients with AF.

Methods: We used data from the Registry of Specialized Care Activity-Basic Minimum Data Set to select all patients aged ≥40 years with an asthma diagnosis in Spain, from 2016 to 2021. We stratified the study population according to the presence of AF and sex.

Results: We identified 65,233 hospitalizations that met the inclusion criteria (14.85 % with AF). The prevalence of AF significantly increased over time, with the male sex being a protective factor for its presentation. IHM were significantly higher in patients with AF. Older age, being a woman, congestive heart failure, renal disease, obstructive sleep apnea, hypertension, and hyperthyroidism were associated with the presence of AF. Advanced age and the presence of cancer and COVID-19 were factors associated with a higher IHM, as well as admission to an intensive care unit and the use of invasive mechanical ventilation. There were no association of sex with the IHM.

Conclusions: AF is highly prevalent among subjects hospitalized due to asthma, with this prevalence having increased significantly in Spain over time. The presence of AF in patients with asthma was associated significantly with a higher LOHS and IHM. Sex was not associated with IHM in these patients.

Keywords: Asthma; Atrial fibrillation; Hospital admissions; In-hospital mortality; Prevalence; Sex-differences.

Conflict of interest statement

Declaration of competing interest All authors declare that they have none Conflict of Interest.

. 2023 Dec 20:S0091-6749(23)02458-2.

doi: 10.1016/j.jaci.2023.12.006. Online ahead of print.

Is the assessment of asthma treatment efficacy sufficiently comprehensive?

David A Stempel [1], Stanley J Szefler [2]

Affiliations expand

- PMID: 38135011

- DOI: 10.1016/j.jaci.2023.12.006

Abstract

The goal of asthma guideline therapy is to achieve disease control including the minimization of impairment and decreased risk of exacerbations and adverse effects of the disease and its treatment. The primary objective of most clinical trials of biologics for severe asthma is a reduction in exacerbation rate. Recently, studies with patients at lower guideline steps have also selected exacerbations reduction as a primary objective. These trials in milder patients frequently demonstrate statistically significant fewer exacerbations but their power calculations reflect larger sample size and smaller effect size. Exacerbations have a precise consensus definition, although a minimal clinically important differences has not been established. Exacerbation reduction in severe asthma is commonly 10-fold greater than in mild disease. Further, reduction in exacerbations is not always associated with reduced impairment. If superior control is the objective, both domains should demonstrate consistent and parallel improvement. The disconnect may reflect the need for alternative tools for impairment measurement or possibly different therapeutic mechanisms of action. Determining response to biologics or discussion of disease remission requires assessing symptoms that may occur daily, rather than focus on exacerbations that occur once or twice a year for patients at the highest steps of guideline care. Asthma guidelines are now in their fourth decade of evolution.[1, 2] The 2007 National Asthma Education and Prevention Program's Expert Panel Report 3 (EPR-3)[3] emphasized the importance of achieving asthma control. This pivotal document defined control: "as the degree to which the manifestations of asthma are minimized by therapeutic intervention and the goals of therapy are met." Asthma control consists of two domains: impairment and risk. The goals of guideline therapy established are to reduce impairment by

minimizing symptoms and address risk by decreasing asthma exacerbations and long-term complications from the disease and its therapy. Whether assessing optimal control over the prior 4 weeks or determining if long-term remission is achieved, clinicians need appropriate measures to properly assess asthma control. Evaluating the impairment domain requires validated tools that accurately demonstrate the absence of significant symptoms, optimization of lung function and achievement of patient and provider goals of therapy. Demonstrating risk reduction focuses on reducing severe exacerbations and limiting disease progression. Assessing both impairment and risk are required for determination of asthma control. The objective of this rostrum is to review if present evaluation methodologies are valid and appropriate across at all levels of asthma severity and control. If deficits exist, what areas need research and development to better evaluate asthma control?

Keywords: Asthma; clinically important difference; effect size; guidelines; severe exacerbations; statistics.

Review

J Allergy Clin Immunol

. 2023 Dec 20:S0091-6749(23)02459-4.

doi: 10.1016/j.jaci.2023.12.007. Online ahead of print.

Health Literacy and Asthma: An Update

Yueh-Ying Han[1], Amanda Gutwein[1], Andrea Apter[2], Juan C Celedón[3]

Affiliations expand

- PMID: 38135010

- DOI: 10.1016/j.jaci.2023.12.007

Abstract

The U.S. Department of Health and Human Services has defined health literacy (HL) as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions. Structural and social determinants of health lead to low HL in ~36% of adults in the U.S., where this condition is most prevalent in racial and ethnic minorities, economically disadvantaged communities, and immigrants with limited English proficiency. In turn, low HL can worsen asthma outcomes through direct effects (e.g., non-adherence to or incorrect use of medications) and indirect effects (e.g., an unhealthy diet leading to obesity, a risk factor for asthma morbidity). The purpose of this update is to examine evidence from studies on low HL and health and asthma outcomes published in the last twelve years, identify approaches to improve HL and reduce health disparities in asthma, and discuss future directions for research in this area under the conceptual framework of a socio-ecological model that illustrates the multifactorial and interconnected complexity of this public health issue at different levels.

Keywords: Health literacy; adults; asthma; children; disparities.

doi: 10.18176/jiaci.0966. Online ahead of print.

Global Lung Initiative as diagnostic criteria in Asthma-COPD overlap syndrome. Prevalence and characterization of the syndrome in a real-life asthma cohort

D Betancor[1], M Otal[1], J M Olaguibel[2 3], J M Rodrigo-Muñoz[3 4], J M Alvarez Puebla[2 3], E Arismendi[3 5], P Barranco[3 6], B Barroso[1 3], I Bobolea[1 5], B Cárdaba[3 4], M J Cruz[3 7], E Curto[8], V Del Pozo[3 4], J Domínguez-Ortega[3 6], F J González-Barcala[9], J A Luna-Porta[3 6], C Martínez-Rivera[3 10], J Mullol[3 11], X Muñoz[3 12], C Picado[5], V Plaza[8], S Quirce[3 6], M J Rial[3 13], I Roibás-Veiga[14], L Soto-Retes[8], A Valero[3 5], M Valverde-Monge[1 3], J Sastre[1 3]

Affiliations expand

- PMID: 38131661

- DOI: 10.18176/jiaci.0966

No abstract available

Keywords: Asthma severity; Asthma-COPD; Exacerbations; Medication use; Overlap syndrome.

10

Sci Rep

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. 2023 Dec 20;13(1):22796.

doi: 10.1038/s41598-023-49135-9.

Identification of differences in CD4+ T-cell gene expression between people with asthma and healthy controls

Mauro Tutino[#1], Jenny Hankinson[#2], Clare Murray[2,3], Lesley Lowe[2,3], Gina Kerry[2,3], Magnus Rattray[4], Adnan Custovic[5], Sebastian L Johnston[5], Chenfu Shi[6], Gisela Orozco[3,6], Stephen Eyre[3,6], Paul Martin[6,7], Angela Simpson[2], John A Curtin[2]

Affiliations expand

- PMID: 38129444
- PMCID: PMC10739740
- DOI: 10.1038/s41598-023-49135-9

Abstract

Functional enrichment analysis of genome-wide association study (GWAS)-summary statistics has suggested that CD4+ T-cells play an important role in asthma pathogenesis. Despite this, CD4+ T-cells are under-represented in asthma transcriptome studies. To fill the gap, 3'-RNA-Seq was used to generate gene expression data on CD4+ T-cells (isolated within 2 h from collection) from peripheral blood from participants with well-controlled asthma (n = 32) and healthy controls (n = 11). Weighted Gene Co-expression Network Analysis (WGCNA) was used to identify sets of co-expressed genes (modules) associated with the asthma phenotype. We identified three modules associated with asthma, which are strongly enriched for GWAS-identified asthma genes, antigen processing/presentation and immune response to viral infections. Through integration of publicly available eQTL and GWAS summary statistics (colocalisation), and protein-protein interaction (PPI) data, we identified PTPRC, a potential druggable target, as a putative master regulator of the asthma gene-expression profiles. Using a co-expression network approach, with integration of external genetic and PPI data, we showed that CD4+ T-cells from peripheral blood from asthmatics have different expression profiles, albeit small in magnitude, compared to healthy controls, for sets of genes involved in immune response to viral infections (upregulated) and antigen processing/presentation (downregulated).

Conflict of interest statement

The authors declare no competing interests.

- 42 references
- 3 figures

SUPPLEMENTARY INFO

Grants and fundingexpand

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11

Chest

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. 2023 Dec 19:S0012-3692(23)05934-2.

doi: 10.1016/j.chest.2023.12.020. Online ahead of print.

Increased burden of pertussis among adolescents and adults with asthma or COPD in the US, 2007–2019

Sarah Naeger[1], Vitali Pool[1], Denis Macina[2]

Affiliations expand

- PMID: 38128608

- DOI: 10.1016/j.chest.2023.12.020

Abstract

Background: Individuals with chronic respiratory illnesses may be at higher risk of pertussis infection and severe pertussis than those without.

Research question: What is the incidence of pertussis and pertussis complications in cohorts with pre-existing asthma or COPD versus age- and sex-matched controls from the general population in the US?

Study design and methods: This observational, retrospective study included individuals ≥10 years of age from an administrative health claims system between 2007 and 2019. Individuals with pre-existing asthma or COPD were matched with controls from the general population. The incidence of pertussis infections and pertussis-related complications were assessed overall and by age. The incidence of asthma or COPD exacerbations was also assessed before and after diagnosis of pertussis.

Results: In the general population, incidence per 100,000 person-years of pertussis infection ranged from 5.33 in 2007 to 13.04 in 2012, with highest (all years) in those 10-17 years of age. The risk of pertussis was higher for the asthma (rate ratio [RR] 3.57, 95% confidence interval [CI]: 3.25-3.92), and COPD cohorts (RR 1.83, 95% CI: 1.57-2.12) than the general population. Those with asthma or COPD had a 4.12-fold (95% CI: 3.16, 5.38) and 2.82-fold (95% CI: 2.14, 3.27) increased risk of pertussis with complications than the general population, respectively. Exacerbations were most frequent 30 days before pertussis diagnosis (incidence rate [IR] 25%) in the asthma cohort and 30 days before (IR 26%) and after (IR 22%) pertussis diagnosis, remaining elevated for 180 days after diagnosis, in the COPD cohort.

Interpretation: Among these insured individuals, asthma or COPD increased the risk for pertussis disease and complications versus the general population. COPD and asthma exacerbations were observed most frequently within 30-days of receiving a pertussis diagnosis and remained elevated, suggesting a long-term effect of pertussis in the COPD cohort.

Keywords: COPD; Pertussis; adults; asthma; burden of disease; incidence.

12

JCI Insight

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. 2023 Dec 21:e174124.

doi: 10.1172/jci.insight.174124. Online ahead of print.

Persistent mucus plugs in proximal airways are consequential for airflow limitation in asthma

Brendan K Huang[1], Brett M Elicker[2], Travis S Henry[3], Kimberly G Kallianos[2], Lewis D Hahn[4], Monica Tang[1], Franklin Heng[5], Charles E McCulloch[6], Nirav R Bhakta[1], Sharmila Majumdar[2], Jiwoong Choi[7], Loren C Denlinger[8], Sean B Fain[9], Annette T Hastie[10], Eric A Hoffman[9], Elliot Israel[11], Nizar N Jarjour[8], Bruce D Levy[11], David T Mauger[12], Kaharu Sumino[13], Sally E Wenzel[14], Mario Castro[7], Prescott G Woodruff[1], John V Fahy[1]

Affiliations expand

- PMID: 38127464

- DOI: 10.1172/jci.insight.174124

Free article

Abstract

Background: Information about the size, airway location, and longitudinal behavior of mucus plugs in asthma is needed to understand their role in mechanisms of airflow obstruction and to rationally design muco-active treatments.

Methods: Computed tomography (CT) lung scans from 57 asthma patients were analyzed to quantify mucus plug size and airway location, and paired CT scans obtained 3 years apart were analyzed to determine plug behavior over time. Radiologist annotations of mucus plugs were incorporated in an image-processing pipeline to generate size and location information that was related to measures of airflow.

Results: The length distribution of 778 annotated mucus plugs was multimodal and a 12 mm length defined short ("stubby", ≤12 mm) and long ("stringy", >12 mm) plug phenotypes. High mucus plug burden was disproportionately attributable to stringy mucus plugs. Mucus plugs localized predominantly to airway generations 6 to 9, and 47% of plugs in baseline scans, persisted in the same airway for three years, and fluctuated in length and volume. Mucus plugs in larger proximal generations had greater effects on spirometry measures than plugs in smaller distal generations, and a model of airflow that estimates the increased airway resistance attributable to plugs predicted higher impact for proximal and more numerous mucus plugs.

Conclusions: Persistent mucus plugs in proximal airway generations occur in asthma and demonstrate a stochastic process of formation and resolution over time. Proximal airway mucus plugs are consequential for airflow and are in locations amenable to treatment by inhaled muco-active drugs or bronchoscopy.

Clinicaltrials: gov NCT01718197, NCT01606826, NCT01750411, NCT01761058, NCT01761630, NCT01759186, NCT01716494, and NCT01760915FUNDING. NIH Grants: R01 HL080414, UG1 HL139106, P01 HL107202, U01 HL146002, U10 HL109172, U10 HL109168, U10 HL109152, U10 HL109257, U10 HL109146, U10 HL109250, U10 HL109164, U10 109086, and T32 HL007185, F32 HL162422. The following companies provided financial support for study activities at the Coordinating and Clinical Centers beyond the third year of patient follow-up: AstraZeneca, Boehringer-Ingelheim, Genentech, GlaxoSmithKline, Sanofi-Genzyme- Regeneron, and TEVA. These companies had no role in study design or data analysis, and the only restriction on the funds was that they be used to support the SARP initiative.

Keywords: Asthma; Clinical practice; Diagnostic imaging; Pulmonology.

13

Curr Opin Allergy Clin Immunol

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Long-term outcome of occupational asthma with different etiology

Hille Suojalehto[1], Irmeli Lindström

Affiliations expand

- PMID: 38126800

- DOI: 10.1097/ACI.0000000000000962

Abstract

Purpose of review: This review summarizes the recent literature on the long-term outcome of sensitizer-induced and irritant-induced occupational asthma.

Recent findings: Recent studies of sensitizer-induced occupational asthma show that after the offending exposure has ceased, most patients report at least partial relief of symptoms. However, in the long term, the diagnosis may negatively impact their careers, incomes, and quality of life. The studies also offer new insights into diisocyanate-induced occupational asthma phenotypes and asthma remission rates. One third of these cases were in remission in long-term after reduction or cessation of exposure. The long-term prognosis of irritant-induced occupational asthma was demonstrated to be poorer than sensitizer-induced occupational asthma. Older age, low fractional exhaled nitric oxide levels and uncontrolled asthma at the time of diagnosis predicted uncontrolled asthma in the long term in patients with irritant and low-molecular-weight sensitizer induced occupational asthma.

Summary: Recent studies provide further evidence of the long-term outcome of different occupational asthma phenotypes and the factors that affect them. These findings help us identify patients at risk of poor asthma outcomes, who need close monitoring and support. It should also be borne in mind that occupational asthma diagnosis may have wider-ranging negative impacts on patients' lives.

- 35 references

FULL TEXT LINKS

Wolters Kluwer

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14

Review

Eur Respir Rev

. 2023 Dec 20;32(170):230105.

doi: 10.1183/16000617.0105-2023. Print 2023 Dec 31.

Treatable traits in asthma during pregnancy: a call for a shift towards a precision-based management approach

Esha Joshi[1,2], Peter G Gibson[1,2,3], Vanessa M McDonald[1,2,4], Vanessa E Murphy[5,2]

Affiliations expand

- PMID: 38123232

- PMCID: PMC10731471

- DOI: 10.1183/16000617.0105-2023

Free PMC article

Abstract

Asthma is the most common chronic medical condition in pregnancy. Asthma exacerbations in pregnancy are unpredictable, and are associated with adverse maternal and fetal perinatal outcomes such as preterm birth and low birthweight. Goals of asthma management in pregnancy are to establish effective asthma control and prevent exacerbations. Optimising the management of asthma in pregnancy is an important goal of practice and future research.Treatable traits is a precision medicine paradigm proposed for the management of airways diseases, which holistically addresses the complexity and heterogeneity of airways disease. It is an individualised treatment approach that aims to improve outcomes. This makes treatable traits well suited for pregnant women with asthma, who have a high prevalence of obesity, mental health conditions, poor symptom perception and suboptimal asthma management skills including low treatment adherence. These traits are measurable and treatable. In this review, we explore current knowledge on

the burden of asthma, maternal and perinatal consequences of asthma during pregnancy, the treatable traits paradigm, the prevalence of treatable traits in pregnant women with asthma, and consider how the treatable traits paradigm can be integrated into the management of asthma in pregnancy.

Conflict of interest statement

Conflicts of interests: E. Joshi's Doctor of Philosophy is supported by a scholarship from the University of Newcastle. P.G. Gibson has received fees from AstraZeneca, GlaxoSmithKline, Novartis and Sanofi. P.G. Gibson's institution has received grants from GlaxoSmithKline. V.M. McDonald has received fees from AstraZeneca, GlaxoSmithKline, Novartis and Boehringer Ingleheim. V.M. McDonald's institution has received fees from GlaxoSmithKline, AstraZeneca and Cyclopharm. V.E. Murphy would like to acknowledge her fellowship. V.E. Murphy is supported by an Investigator Grant funded by the Medical Research Future Fund (application ID 1196252).

- 116 references
- 1 figure

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Chest

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. 2023 Dec 18:S0012-3692(23)05871-3.

doi: 10.1016/j.chest.2023.12.015. Online ahead of print.

Use of Quantitative CT to Identify Bronchial Thermoplasty Responders

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Affiliations expand

- PMID: 38123124

- DOI: 10.1016/j.chest.2023.12.015

Abstract

Background: Bronchial thermoplasty (BT) is a treatment for patients with poorly controlled, severe asthma. However, predictors of treatment response to BT are poorly defined.

Research question: Are there baseline radiographic and clinical characteristics that predict response to BT?

Study design and methods: We conducted a longitudinal prospective cohort study of participants with severe asthma receiving BT across 8 academic medical centers. Participants received 3 separate BT treatments and were monitored at 3-month intervals for 1 year following BT. Similar to prior studies, a positive response to BT was defined as either improvement in Asthma Control Test (ACT) of ≥3 or Asthma Quality of Life Questionnaire (AQLQ) of ≥0.5. Regression analyses were utilized to evaluate the association between pre-treatment clinical and quantitative CT (qCT) measures with subsequent BT response.

Results: From 2006 to 2017, 88 participants received BT with 70 (79.5%) identified as responders by ACT or AQLQ criteria. Responders were less likely to have an asthma-related ICU admissions in the prior year (3% vs 25%, P=0.01). On baseline qCT, BT responders had less air trapping percentage (odds ratio [OR] = 0.90, 95% confidence interval [CI] 0.82 to 0.99, P=0.03), a greater Jacobian determinant (OR = 1.49, 95% CI 1.05 to 2.11), greater standard deviation (SD) of the Jacobian determinant (OR = 1.84, 95% CI 1.04 to 3.26), and greater anisotropic deformation index (OR = 3.06, 95% CI 1.06 to 8.86]).

Interpretation: To our knowledge, this is the largest study to evaluate baseline qCT and clinical characteristics associated with BT response. Our results show that preservation of normal lung expansion, indicated by less air trapping, a greater magnitude of isotropic expansion, and greater within-lung spatial variation on qCT were predictors of future BT response.

Keywords: air trapping; bronchial thermoplasty; lung deformation; quantitative CT; severe asthma.

16

Pediatr Pulmonol

. 2023 Dec 20.

doi: 10.1002/ppul.26824. Online ahead of print.

Palivizumab prophylaxis in preterm infants and subsequent wheezing/asthma: 10-year follow-up study

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Affiliations expand

- PMID: 38116923

- DOI: 10.1002/ppul.26824

Abstract

Background: Respiratory syncytial virus (RSV) causes not only infantile recurrent wheezing but also the development of asthma. To investigate whether palivizumab, an anti-RSV monoclonal antibody, prophylaxis given to preterm infants during the first RSV season reduces the incidence of subsequent recurrent wheezing and/or development of asthma, at 10 years of age.

Methods: We conducted an observational prospective multicenter (52 registered hospitals in Japan) case-control study in preterm infants with a gestational age between 33 and 35 weeks followed for 6 years. During the 2007-2008 RSV season, the decision to administer palivizumab was made based on standard medical practice (SCELIA study). Here, we followed these subjects until 10 years of age. Parents of study subjects reported the patients' physician's assessment of recurrent wheezing/asthma, using a report card and a novel mobile phone-based reporting system using the internet. The relationship between RSV infection and asthma development, as well as the relationship between other factors and asthma development, were investigated.

Results: Of 154 preterm infants enrolled, 113 received palivizumab during the first year of life. At 10 years, although both recurrent wheezing and development of asthma were not significantly different between the treated and untreated groups, maternal smoking with aeroallergen sensitization of the patients was significantly correlated with physician-diagnosed asthma.

Conclusions: In contrast to the prior study results at 6 years, by 10 years palivizumab prophylaxis had no impact on recurrent wheezing or asthma, but there was a significant correlation between maternal passive smoking with aeroallergen sensitization and development of asthma by 10 years of age.

Keywords: aeroallergen sensitization; asthma development; palivizumab; passive smoking; respiratory syncytial virus.

- 33 references

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

17

RMD Open

. 2023 Dec 19;9(4):e003583.

doi: 10.1136/rmdopen-2023-003583.

Anti-IL-5 biologics and rheumatoid arthritis: a single-centre 500 patient year exposure analysis

Nathan J Dean[1], Ian J Clifton[2], Rashad Salman[2], Charles Bridgewood[3], Jacquie Nam[4], Tom Macleod[3], Dennis G McGonagle[3]

Affiliations expand

- PMID: 38114196

- DOI: 10.1136/rmdopen-2023-003583

Free article

Abstract

Objective: The increasing use of biological therapies has led to the paradoxical finding that monoclonal antibody therapy for one inflammatory disease can sometimes induce another inflammatory disease. Recently, the use of anti-IL-5 (IL, interleukin) antibody therapies for severe asthma has been associated with the onset of rheumatoid arthritis (RA) and other inflammatory rheumatological disease. We undertook this audit to identify the prevalence of this finding across a large clinical cohort of patients receiving anti-IL-5 therapy.

Methods: All patients currently receiving mepolizumab or benralizumab for severe asthma across the Leeds Teaching Hospitals NHS Trust's (LTHT) Respiratory Service were included. Electronic records for each patient were searched to identify clinical and biochemical manifestations of inflammatory rheumatological disease following the initiation of anti-IL-5 therapy.

Results: 142 patients, with a mean duration of 3.5 years on therapy, were included (89 mepolizumab, 53 benralizumab). 17 patients developed new arthralgias (nine mepolizumab, eight benralizumab), however only one of these patients (on mepolizumab) had raised acute phase reactants and newly positive anti-CCP antibody (ACPA) and rheumatoid factor and was the only patient to receive a formal diagnosis of RA.

Conclusion: Although ACPA positive RA has now been reported in a handful of case reports, we noted a very low rate of evolution into RA or inflammatory arthritis, at least in the short-medium term under anti-IL-5 therapy. This challenges the emerging suggestion that anti-IL-5 biologics may be triggering RA.

Keywords: Arthritis; Arthritis, Rheumatoid; Biological Therapy; Immune System Diseases.

Conflict of interest statement

Competing interests: None declared.

. 2023 Dec 19:1-16.

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Multivariate analysis and data mining help predict asthma exacerbations

Stefan Mihaicuta[1], Lucretia Udrescu[2], Adrian Militaru[3], Valentin Nadasan[4], Angelica Tiotiu[5], Andras Bikov[6,7], Sorin Ursoniu[8,9], Romina Birza[1], Alina Mirela Popa[1], Stefan Frent[1]

Affiliations expand

- PMID: 38112563

- DOI: 10.1080/02770903.2023.2297366

Abstract

Background. Work-related asthma has become a highly prevalent occupational lung disorder. **Objective.** Our study aims to evaluate occupational exposure as a predictor for asthma exacerbation. **Method.** We performed a retrospective evaluation of 584 consecutive patients diagnosed and treated for asthma between October 2017 and December 2019 in 4 clinics from Western Romania. We evaluated the enrolled patients for their asthma control level by employing the Asthma Control Test (ACT < 20 represents uncontrolled asthma), the medical record of asthma exacerbations, occupational exposure, and lung function (i.e., spirometry). Then, we used statistical and data mining methods to explore the most important predictors for asthma exacerbations. **Results.** We identified essential predictors by calculating the odds ratios (OR) for the exacerbation in a logistic regression model. The average age was 45.42 ± 11.74 years (19-85 years), and 422 (72.26%) participants were females. 42.97% of participants had exacerbations in the past year, and 31.16% had a history of occupational exposure. In a multivariate model analysis adjusted for age and gender, the most important predictors for exacerbation were uncontrolled asthma (OR 4.79, $p < 0.001$), occupational exposure (OR 4.65, $p < 0.001$), and lung function impairment (FEV1 < 80%) (OR 1.15, $p = 0.011$). The ensemble machine learning experiments on combined patient features harnessed by our data mining approach reveal that the best predictor is professional exposure, followed by ACT. **Conclusions.** Machine learning ensemble methods and statistical analysis concordantly indicate that occupational exposure and ACT < 20 are strong predictors for asthma exacerbation.

Keywords: asthma exacerbation; data mining; ensemble learning; occupational exposure; predictor; work-related asthma.

19

J Asthma

. 2023 Dec 19:1-26.

doi: 10.1080/02770903.2023.2294910. Online ahead of print.

Impact of a discharge prescription for dexamethasone on outcomes of children treated in the emergency department for acute asthma exacerbations

Melisa S Tanverdi[1], Nidhya Navanandan[1], Savannah Brackman[2], Lorel Huber[2], Jan Leonard[1], Rakesh D Mistry[1]

Affiliations expand

- PMID: 38112414

- DOI: 10.1080/02770903.2023.2294910

Abstract

Objectives: To evaluate dexamethasone prescribing practices, patient adherence, and outcomes by dosing regimen in children with acute asthma discharged from the emergency department (ED).

Study design: Prospective study of children 2-18 years treated with dexamethasone for acute asthma prior to discharge from an urban, tertiary care ED between 2018-2022. Demographics, clinical characteristics, ED treatment, and discharge prescriptions were collected via chart review. The exposure was discharge prescription (additional dose) versus no discharge prescription for dexamethasone. The primary outcome was treatment failure, defined as return ED visit, unplanned primary care visit, and/or ongoing bronchodilator use. Secondary outcomes included medication adherence, symptom persistence, quality-of-life, and school/work absenteeism. Outcomes were assessed by telephone 7-10 days after discharge.

Results: 564 subjects were enrolled; 338 caregivers (60%) completed follow-up. Children were a median age seven years, 30% Black or African American, 49% Hispanic, and 79% had public insurance. A discharge prescription for dexamethasone was written for 482 (86%) children and was significantly associated with exacerbation severity, number of combined albuterol/ipratropium treatments, and longer length of stay. There was no difference in treatment failure between the discharge prescription and no discharge prescription groups (RR 0.87; 0.67, 1.12), including after adjusting for potential confounders; there was no difference between groups in secondary outcomes.

Conclusions: Prescription for an additional dexamethasone dose was not associated with reduced treatment failure or improved outcomes for children with acute asthma discharged from the ED. Single, ED-dose of dexamethasone prior to discharge may be sufficient for children with mild to moderate asthma exacerbations.

Keywords: Adherence; Corticosteroid; Dexamethasone; Emergency Department; Pediatric; Treatment Failure.

20

BMC Pediatr

. 2023 Dec 18;23(1):640.

doi: 10.1186/s12887-023-04456-6.

Neutrophil to lymphocyte ratio in pediatric patients with asthmatic exacerbation and community-acquired pneumonia

Mei Xu[1,2], Lingfang Zhou[3], Jie Zhang[4], Sha Luo[5], Yunfeng Zhao[6], Wei Xiong[7]

Affiliations expand

- PMID: 38110898
- PMCID: PMC10726602
- DOI: 10.1186/s12887-023-04456-6

Free PMC article

Abstract

Background: Compared with a lower neutrophil to lymphocyte ratio(NLR), a higher one denotes severe asthma exacerbation in hospitalized asthmatic children. In addition, NLR is significantly higher in pediatric patients with community-acquired pneumonia (CAP) than those without. Nevertheless, its role in pediatric patients with concomitant asthmatic exacerbation and CAP remains unknown.

Methods: In this retrospective study including 1032 pediatric patients aged 5 to 14 years old, the diagnostic and prognostic value of NLR in children with concomitant asthmatic exacerbation and non-severe CAP were investigated.

Results: The sensitivity and specificity of NLR for a diagnosis of CAP in patients with asthmatic exacerbation were 56.9% and 90.1%, respectively. The cutoff value of NLR for a diagnosis of CAP in patients with asthmatic exacerbation was 4.15 ($P < 0.001$). The cumulative asthmatic exacerbation during 3-month followup of patients with high NLR were 23 (21.3%) and 58 (42.0%) in the asthma and asthmatic CAP groups, respectively ($P < 0.001$). The patients with high NLR who had unimproved CAP were 15 (8.3%) and 23 (12.2%) in the CAP and asthmatic CAP groups, respectively ($P = 0.006$). Multivariate analyses showed that along with the increase of NLR by 1.0 point, the HR for the

occurrence of asthmatic exacerbation and unimproved CAP were 2.91 [1.83-3.96] (P = 0.001) and 3.38 [1.66-5.10] (P < 0.001), respectively.

Conclusions: NLR had high and moderate diagnostic value for the exclusion and indication of CAP, respectively, in pediatric patients with asthmatic exacerbation. It also had prognostic value for the outcomes of pediatric patients with concomitant asthmatic exacerbation and CAP.

Keywords: Asthma; Asthmatic exacerbation; Community-acquired pneumonia; Neutrophil to lymphocyte ratio; Pediatric.

Conflict of interest statement

The authors declare no competing interests.

- 29 references
- 5 figures

SUPPLEMENTARY INFO

MeSH terms, Grants and fundingexpand

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Review

Adv Ther

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. 2023 Dec 19.

doi: 10.1007/s12325-023-02743-3. Online ahead of print.

Machine Learning Approaches to Predict Asthma Exacerbations: A Narrative Review

Nestor A Molfino[1], Gianluca Turcatel[2], Daniel Riskin[3]

Affiliations expand

- PMID: 38110652

- DOI: 10.1007/s12325-023-02743-3

Abstract

The implementation of artificial intelligence (AI) and machine learning (ML) techniques in healthcare has garnered significant attention in recent years, especially as a result of their potential to revolutionize personalized medicine. Despite advances in the treatment and management of asthma, a significant proportion of patients continue to suffer acute exacerbations, irrespective of disease severity and therapeutic regimen. The situation is further complicated by the constellation of factors that influence disease activity in a patient with asthma, such as medical history, biomarker phenotype, pulmonary function, level of healthcare access, treatment compliance, comorbidities, personal habits, and environmental conditions. A growing body of work has demonstrated the potential for AI and ML to accurately predict asthma exacerbations while also capturing the entirety of the patient experience. However, application in the clinical setting remains mostly unexplored, and important questions on the strengths and limitations of this technology remain. This review presents an overview of the rapidly evolving landscape of AI and ML integration into asthma management by providing a snapshot of the existing scientific evidence and proposing potential avenues for future applications.

Keywords: Algorithm; Artificial intelligence; Asthma; Exacerbation; Machine learning.

- 79 references

SUPPLEMENTARY INFO

Publication typesexpand

22

PLOS Glob Public Health

. 2023 Dec 18;3(12):e0002521.

doi: 10.1371/journal.pgph.0002521. eCollection 2023.

A trend analysis of Black American women with cardiovascular disease and chronic medical conditions, sociodemographic factors from NHANES From 2011 to 2020

Rezaul Karim Ripon[1,2,3], Fahmida Hoque Rimti[4], Mickelder Kercy[5], Shahriar Hossain[2,3], Umma Motahara[2], Md Sharif Hossain[3,6], Md Tajuddin Sikder[2]

Affiliations expand

- PMID: 38109309

- PMCID: PMC10727433

- DOI: 10.1371/journal.pgph.0002521

Free PMC article

Abstract

Background: Significant racial and gender differences exist in the prevalence of CVD in the United States. The goal of this study is to evaluate the prevalence of CVD among Black American women, the relationship between CVD and some medical conditions, and significant sociodemographic factors.

Methods: The researchers in this study used data from four cycles of the NHANES, carried out by the NCHS. 2011 to 2012, 2013 to 2014, 2015 to 2016, and 2017 to 2020 were the cycles that were chosen. The researchers used the survey package in the R programming language to examine the data.

Results: People with CVD problems 20 years of age and older were included in the analyses. Black American women experienced a considerable prevalence of CVD from 2011 to 2020. These women were more likely to report having completed no more schooling than the ninth grade, being widowed/divorced/separated, and having undergone a hysterectomy, as well as having a history of diabetes, asthma, obesity, arthritis, and depression. Black American women with CVD had a 3.8-fold increased risk of diabetes and a 5.6-fold increased risk of arthritis.

Conclusion: This study shows that Black American women with CVD are more likely to have chronic illnesses such as hysterectomy, diabetes, asthma, obesity, arthritis, and depression. Black American women's cardiovascular risk profiles can be updated using the data from this study.

Conflict of interest statement

The authors have declared that no competing interests exist.

- 63 references

SUPPLEMENTARY INFO

Grants and fundingexpand

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23

Allergy

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. 2023 Dec 18.

doi: 10.1111/all.15977. Online ahead of print.

Metabolic pathways in immune senescence and inflammaging: Novel therapeutic strategy for chronic inflammatory lung diseases. An EAACI position paper from the Task Force for Immunopharmacology

F Roth-Walter[1,2], I M Adcock[3], C Benito-Villalvilla[4], R Bianchini[1], L Bjermer[5], G Caramori[6], L Cari[7], K F Chung[8], Z Diamant[9,10,11], I Eguiluz-Gracia[12], E F Knol[13], M Jesenak[14], F Levi-Schaffer[15], G Nocentini[7], L O'Mahony[16,17,18], O Palomares[4], F Redegeld[19], M Sokolowska[20,21], B C A M Van Esch[19], C Stellato[22]

Affiliations expand

- PMID: 38108546

- DOI: 10.1111/all.15977

Abstract

The accumulation of senescent cells drives inflammaging and increases morbidity of chronic inflammatory lung diseases. Immune responses are built upon dynamic changes in cell metabolism that supply energy and substrates for cell proliferation, differentiation, and activation. Metabolic changes imposed by environmental stress and inflammation on immune cells and tissue microenvironment are thus chiefly involved in the pathophysiology of allergic and other immune-driven diseases. Altered cell metabolism is also a hallmark of cell senescence, a condition characterized by loss of proliferative activity in cells that remain metabolically active. Accelerated senescence can be triggered by acute

or chronic stress and inflammatory responses. In contrast, replicative senescence occurs as part of the physiological aging process and has protective roles in cancer surveillance and wound healing. Importantly, cell senescence can also change or hamper response to diverse therapeutic treatments. Understanding the metabolic pathways of senescence in immune and structural cells is therefore critical to detect, prevent, or revert detrimental aspects of senescence-related immunopathology, by developing specific diagnostics and targeted therapies. In this paper, we review the main changes and metabolic alterations occurring in senescent immune cells (macrophages, B cells, T cells). Subsequently, we present the metabolic footprints described in translational studies in patients with chronic asthma and chronic obstructive pulmonary disease (COPD), and review the ongoing preclinical studies and clinical trials of therapeutic approaches aiming at targeting metabolic pathways to antagonize pathological senescence. Because this is a recently emerging field in allergy and clinical immunology, a better understanding of the metabolic profile of the complex landscape of cell senescence is needed. The progress achieved so far is already providing opportunities for new therapies, as well as for strategies aimed at disease prevention and supporting healthy aging.

Keywords: cell metabolism; immune senescence; immunometabolism; inflammaging; senolytic drugs; senomorphic drugs.

- 396 references

SUPPLEMENTARY INFO

Grants and fundingexpand

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Proc Natl Acad Sci U S A

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. 2023 Dec 19;120(51):e2309325120.

doi: 10.1073/pnas.2309325120. Epub 2023 Dec 12.

Quantifying fire-specific smoke exposure and health impacts

Jeff Wen[1], Sam Heft-Neal[2], Patrick Baylis[3], Judson Boomhower[4 5], Marshall Burke[2 5 6]

Affiliations expand

- PMID: 38085772

- PMCID: PMC10743475 (available on 2024-06-12)

- DOI: 10.1073/pnas.2309325120

Abstract

Rapidly changing wildfire regimes across the Western United States have driven more frequent and severe wildfires, resulting in wide-ranging societal threats from wildfires and wildfire-generated smoke. However, common measures of fire severity focus on what is burned, disregarding the societal impacts of smoke generated from each fire. We combine satellite-derived fire scars, air parcel trajectories from individual fires, and predicted smoke $PM_{2.5}$ to link source fires to resulting smoke $PM_{2.5}$ and health impacts experienced by populations in the contiguous United States from April 2006 to 2020. We quantify fire-specific accumulated smoke exposure based on the cumulative population exposed to smoke $PM_{2.5}$ over the duration of a fire and estimate excess asthma-related emergency department (ED) visits as a result of this exposure. We find that excess asthma visits attributable to each fire are only moderately correlated with common measures of wildfire severity, including burned area, structures destroyed, and suppression cost. Additionally, while recent California fires contributed nearly half of the country's smoke-related excess asthma ED visits during our study period, the most severe individual fire was the 2007 Bugaboo fire in the Southeast. We estimate that a majority of smoke $PM_{2.5}$ comes from sources outside the local jurisdictions where the smoke is experienced, with 87% coming from fires in other counties and 60% from fires in other states. Our approach could enable broad-scale assessment of whether specific fire characteristics affect smoke toxicity or impact, inform cost-effectiveness assessments for allocation of suppression resources, and help clarify the growing transboundary nature of local air quality.

Keywords: air pollution; climate change; health impacts; wildfire.

Conflict of interest statement

Competing interests statement:The authors declare no competing interest.

- 74 references

SUPPLEMENTARY INFO

MeSH terms, Substances, Grants and fundingexpand

FULL TEXT LINKS

Full Text ARTICLE PNAS

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Eur Respir J

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. 2023 Dec 21;62(6):2301011.

doi: 10.1183/13993003.01011-2023. Print 2023 Dec.

Best step-up treatments for children with uncontrolled asthma: a systematic review and network meta-analysis of individual participant data

Sofia Cividini[1], Ian Sinha[2], Sarah Donegan[1], Michelle Maden[3], Katie Rose[2], Olivia Fulton[4], Giovanna Culeddu[5], Dyfrig A Hughes[5], Stephen Turner[6,7], Catrin Tudur Smith[8]; EINSTEIN Collaborative Group

Affiliations expand

- PMID: 37945034

- DOI: 10.1183/13993003.01011-2023

Free article

Abstract

Background: There is uncertainty about the best treatment option for children/adolescents with uncontrolled asthma despite inhaled corticosteroids (ICS) and international guidelines make different recommendations. We evaluated the pharmacological treatments to reduce asthma exacerbations and symptoms in uncontrolled patients age <18 years on ICS.

Methods: We searched MEDLINE, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Embase, Web of Science, National Institute for Health and Care Excellence Technology Appraisals, National Institute for Health and Care Research Health Technology Assessment series, World Health Organization International Clinical Trials Registry, conference abstracts and internal clinical trial registers (1 July 2014 to 5 May 2023) for randomised controlled trials of participants age <18 years with uncontrolled asthma on any ICS dose alone at screening. Studies before July 2014 were retrieved from previous systematic reviews/contact with authors. Patients had to be randomised to any dose of ICS alone or combined with long-acting β_2-agonists (LABA) or combined with leukotriene receptor antagonists (LTRA), LTRA alone, theophylline or placebo. Primary outcomes were exacerbation and asthma control. The interventions evaluated were ICS (low/medium/high dose), ICS+LABA, ICS+LTRA, LTRA alone, theophylline and placebo.

Results: Of the 4708 publications identified, 144 trials were eligible. Individual participant data were obtained from 29 trials and aggregate data were obtained from 19 trials. Compared with ICS Low, ICS Medium+LABA was associated with the lowest odds of exacerbation (OR 0.44, 95% credibility interval (95% CrI) 0.19-0.90) and with an increased forced expiratory volume in 1 s (mean difference 0.71, 95% CrI 0.35-1.06). Treatment with LTRA was the least preferred. No apparent differences were found for asthma control.

Conclusions: Uncontrolled children/adolescents on low-dose ICS should be recommended a change to medium-dose ICS+LABA to reduce the risk for exacerbation and improve lung function.

Conflict of interest statement

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

26

Review

Sci Total Environ

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Outdoor airborne allergens: Characterization, behavior and monitoring in Europe

Łukasz Grewling[1], Helena Ribeiro[2], Celia Antunes[3], Godfrey Philliam Apangu[4], Sevcan Çelenk[5], Ana Costa[3], Ibon Eguiluz-Gracia[6], Ana Galveias[3], Nestor Gonzalez Roldan[7], Mirela Lika[8], Donát Magyar[9], Moises Martinez-Bracero[10], Pia Ørby[11], David O'Connor[10], Alexandra Marchã Penha[12], Sónia Pereira[2], Rosa Pérez-Badia[13], Victoria Rodinkova[14], Merita Xhetani[8], Ingrida Šauliene[15], Carsten Ambelas Skjøth[16]

Affiliations expand

- PMID: 37709071

- DOI: 10.1016/j.scitotenv.2023.167042

Free article

Abstract

Aeroallergens or inhalant allergens, are proteins dispersed through the air and have the potential to induce allergic conditions such as rhinitis, conjunctivitis, and asthma. Outdoor aeroallergens are found predominantly in pollen grains and fungal spores, which are allergen carriers. Aeroallergens from pollen and fungi have seasonal emission patterns that correlate with plant pollination and fungal sporulation and are strongly associated with atmospheric weather conditions. They are released when allergen carriers come in contact with the respiratory system, e.g. the nasal mucosa. In addition, due to the rupture of allergen carriers, airborne allergen molecules may be released directly into the air in the form of micronic and submicronic particles (cytoplasmic debris, cell wall fragments, droplets etc.) or adhered onto other airborne particulate matter. Therefore, aeroallergen detection strategies must consider, in addition to the allergen carriers, the allergen molecules themselves. This review article aims to present the current knowledge on inhalant allergens in the outdoor environment, their structure, localization, and factors affecting their production, transformation, release or degradation. In addition, methods for collecting and quantifying aeroallergens are listed and thoroughly discussed. Finally, the knowledge gaps, challenges and implications associated with aeroallergen analysis are described.

Keywords: Aeroallergens; Air pollution; Allergenic proteins; Fungal spores; Immunodetection; Monitoring; Pollen grains.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Fam Pract

. 2023 Dec 22;40(5-6):698-706.

doi: 10.1093/fampra/cmad025.

Continuity of care and mortality for patients with chronic disease: an observational study using Norwegian registry data

Sahar Pahlavanyali[1], Øystein Hetlevik[1], Valborg Baste[2], Jesper Blinkenberg[1,2], Steinar Hunskaar[1,2]

Affiliations expand

- PMID: 37074143

- PMCID: PMC10745252

- DOI: 10.1093/fampra/cmad025

Free PMC article

Abstract

Background: Research on continuity of care (CoC) is mainly conducted in primary care and has received little acknowledgment in other levels of care. This study sought to investigate CoC across care levels for patients with selected chronic diseases, along with its association with mortality.

Methods: In a registry-based cohort study, patients with ≥1 consultation in primary or specialist healthcare or hospital admission with asthma, chronic obstructive pulmonary disease (COPD), diabetes mellitus, or heart failure in 2012 were linked to disease-related consultation data in 2013-2016. CoC was measured by Usual Provider of Care index (UPC) and Bice-Boxermann continuity of care score (COCI). Values equal to one were categorized into one group and the rest into three equal groups (tertiles). The association with mortality was determined by Cox regression models.

Results: The highest mean UPCtotal was measured for patients with diabetes mellitus (0.58) and the lowest for those with asthma (0.46). The population with heart failure had the highest death rate (26.5). In adjusted Cox regression analyses for COPD, mortality was 2.6 times higher (95% CI 2.25-3.04) for patients in the lowest tertile of continuity compared to those with UPCtotal = 1. Patients with diabetes mellitus and heart failure showed similar results.

Conclusion: CoC was moderate to high for disease-related contacts across care levels. A higher mortality associated with lower CoC was observed for patients with COPD, diabetes mellitus, and heart failure. A similar, but not statistically significant trend was found for patients with asthma. This study suggests that higher CoC across levels of care can decrease mortality.

Keywords: chronic disease; continuity of care; general practice; healthcare system; mortality; observational study.

Conflict of interest statement

Authors declare that they have no competing interests.

- 37 references
- 2 figures

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

OXFORD ACADEMIC

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

1
J Inflamm Res

. 2023 Dec 19:16:6211-6225.

doi: 10.2147/JIR.S438758. eCollection 2023.

RNA Sequencing and Bioinformatics Analysis to Reveal Potential Biomarkers in Patients with Combined Allergic Rhinitis and Asthma Syndrome

Zheng-Dao Mao[#1], Zhi-Guang Liu[#1], Yan Qian[1], Yu-Jia Shi[1], Lian-Zheng Zhou[1], Qian Zhang[1], Chun-Jian Qi[2]

Affiliations expand

- PMID: 38145010
- PMCID: PMC10748568
- DOI: 10.2147/JIR.S438758

Abstract

Introduction: Combined allergic rhinitis and asthma syndrome (CARAS) is a concurrent clinical or subclinical allergic symptom of diseases of the upper and lower respiratory tract. This study is the first to explore the expression profiles of mRNA, lncRNA, and circRNA in CARAS using RNA sequencing, which may provide insight into the mechanisms underlying CARAS.

Material and methods: Whole blood samples from nine participants (three CARAS patients, three AR patients, and three normal control participants) were subjected to perform RNA sequencing, followed by identification of differentially expressed lncRNAs (DElncRNAs), circRNAs (DEcircRNAs) and mRNAs (DEmRNAs). Then, lncRNA/circRNA-mRNA regulatory pairs were constructed, followed by functional analysis, immune infiltration analysis, drug prediction, and expression validation with RT-qPCR and ELISA.

Results: The results showed that 61 DEmRNAs, 23 DElncRNAs and 3 DEcircRNAs may be related to the occurrence and development of CARAS. KRT8 may be implicated in the development of AR into CARAS. Three immunity-related mRNAs (IDO1, CYSLTR2, and TEC) and two hypoxia-related mRNAs (TKTL1 and VLDLR) were associated with the occurrence and development of CARAS. TEC may be considered a drug target for Dasatinib in treating CARAS. Several lncRNA/circRNA-mRNA regulatory pairs were identified in CARAS, including LINC00452/MIR4280HG/hsa_circ_0007272/hsa_circ_0070934-CLC, HEATR6-DT/LINC00639/LINC01783/hsa_circ_0008903-TEC, RP11-71L14.3-IDO1/SMPD3, RP11-

178F10.2-IDO1/HRH4, and hsa_circ_0008903-CYSLTR2, which may indicate potential regulatory effects of lncRNAs/circRNAs in CARAS. Dysregulated levels of immune cell infiltration may be closely related to CARAS.

Conclusion: The regulating effect of lncRNA/circRNA-immunity/hypoxia-related mRNA regulatory pairs may be involved in the occurrence and development of CARAS.

Keywords: circRNA; combined allergic rhinitis and asthma syndrome; hypoxia; immunity; lncRNA.

Conflict of interest statement

The authors report no conflict of interest.

2

Review

Am J Otolaryngol

. 2023 Dec 18;45(2):104206.

doi: 10.1016/j.amjoto.2023.104206. Online ahead of print.

The association between chronic sinonasal inflammation and

nasopharyngeal carcinoma - A systematic review and meta-analysis

Yuxing Wang [1], Kylynn Kathleen Koh [2], Elizabeth Chua [3], Kimberley Liqin Kiong [4], Yu Heng Kwan [5], Tze Choong Charn [6]

Affiliations expand

- PMID: 38141564

- DOI: 10.1016/j.amjoto.2023.104206

Abstract

Purpose: There has been mounting evidence that inflammation is a key risk factor towards the development of certain cancers. Past studies have shown associations between nasopharyngeal carcinoma (NPC) and sinonasal tract inflammation. We aim to conduct a review and meta-analysis on the association between NPC and chronic sinus inflammation.

Materials and methods: We conducted a meta-analysis, searching 4 international databases from 1 January 1973 to 28 March 2022 for studies reporting on sinonasal inflammation and NPC in adult patients (>18 years old). We included cohort, case-control or cross-sectional studies. These studies must examine the association between a prior history of sinonasal inflammation and the risk of developing NPC. The outcome is the incidence of NPC in patients who had prior sinonasal inflammation.

Results: 8 studies (8245 NPC; 1,036,087 non-NPC) were included. The overall odds ratio (OR) of patients having NPC after reporting sinonasal inflammation was 1.81 (95 % CI 1.73-1.89). Of note, chronic rhinosinusitis (CRS) (OR of 1.78 (95 %-CI: 1.68-1.90)) was more closely associated with an increased risk of NPC, as compared to allergic rhinitis (AR) (OR of 1.60 (95 %-CI: 1.52-1.68)).

Conclusion: Chronic sinonasal inflammation is significantly associated with NPC in this systemic review and meta-analysis. The true cause-effect relationship and the potential effects of targeted screening need to be explored thoroughly with large scale prospective studies.

Keywords: Allergic rhinitis; Chronic rhinosinusitis; Meta-analysis; Nasopharyngeal cancer; Sinonasal inflammation.

Conflict of interest statement

Declaration of competing interest All authors declare no competing interests.

SUPPLEMENTARY INFO

Publication typesexpand

FULL TEXT LINKS

3

JAMA

. 2023 Dec 21.

doi: 10.1001/jama.2023.20171. Online ahead of print.

Nonprescription Medications for Adults With Allergic Rhinitis

Sarah E Vordenberg[1]

Affiliations expand

- PMID: 38127357

- DOI: 10.1001/jama.2023.20171

No abstract available

Plain language summary

This JAMA Patient Page describes the types of nonprescription medications for allergic rhinitis and how to use them.

Review

J Investig Allergol Clin Immunol

. 2023 Dec 19:0.

doi: 10.18176/jiaci.0983. Online ahead of print.

The multiple trajectories of the allergic march

L de Las Vecillas[1], S Quirce[1,2]

Affiliations expand

- PMID: 38113128

- DOI: 10.18176/jiaci.0983

No abstract available

Keywords: Allergic march; Allergic rhinitis; Asthma; Atopic dermatitis; Epithelial barrier dysfunction; Food allergy; Omics; T2 inflammation.

5

Expert Rev Clin Immunol

. 2023 Dec 19:1-8.

doi: 10.1080/1744666X.2023.2294040. Online ahead of print.

A successful linkage of a named patient products of sublingual immunotherapy-dispensing registry to French healthcare insurance database (SNDS): methodological constitution of the EfficAPSI cohort

Philippe Devillier[1], Mathieu Molimard[2], Jean-François Bergmann[3], Bertrand Delaisi[4], Amandine Gouverneur[5], Jade Vadel[5], Cédric Collin[5], Laurence Girard[6], Silvia Scurati[6], Pascal Demoly[7]

Affiliations expand

- PMID: 38112340

- DOI: 10.1080/1744666X.2023.2294040

Abstract

Background: The only causal treatment for allergic rhinitis (AR) is allergen immunotherapy (AIT) including personalized liquid sublingual AIT (SLIT). We present the methodology for establishing the EfficAPSI cohort to further evaluate the real-life effectiveness and use of SLIT liquid.

Research design and methods: The EfficAPSI cohort was constituted by deterministic linkage of Stallergenes Greer dispensing and nationwide French healthcare insurance system (SNDS) databases. Data from 2006 to 2018 were extracted. All patients who initiated Stallergenes Greer SLIT liquid between 2010 and 2013 were considered as exposed and those dispensed with AR symptomatic treatment only as control. To limit the impact of confounding, the models will be weighted using the inverse probability of treatment weighting (IPTW).

Results: A total of 445,574 patients were included; median age was 38 years; 59.1% were female. Exposed patients (*n* = 112,492) were significantly younger, more frequently males, and less likely to have comorbidities than controls (*n* = 333,082). After IPTW, patients' characteristics from both groups were similar.

Conclusions: To date, the EfficAPSI cohort has the largest number of person-years of follow-up in the field of AIT. The completeness of the data allows to evaluate SLIT liquid effectiveness with rigorous methodology, leading to important insights on personalized medicine in real-life.

Keywords: Asthma; pharmacoepidemiology; precision medicine; rhinitis, Allergic; sublingual immunotherapy.

6

Review

Sci Total Environ

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. 2023 Dec 20:905:167042.

doi: 10.1016/j.scitotenv.2023.167042. Epub 2023 Sep 12.

Outdoor airborne allergens: Characterization, behavior and monitoring in Europe

Łukasz Grewling[1], Helena Ribeiro[2], Celia Antunes[3], Godfrey Philliam Apangu[4], Sevcan Çelenk[5], Ana Costa[3], Ibon Eguiluz-Gracia[6], Ana Galveias[3], Nestor Gonzalez Roldan[7], Mirela Lika[8], Donát Magyar[9], Moises Martinez-Bracero[10], Pia Ørby[11], David O'Connor[10], Alexandra Marchã Penha[12], Sónia Pereira[2], Rosa Pérez-Badia[13], Victoria Rodinkova[14], Merita Xhetani[8], Ingrida Šauliene[15], Carsten Ambelas Skjøth[16]

Affiliations expand

- PMID: 37709071

- DOI: 10.1016/j.scitotenv.2023.167042

Free article

Abstract

Aeroallergens or inhalant allergens, are proteins dispersed through the air and have the potential to induce allergic conditions such as rhinitis, conjunctivitis, and asthma. Outdoor aeroallergens are found predominantly in pollen grains and fungal spores, which are allergen carriers. Aeroallergens from pollen and fungi have seasonal emission patterns that correlate with plant pollination and fungal sporulation and are strongly associated with atmospheric weather conditions. They are released when allergen carriers come in contact with the respiratory system, e.g. the nasal mucosa. In addition, due to the rupture of allergen carriers, airborne allergen molecules may be released directly into the air in the form of micronic and submicronic particles (cytoplasmic debris, cell wall fragments, droplets etc.) or adhered onto other airborne particulate matter. Therefore, aeroallergen detection strategies must consider, in addition to the allergen carriers, the allergen molecules themselves. This review article aims to present the current knowledge on inhalant allergens in the outdoor environment, their structure, localization, and factors affecting their production, transformation, release or degradation. In addition, methods for collecting and quantifying aeroallergens are listed and thoroughly discussed. Finally, the knowledge gaps, challenges and implications associated with aeroallergen analysis are described.

Keywords: Aeroallergens; Air pollution; Allergenic proteins; Fungal spores; Immunodetection; Monitoring; Pollen grains.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

FULL TEXT LINKS

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

Review

Respir Med

. 2023 Dec 21:107503.

doi: 10.1016/j.rmed.2023.107503. Online ahead of print.

Applying the treatable traits approach in bronchiectasis–A scoping review of traits, measurements and treatments implemented by allied health professionals and nurses

Kirsty E Watson[1], Annemarie L Lee[2], Tiffany J Dwyer[3], Zoe J McKeough[4]

Affiliations expand

- PMID: 38141863

- DOI: 10.1016/j.rmed.2023.107503

Abstract

Background: Using treatable traits as a management approach in bronchiectasis involves determining identifiable, clinically relevant, measurable and treatable problems to develop a management strategy in collaboration with the patient.

Objective: To identify new treatable traits not previously reported in the literature and treatment strategies for new and existing traits that could be implemented in an outpatient clinic or community setting by an allied health professional or nurse in adults with bronchiectasis.

Methods: A scoping review was conducted with searches of MEDLINE, CINAHL, AMED, Embase, Cochrane Central Register of Controlled Trials and PsycInfo. The search yielded 9963 articles with 255 articles proceeding to full text review and 114 articles included for data extraction.

Results: Sixteen new traits were identified, including fatigue (number of studies with new trait (n) = 13), physical inactivity (n = 13), reduced peripheral muscle power and/or strength (n = 12), respiratory muscle weakness (n = 9) and sedentarism (n = 6). The main treatment strategies for new and existing traits were airway clearance therapy (number of citations (n = 86), pulmonary rehabilitation (n = 58), inspiratory muscle training (n = 20) and nebulised saline (n = 12).

Conclusion: This review identifies several new traits in bronchiectasis and highlights the common treatments for new and existing traits that can be implemented in a treatable traits approach in an outpatient clinic or community setting by an allied health professional or nurse.

Keywords: Airway clearance therapy; Clinic; Multidisciplinary team; Physiotherapy; Pulmonary rehabilitation; Respiratory.

Conflict of interest statement

Declaration of competing interest There is no conflict of interest.

2

Pulm Pharmacol Ther

. 2023 Dec 21:102283.

doi: 10.1016/j.pupt.2023.102283. Online ahead of print.

Evaluation of high dose N-Acetylcysteine on airway inflammation and quality of life outcomes in adults with bronchiectasis: A randomised placebo-controlled pilot study

L Jayaram[1], P T King[2], J Hunt[3], M Lim[3], C Park[3], E Hu[3], L Dousha[2], P Ha[3], J B Bartlett[4], Southcott Am[4], S Muruganandan[5], S Vogrin[4], M A Rees[6], O M Dean[7], C A Wong[8]

Affiliations expand

- PMID: 38141851

- DOI: 10.1016/j.pupt.2023.102283

Abstract

Background: High dose N acetylcysteine (NAC), a mucolytic, anti-inflammatory and antioxidant agent has been shown to significantly reduce exacerbations, and improve quality of life in placebo controlled, double blind randomised (RCT) studies in patients with COPD, and in an open, randomised study in bronchiectasis. In this pilot, randomised, double-blind, placebo-controlled study, we wished to investigate the feasibility of a larger clinical trial, and the anti-inflammatory and clinical benefits of high dose NAC in bronchiectasis.

Aims: Primary outcome: to assess the efficacy of NAC 2400 mg/day at 6 weeks on sputum neutrophil elastase (NE), a surrogate marker for exacerbations. Secondary aims included assessing the efficacy of NAC on sputum MUC5B, IL-8, lung function, quality of life, and adverse effects.

Methods: Participants were randomised to receive 2400 mg or placebo for 6 weeks. They underwent 3 visits: at baseline, week 3 and week 6 where clinical and sputum measurements were assessed.

Results: The study was stopped early due to the COVID pandemic. In total 24/30 patients were recruited, of which 17 completed all aspects of the study. Given this, a per protocol analysis was undertaken: NAC (n = 9) vs placebo (n = 8): mean age 72 vs 62 years; male gender: 44% vs 50%; baseline median $FEV_1$1.56 L (mean 71.5 % predicted) vs 2.29L (mean 82.2% predicted). At 6 weeks, sputum NE fell by 47% in the NAC group relative to placebo (mean fold difference (95%CI: 0.53 (0.12,2.42); MUC5B increased by 48% with NAC compared with placebo. Lung function, FVC improved significantly with NAC compared with placebo at 6 weeks (mean fold difference (95%CI): 1.10 (1.00, 1.20), p = 0.045. Bronchiectasis Quality of life measures within the respiratory and social functioning domains demonstrated clinically meaningful improvements, with social functioning reaching statistical significance. Adverse effects were similar in both groups.

Conclusion: High dose NAC exhibits anti-inflammatory benefits, and improvements in aspects of quality of life and lung function measures. It is safe and well tolerated. Further larger placebo controlled RCT's are now warranted examining its role in reducing exacerbations.

Keywords: Bronchiectasis; Lung function; N-acetylcysteine; Neutrophil elastase; Quality of life.

Conflict of interest statement

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

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