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COPD

Respir Res
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. 2023 Jan 28;24(1):35.
doi: 10.1186/s12931-022-02305-1.

Risk factors for herpes zoster: should people with asthma or COPD be vaccinated?

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Affiliations expand

- PMID: 36709298

- DOI: 10.1186/s12931-022-02305-1

Abstract

Without vaccination, an estimated 1 in 3 individuals will develop herpes zoster (HZ) in their lifetime. Increased risk of HZ is attributed to impaired cell-mediated immunity, as observed in age-related immunosenescence or in individuals immunocompromised due to disease or immunosuppressive treatments. Most vaccination guidelines recommend HZ

vaccination in all adults ≥ 50 years of age, although Shingrix® was recently approved by the U.S. Food and Drug Administration for use in individuals aged ≥ 18 years who are or will be at increased risk of HZ due to immunodeficiency or immunosuppression caused by known disease or therapy, followed by approval by the European Medicines Agency for use in immunocompromised individuals aged ≥ 18 years. Chronic respiratory diseases are also risk factors for HZ. A new meta-analysis reported 24% and 41% increased risks of HZ in those with asthma and chronic obstructive pulmonary disorder (COPD), respectively, compared with healthy controls. Asthma and COPD increase a person's risk of HZ and associated complications at any age and may be further elevated in those receiving inhaled corticosteroids. Despite the increased risks, there is evidence that HZ vaccination uptake in those aged ≥ 50 years with COPD may be lower compared with the age-matched general population, potentially indicating a lack of awareness of HZ risk factors among clinicians and patients. The 2022 Global Initiative for Chronic Lung Disease report recognizes that Centers for Disease Control and Prevention recommended to vaccinate those aged ≥ 50 years against HZ, although health systems should consider the inclusion of all adults with asthma or COPD into their HZ vaccination programs. Further research into HZ vaccine efficacy/effectiveness and safety in younger populations is needed to inform vaccination guidelines.

Keywords: Asthma; COPD; Herpes zoster; Obstructive lung diseases; Prevention; Shingles; Vaccine.

Plain language summary

What is the context? After experiencing chickenpox, the varicella-zoster virus remains in the body and can be reactivated years later in a form called herpes zoster, more commonly known as shingles. Although shingles is more common in people aged ≥ 50 years, it is also more likely to occur in people with immune systems that do not work normally, which may include those with respiratory conditions such as asthma and chronic obstructive pulmonary disorder (COPD). This disease can be prevented by vaccination. Therefore, it is important for doctors to know which patients are at increased risk of shingles and who could be considered for vaccination. What is new? This review is the first to summarize the risk of shingles in people with asthma or COPD, drawing together evidence from across the world. It also evaluates the recommended use of different shingles vaccines in these patients, with a focus on two widely used vaccines: Zostavax® (ZVL) and Shingrix® (RZV). Asthma or COPD can make people more likely to develop shingles and related medical complications, even in younger people. Most guidelines recommend vaccination against this disease for those aged 50 years and above, with some also recommending vaccination in people aged 18–49 years who may be at higher risk of shingles. There is limited information on the benefit of shingles vaccination in those aged ≤ 50 years with asthma or COPD, but their increased risk of developing shingles suggests they may also benefit from inclusion in vaccination programs. What is the impact? The data presented in the review suggest that people with asthma or COPD aged 18–49 years could benefit from shingles vaccination. This group is not currently included in most vaccination guidelines, despite the evidence of increased risk of shingles and its complications. More information is needed

on the risks and benefits of vaccinating this group to determine if it would be cost-effective.

- 77 references

SUPPLEMENTARY INFO

Publication typesexpand
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BMC Pulm Med

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. 2023 Jan 28;23(1):39.
doi: 10.1186/s12890-023-02328-4.

Risk factors for hyponatremia in acute exacerbation chronic obstructive pulmonary disease (AECOPD): a multicenter cross-sectional study

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Affiliations expand

- PMID: 36709254

- DOI: 10.1186/s12890-023-02328-4

Abstract

Background: Hyponatremia is an independent predictor of poor prognosis, including increased mortality and readmission, in COPD patients. Identifying modifiable etiologies of

hyponatremia may help reduce adverse events in patients with AECOPD. Therefore, the aim of this study was to explore the risk factors and underlying etiologies of hyponatremia in AECOPD patients.

Methods: A total of 586 AECOPD patients were enrolled in this multicenter cross-sectional study. Finally, 323 had normonatremia, and 90 had hyponatremia. Demographics, underlying diseases, comorbidities, symptoms, and laboratory data were collected. The least absolute shrinkage and selection operator (LASSO) regression was used to select potential risk factors, which were substituted into binary logistic regression to identify independent risk factors. Nomogram was built to visualize and validate binary logistics regression model.

Results: Nine potential hyponatremia-associated variables were selected by LASSO regression. Subsequently, a binary logistic regression model identified that smoking status, rate of community-acquired pneumonia (CAP), anion gap (AG), erythrocyte sedimentation rate (ESR), and serum magnesium (Mg^{2+}) were independent variables of hyponatremia in AECOPD patients. The AUC of ROC curve of nomogram was 0.756. The DCA curve revealed that the nomogram could yielded more clinical benefits if the threshold was between 10% and 52%.

Conclusions: Collectively, our results showed that smoking status, CAP, AG, ESR, and serum Mg^{2+} were independently associated with hyponatremia in AECOPD patients. Then, these findings indicate that pneumonia, metabolic acidosis, and hypomagnesemia were the underlying etiologies of hyponatremia in AECOPD patients. However, their internal connections need further exploration.

Keywords: Acute exacerbation chronic obstructive pulmonary disease (AECOPD); Hyponatremia; Least absolute shrinkage and selection operator (LASSO) regression; Nomogram; Risk factors.

- 49 references

SUPPLEMENTARY INFO

Grant supportexpand
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Respir Res
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. 2023 Jan 27;24(1):34.
doi: 10.1186/s12931-023-02338-0.

The impact of diagnostic delay on survival in alpha-1-antitrypsin deficiency: results from the Austrian Alpha-1 Lung Registry

Tobias Meischl[1,2], Karin Schmid-Scherzer[1,3], Florian Vafai-Tabrizi[1,3], Gert Wurzinger[4], Eva Traunmüller-Wurm[5], Kristina Kutics[5], Markus Rauter[6], Fikreta Grabcanovic-Musija[7], Simona Müller[8], Norbert Kaufmann[9], Judith Löffler-Ragg[10], Arschang Valipour[1,11], Georg-Christian Funk[12,13]
Affiliations expand

- PMID: 36707810

- DOI: 10.1186/s12931-023-02338-0

Abstract

Background: Alpha-1-antitrypsin (AAT) deficiency (AATD) is a genetic disorder that can manifest as lung disease. A delay between onset of symptoms and diagnosis of AATD is common and associated with worse clinical status and more advanced disease stage but the influence on survival is unclear.

Objective: We aimed to investigate the impact of diagnostic delay on overall survival (OS) and transplant-free survival (TS) in AATD patients.

Methods: We analysed 268 AATD patients from the prospective multi-centre Austrian Alpha-1 Lung (AAL) Registry, employing descriptive statistics, Chi-square-test as well as univariable (Kaplan-Meier plots, log-rank test) and multivariable survival analysis (Cox regression).

Results: The predominant phenotype was Pi*ZZ (82.1%). At diagnosis, 90.2% had an AAT level below 0.6 g/L. At inclusion, 28.2% had never smoked, 68.0% had quit smoking and 3.8% continued to smoke. Lung disease was diagnosed in 98.5%, thereof most patients were diagnosed with emphysema (63.8%) and/or chronic obstructive pulmonary disease (44.0%). Median diagnostic delay was 5.3 years (inter-quartile range [IQR] 2.2-11.5 years). In multivariable analysis (n = 229), a longer diagnostic delay was significantly associated

with worse OS (hazard ratio [HR] 1.61; 95% CI 1.09-2.38; p = 0.016) and TS (HR 1.43; 95% CI 1.08-1.89; p = 0.011), independent from age, smoking status, body mass index (BMI), forced expiratory volume in one second (FEV_1) and long-term oxygen treatment. Furthermore, BMI, age and active smoking were significantly associated with worse OS as well as BMI, active smoking and FEV_1 were with worse TS.

Conclusions: A delayed diagnosis was associated with significantly worse OS and TS. Screening should be improved and efforts to ensure early AATD diagnosis should be intensified.

Keywords: Alpha-1-antitrypsin; Alpha-1-antitrypsin deficiency; Diagnostic delay.

- 41 references

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J Infect

. 2023 Jan 24;S0163-4453(23)00019-1.
doi: 10.1016/j.jinf.2023.01.012. Online ahead of print.

Estimating the contribution of respiratory pathogens to acute exacerbations of COPD using routine data

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Affiliations expand

- PMID: 36706962

- DOI: 10.1016/j.jinf.2023.01.012

Abstract

Objectives: To characterise microbiology testing and results associated with emergency admissions for acute exacerbation of COPD (AECOPD), and determine the accuracy of ICD-10 codes in retrospectively identifying laboratory-confirmed respiratory pathogens in this setting.

Methods: Using person-level data from the Secure Anonymised Information Linkage Databank in Wales, we extracted emergency admissions for COPD from 1/12/2016 to 30/11/2018 and undertook linkage of admissions data to microbiology data to identify laboratory-confirmed infection. We further used these data to assess the accuracy of pathogen-specific ICD-10 codes.

Results: We analysed data from 15,950 people who had 25,715 emergency admissions for COPD over the two-year period. 99.5% of admissions could be linked to a laboratory test within 7 days of admission date. Sputum was collected in 5,013 (19.5%) of admissions, and respiratory virus testing in 1,219 (4.7%). Where respiratory virus testing was undertaken, 46.7% returned any positive result. Influenza was the virus most frequently detected, in 21.5% of admissions where testing was conducted. ICD-10 codes exhibited low sensitivity in detecting laboratory-confirmed respiratory pathogens.

Conclusions: In people admitted to hospital with AECOPD, increased testing for respiratory viruses could enable more effective antibiotic stewardship and isolation of cases. Linkage with microbiology data achieves more accurate and reliable case definitions.

Keywords: Chronic Obstructive'; 'Electronic Health Records'; 'Pulmonary Disease; 'Respiratory Tract Infections'.

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.

BMC Pulm Med

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doi: 10.1186/s12890-022-02220-7.

Clinical values of diaphragmatic movement in patients with chronic obstructive pulmonary disease

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Affiliations expand

- PMID: 36703157

- PMCID: PMC9881315

- DOI: 10.1186/s12890-022-02220-7

Abstract

Background: The limitation of activity due to dyspnea in chronic obstructive pulmonary disease (COPD) patients is affected by diaphragmatic dysfunction and reduced lung function. This study aimed to analyze the association between diaphragm function variables and forced expiratory volume in the first second (FEV1) and to estimate the clinical significance of diaphragm function in the correlation between COPD severity and lung function.

Methods: This prospective, single-center, cross-sectional observational study enrolled 60 COPD patients in a respiratory outpatient clinic. Data for baseline characteristics and the dyspnea scale were collected. Participants underwent a pulmonary function test (PFT), a 6-minute walk test (6MWT), and diaphragm function by ultrasonography.

Results: The right excursion at forced breathing showed the most significant correlation with FEV1 ($r = 0.370$, $p = 0.004$). The cutoff value was 6.7 cm of the right diaphragmatic excursion at forced breathing to identify the FEV1 above 50% group. In the group with a right diaphragmatic excursion at forced breathing < 6.7 cm, modified Medical Research Council (mMRC), St. George's Respiratory Questionnaire and the total distance of 6MWT showed no difference between groups with FEV1 under and above 50% ($p > 0.05$). In the group with ≥ 6.7 cm, mMRC and the total distance of 6MWT showed a significant difference between FEV1 under and above 50% ($p = 0.014$, 456.7 ± 69.7 m vs. 513.9 ± 60.3 m, $p = 0.018$, respectively).

Conclusion: The right diaphragmatic forced excursion was closely related to FEV1, and analysis according to the right diaphragmatic forced excursion-based cut-off value showed a significant difference between both groups. When the diaphragm function was maintained, there was a lot of difference in the 6MWT's factors according to the FEV1 value. Our data suggest that diaphragmatic function should be performed when interpreting PFT.

Keywords: 6-minute walk test; Cut-off value; Diaphragm; Excursion; FEV1.

Conflict of interest statement

The authors have no conflicts of interest or funding sources to declare.

- 24 references
- 1 figure

SUPPLEMENTARY INFO

Grant supportexpand
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Am J Respir Crit Care Med

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doi: 10.1164/rccm.202209-1795CI. Online ahead of print.

Differential Diagnosis of Suspected COPD Exacerbations in the Acute Care Setting: Best Practice

Bartolome R Celli[1,2], Leonardo M Fabbri[3], Shawn D Aaron[4], Alvar Agusti[5], Robert D Brook[6], Gerard J Criner[7], Frits M E Franssen[8], Marc Humbert[9], John R Hurst[10], Maria Montes de Oca[11], Leonardo Pantoni[12], Alberto Papi[13], Roberto Rodriguez-Roisin[14], Sanjay Sethi[15], Daiana Stolz[16], Antoni Torres[17], Claus F Vogelmeier[18], Jadwiga A Wedzicha[19]
Affiliations expand

- PMID: 36701677

- DOI: 10.1164/rccm.202209-1795CI

Abstract

Patients with chronic obstructive pulmonary disease (COPD) may suffer from acute episodes of worsening dyspnea, often associated with increased cough, sputum and/or sputum purulence. These exacerbations (ECOPDs) impact health status, accelerate lung function decline, and increase the risk of hospitalization. Importantly, close to 20% of patients are readmitted within 30 days after hospital discharge, with great cost to the person and to society. Approximately 25% and 65% of patients hospitalized for an ECOPD die within 1 and 5 years, respectively. Patients with COPD are usually older, and frequently have concomitant chronic diseases, including heart failure, coronary artery disease, arrhythmias, interstitial lung diseases, bronchiectasis, asthma, anxiety, and depression, and are also at increased risk of developing pneumonia, pulmonary embolism, and pneumothorax. All of these morbidities not only increase the risk of subsequent ECOPDs, but can also mimic or aggravate them. Importantly, close to 70% of readmissions following an ECOPD hospitalization result from decompensation of other morbidities. These observations suggest that in patients with COPD with worsening dyspnea but without the other classic characteristics of ECOPD, careful search for these morbidities can help detect them and allow appropriate treatment. For most morbidities , a thorough clinical evaluation supplemented by appropriate clinical investigations can guide the healthcare provider to make a precise diagnosis. This perspective integrates the currently dispersed information available, and provides a practical approach to patients with COPD complaining of worsening respiratory symptoms, particularly dyspnea. A systematic approach should help improve outcomes and the personal and societal cost of ECOPDs.

Keywords: Algorithms; Chronic Obstructive Pulmonary Disease; Differential Diagnosis; Symptom Flare Up.

Respir Res

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Distinct COPD subtypes in former smokers revealed by gene network perturbation analysis

Kristina L Buschur[1 2 3 4], Craig Riley[5], Aabida Saferali[6], Peter Castaldi[6], Grace Zhang[1], Francois Aguet[7], Kristin G Ardlie[7], Peter Durda[8], W Craig Johnson[9], Silva Kasela[4 10], Yongmei Liu[11], Ani Manichaikul[12], Stephen S Rich[12], Jerome I Rotter[13], Josh Smith[14], Kent D Taylor[13], Russell P Tracy[8 15], Tuuli Lappalainen[4 10 16], R Graham Barr[3], Frank Sciurba[5], Craig P Hersh[# 6], Panayiotis V Benos[# 17 18 19]
Affiliations expand

- PMID: 36698131

- PMCID: PMC9875487

- DOI: 10.1186/s12931-023-02316-6

Abstract

Background: Chronic obstructive pulmonary disease (COPD) varies significantly in symptomatic and physiologic presentation. Identifying disease subtypes from molecular data, collected from easily accessible blood samples, can help stratify patients and guide disease management and treatment.

Methods: Blood gene expression measured by RNA-sequencing in the COPDGene Study was analyzed using a network perturbation analysis method. Each COPD sample was compared against a learned reference gene network to determine the part that is deregulated. Gene deregulation values were used to cluster the disease samples.

Results: The discovery set included 617 former smokers from COPDGene. Four distinct gene network subtypes are identified with significant differences in symptoms, exercise capacity and mortality. These clusters do not necessarily correspond with the levels of lung function impairment and are independently validated in two external cohorts: 769 former smokers from COPDGene and 431 former smokers in the Multi-Ethnic Study of Atherosclerosis (MESA). Additionally, we identify several genes that are significantly deregulated across these subtypes, including DSP and GSTM1, which have been previously associated with COPD through genome-wide association study (GWAS).

Conclusions: The identified subtypes differ in mortality and in their clinical and functional characteristics, underlining the need for multi-dimensional assessment potentially supplemented by selected markers of gene expression. The subtypes were consistent across cohorts and could be used for new patient stratification and disease prognosis.

Keywords: COPD; Disease subtypes; Gene expression; Graphical models.

Conflict of interest statement

Peter Castaldi reports receiving grant support from GSK and Bayer and personal fees from GSK and Novartis. Tuuli Lappalainen is an advisor to Goldfinch Bio, Variant Bio, and GSK, and has equity in Variant Bio. Craig Hersh reports grant support from Bayer, Boehringer-Ingelheim, Novartis, and Vertex, and personal fees from Astra-Zeneca and Takeda.

- 45 references
- 3 figures

SUPPLEMENTARY INFO

MeSH terms, Grant supportexpand
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Review

Eur Respir Rev

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. 2023 Jan 25;32(167):220144.
doi: 10.1183/16000617.0144-2022. Print 2023 Mar 31.

Targeting interleukin-33 and thymic stromal lymphopoietin pathways for novel pulmonary therapeutics in asthma and COPD

Ariel A Calderon[1], Colin Dimond[1], David F Choy[1], Rajita Pappu[1], Michele A Grimbaldeston[1], Divya Mohan[2], Kian Fan Chung[3]
Affiliations expand

- PMID: 36697211

- DOI: 10.1183/16000617.0144-2022

Free article

Abstract

Interleukin-33 (IL-33) and thymic stromal lymphopoietin (TSLP) are alarmins that are released upon airway epithelial injury from insults such as viruses and cigarette smoke, and play critical roles in the activation of immune cell populations such as mast cells, eosinophils and group 2 innate lymphoid cells. Both cytokines were previously understood to primarily drive type 2 (T2) inflammation, but there is emerging evidence for a role for these alarmins to additionally mediate non-T2 inflammation, with recent clinical trial data in asthma and COPD cohorts with non-T2 inflammation providing support. Currently available treatments for both COPD and asthma provide symptomatic relief with disease control, improving lung function and reducing exacerbation rates; however, there still remains an unmet need for further improving lung function and reducing exacerbations, particularly for those not responsive to currently available treatments. The epithelial cytokines/alarmins are involved in exacerbations; biologics targeting TSLP and IL-33 have been shown to reduce exacerbations in moderate-to-severe asthma, either in a broad population or in specific subgroups, respectively. For COPD, while there is clinical evidence for IL-33 blockade impacting exacerbations in COPD, clinical data from anti-TSLP therapies is awaited. Clinical data to date support an acceptable safety profile for patients with airway diseases for both anti-IL-33 and anti-TSLP antibodies in development. We examine the roles of IL-33 and TSLP, their potential use as drug targets, and the evidence for target patient populations for COPD and asthma, together with ongoing and future trials focused on these targets.

Conflict of interest statement

Conflict of interest: A.A. Calderon has nothing to declare. C. Dimond, D.F. Choy, R. Pappu, M.A. Grimbaldeston and D. Mohan are employees of Genentech, Inc., a member of the Roche group, and are Roche stockholders. D.F. Choy and M.A. Grimbaldeston are co-inventors on patents that have been filed or are pending relating to the diagnosis and treatment of chronic respiratory diseases for Genentech, Inc. D. Mohan was previously an employee and shareholder of GSK. K.F. Chung received personal payments for service on

an advisory board for Roche, Merck, Rickett-Beckinson and Shinogi, data safety monitoring board for Nocion, and for speaking engagements from Novartis and AstraZeneca; and received the MRC, EPSRC, and GSK grants for his institution.

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

FULL TEXT LINKS

Review

Eur Respir Rev

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. 2023 Jan 25;32(167):220141.
doi: 10.1183/16000617.0141-2022. Print 2023 Mar 31.

Mucolytics for acute exacerbations of chronic obstructive pulmonary disease: a meta-analysis

Efthymia Papadopoulou[1], Jan Hansel[2], Zsofia Lazar[3], Konstantinos Kostikas[4], Stavros Tryfon[1], Jørgen Vestbo[5 6], Alexander G Mathioudakis[7 6]
Affiliations expand

- PMID: 36697209

- DOI: 10.1183/16000617.0141-2022

Free article

Abstract

This meta-analysis explored the safety and effectiveness of mucolytics as an add-on treatment for chronic obstructive pulmonary disease (COPD) exacerbations. Based on a pre-registered protocol and following Cochrane methods, we systematically searched for relevant randomised or quasi-randomised controlled trials (RCTs). We used the Risk of Bias v2 tool for appraising the studies and performed random-effect meta-analyses when appropriate. We assessed certainty of evidence using GRADE. This meta-analysis included 24 RCTs involving 2192 patients with COPD exacerbations, entailing at least some concerns of methodological bias. We demonstrated with moderate certainty that mucolytics increase the rate of treatment success (relative risk 1.37, 95% CI 1.08-1.73, n=383), while they also exert benefits on overall symptom scores (standardised mean difference 0.86, 95% CI 0.63-1.09, n=316), presence of cough at follow-up (relative risk 1.93, 95% CI 1.15-3.23) and ease of expectoration (relative risk 2.94, 95% CI 1.68-5.12). Furthermore, low or very low certainty evidence suggests mucolytics may also reduce future risk of exacerbations and improve health-related quality of life, but do not impact on breathlessness, length of hospital stay, indication for higher level of care or serious adverse events. Overall, mucolytics could be considered for COPD exacerbation management. These findings should be validated in further, rigorous RCTs.

Conflict of interest statement

Conflicts of interest: The authors declare no conflict of interest related to this work. E. Papadopoulou, J. Hansel, and Z. Lazar report no conflict of interest. K. Kostikas reports grants from AstraZeneca, Boehringer Ingelheim, Chiesi, Innovis, ELPEN, GSK, Menarini, Novartis and NuvoAir, consulting fees from AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, ELPEN, GSK, Menarini, Novartis and Sanofi Genzyme, honoraria from AstraZeneca, Boehringer Ingelheim, Chiesi, ELPEN, GILEAD, GSK, Menarini, MSD, Novartis, Sanofi Genzyme and WebMD. S. Tryfon reports honoraria from Menarini, Boehringer-Ingelheim and ELPEN, support for attending meetings from Chiesi and Menarini, and patents with GSK, AstraZeneca and ELPEN, not related to this work. J. Vestbo reports consulting fees and/or honoraria from ALK-Abello, AstraZeneca, Boehringer Ingelheim, GSK and TEVA, not related to this work. A.G. Mathioudakis reports a research grant from Boehringer Ingelheim, not related to this work.

Review

Eur Respir Rev

. 2023 Jan 25;32(167):220109.
doi: 10.1183/16000617.0109-2022. Print 2023 Mar 31.

Physical activity promotion interventions in chronic airways disease: a systematic review and meta-analysis

Caroline Reilly[1], Joe Sails[1], Antonios Stavropoulos-Kalinoglou[1], Rebecca J Birch[2], Jim McKenna[1], Ian J Clifton[2,3], Daniel Peckham[2,3], Karen M Birch[4], Oliver J Price[5,3,4]
Affiliations expand

- PMID: 36697208

- DOI: 10.1183/16000617.0109-2022

Free article

Abstract

Physical inactivity is common in people with chronic airways disease (pwCAD) and associated with worse clinical outcomes and impaired quality of life. We conducted a systematic review and meta-analysis to characterise and evaluate the effectiveness of interventions promoting step-based physical activity (PA) in pwCAD. We searched for studies that included a form of PA promotion and step-count outcome measure. A random-effects model was used to determine the overall effect size using post-intervention values. 38 studies (n=32 COPD; n=5 asthma; n=1 bronchiectasis; study population: n=3777) were included. Overall, implementing a form of PA promotion resulted in a significant increase in step-count: median (IQR) 705 (183-1210) when compared with usual standard care: -64 (-597-229), standardised mean difference (SMD)

0.24 (95% CI: 0.12-0.36), p<0.01. To explore the impact of specific interventions, studies were stratified into subgroups: PA promotion+wearable activity monitor-based interventions (n=17) (SMD 0.37, p<0.01); PA promotion+step-count as an outcome measure (n=9) (SMD 0.18, p=0.09); technology-based interventions (n=12) (SMD 0.16, p=0.01). Interventions promoting PA, particularly those that incorporate wearable activity monitors, result in a significant and clinically meaningful improvement in daily step-count in pwCAD.

Conflict of interest statement

Conflict of interest: I.J. Clifton reports personal fees from GlaxoSmithKline, outside the submitted work. The remaining authors have no conflicts to declare.

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

FULL TEXT LINKS

Clin Respir J
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doi: 10.1111/crj.13587. Online ahead of print.

Assessment of incidence of cerebral vascular diseases and prediction of stroke risk in chronic obstructive pulmonary disease patients using multimodal biomarkers

Marwa Y Badr[1], Amira A Elkholy[2], Sara M Shoeib[3], Marwa G Bahey[4], Esraa A Mohamed[4], Alaa M Reda[5]
Affiliations expand

- PMID: 36696969

- DOI: 10.1111/crj.13587

Abstract

Background: Early assessment of cerebrovascular disease in chronic obstructive pulmonary disease (COPD) patients is an important issue for a favorable influence on the quality of life.

Methodology: This cross-sectional case-control study was conducted on 38 eligible COPD patients (mean age 55.5 ± 11.5, 25 males, and 13 females) and 26 age-/sex-matched healthy controls. All participants were subjected to stroke risk screening instruments that included the Stroke Riskometer™, the Framingham 10-Year Risk Score, the stroke risk screening tool (the Department of Disease Control of Thailand), the My Risk Stroke Calculator, and Q Stroke. Radiologically, diffusion tensor imaging (DTI) and echo-gradient MRI (T2 star) T2 star imaging were done. Color-coded duplex sonography was done. Laboratory investigations included C-reactive protein (CRP), serum amyloid A, plasma fibrinogen level, serum IL6, 8-Isoprostane, vWF and urinary albumin creatinine ratio.

Results: Stroke risk screening instruments revealed a significant increase in COPD patients. DTI showed a significant bilateral reduction in fractional isotropy and a significant bilateral increase in mean diffusivity of white matter through many areas in COPD patients. Patients also had a significant increase of intima-media thickness, presence of atherosclerotic focal thicknesses or plaques on duplex sonography. There was a significant elevation of CRP, serum amyloid A, plasma fibrinogen level, serum IL6, 8-isoprostane, von Willebrand factor (vWF), and urinary albumin creatinine ratio in COPD patients.

Conclusion: COPD patients had an increased risk for stroke that could be assessed on stroke risk screening instruments, DTI, T2 star, duplex sonography, and laboratory investigation and could be correlated with the severity of the disease.

Keywords: COPD; biomarkers; brain imaging; cerebrovascular disease; duplex; laboratory investigations; stroke risk.

- 57 references

Observational Study

PLoS One

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Assessment of risk factors associated with potential drug-drug interactions among patients suffering from chronic disorders

Muhammad Fawad Rasool[1], Anees Ur Rehman[1,2], Irfanullah Khan[2], Muhammad Latif[3], Imran Ahmad[4], Sadia Shakeel[5], Muhammad Sadiq[1], Khezar Hayat[6], Shahid Shah[7], Waseem Ashraf[8], Abdul Majeed[1], Iltaf Hussain[1], Rabia Hussain[9]
Affiliations expand

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- PMCID: PMC9873175
- DOI: 10.1371/journal.pone.0276277

Abstract

Patients suffering from chronic diseases are more likely to experience pDDIs due to older age, prolonged treatment, severe illness and greater number of prescribed drugs. The objective of the current study was to assess the prevalence of pDDIs and risk factors associated with occurrence of pDDIs in chronic disease patients attending outpatient clinics for regular check-ups. Patients suffering from diabetes, chronic obstructive pulmonary disease (COPD), stroke and osteoporosis were included in the study. This study was a cross sectional, observational, prospective study that included 337 patients from outpatient clinics of respiratory ward, cardiac ward and orthopedic ward of Nishter Hospital Multan, Pakistan. The mean number of interactions per patient was 1.68. A greater risk for occurrence of pDDI was associated with older age ≥ 60 years (OR = 1.95, 95% CI = 1.44-2.37, p<0.001); polypharmacy (≥ 5 drugs) (OR = 3.74, 95% CI 2.32-4.54, p<0.001); overburden (OR = 2.23, 95% CI = 1.64-3.16, p<0.01); CCI score (OR = 1.28, 95% CI = 1.04-1.84, p<0.001); multiple prescribers to one patient (OR = 1.18, 95% CI = 1.06-1.41, p<0.01); and trainee practitioner (OR = 1.09, 95% CI = 1.01-1.28, p<0.01). Old age, polypharmacy, overburden healthcare system, higher comorbidity index, multiple prescribers to one patient and trainee practitioner were associated with increased risk of occurrence of pDDIs in chronic disease patients.

Conflict of interest statement

The authors have declared that no competing interests exist.

- 55 references

SUPPLEMENTARY INFO

Publication types, MeSH terms, Grant supportexpand

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J Physiol

. 2023 Jan 24.
doi: 10.1113/JP284297. Online ahead of print.

Sarcopenia in chronic obstructive pulmonary disease: Skeletal muscle gasping for air?

Valdemar Brimnes Ingemann Johansen[1,2]
Affiliations expand

- PMID: 36692139

- DOI: 10.1113/JP284297

No abstract available

. 2023 Jan 23;1-9.
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Centrilobular Emphysema Is Associated with Pectoralis Muscle Reduction in Current Smokers without Airflow Limitation

Tomoki Maetani[1], Naoya Tanabe[1], Yusuke Shiraishi[1], Takafumi Shimada[2], Satoru Terada[1], Hiroshi Shima[1], Fumi Mochizuki[2], Ryo Sakamoto[3], Shizuo Kaji[4], Tsuyoshi Oguma[1], Susumu Sato[1,5], Hiroaki Iijima[2], Izuru Masuda[6], Toyohiro Hirai[1]
Affiliations expand

- PMID: 36689922

- DOI: 10.1159/000529031

Free article

Abstract

Background: Physiological and prognostic associations of centrilobular emphysema (CLE) and paraseptal emphysema (PSE) in smokers with and without chronic obstructive pulmonary disease (COPD) have been increasingly recognized, but the associations with extrapulmonary abnormalities, such as muscle wasting, osteoporosis, and cardiovascular diseases, remain unestablished.

Objectives: The aim of the study was to investigate whether CLE was associated with extrapulmonary abnormalities independent of concomitant PSE in smokers without airflow limitation.

Methods: This retrospective study consecutively enrolled current smokers without airflow limitation who underwent lung cancer screening with computed tomography and spirometry. CLE and PSE were visually identified based on the Fleischner Society classification system. Cross-sectional areas of pectoralis muscles (PM) and adjacent subcutaneous adipose tissue (SAT), bone mineral density (BMD), and coronary artery calcification (CAC) were evaluated.

Results: Of 310 current smokers without airflow limitation, 83 (26.8%) had CLE. The PSE prevalence was higher (67.5% vs. 23.3%), and PM area, SAT area, and BMD were lower in smokers with CLE than in those without (PM area (mean), 34.5 versus 38.6 cm2; SAT area (mean), 29.3 versus 36.8 cm2; BMD (mean), 158.3 versus 178.4 Hounsfield unit), while CAC presence did not differ. In multivariable models, CLE was associated with lower PM area but not with SAT area or BMD, after adjusting for PSE presence, demographics, and forced expiratory volume in 1 s.

Conclusions: The observed association between CLE and lower PM area suggests that susceptibility to skeletal muscle loss could be high in smokers with CLE even without COPD.

Keywords: Chest computed tomography; Chronic obstructive pulmonary disease; Emphysema; Muscle wasting.

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J Telemed Telecare

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Effect of telemonitoring on readmissions for acute exacerbation of chronic obstructive pulmonary disease: A randomized clinical trial

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Affiliations expand

- PMID: 36683440

- DOI: 10.1177/1357633X221150279

Abstract

Introduction: Acute exacerbations of chronic obstructive pulmonary disease are associated with high morbidity and mortality. Telemonitoring may reduce the frequency of hospitalization. The aim of this study was to investigate the effect of telemonitoring on hospitalization rates for acute exacerbations of chronic obstructive pulmonary disease.

Methods: Patients were recruited during hospitalization and equally randomized to telemonitoring or usual care. Telemonitoring participants recorded symptoms and monitored oxygen saturation, heart rate, peak expiratory flow, and body weight. Alerts were generated if readings breached thresholds. Acute exacerbations of chronic obstructive pulmonary disease hospitalizations during the 6 months intervention were compared using logistic regression, and time to first hospitalization was assessed using Cox proportional hazard modeling. The incidence rates for acute exacerbations of chronic obstructive pulmonary disease hospitalization were compared using a negative binomial regression model with between-group comparisons expressed as incidence rate ratios. The telemonitoring group was used as reference.

Results: A total of 222 patients were randomized. 37/112 (33%) in the control group and 31/110 (28%) in the telemonitoring group experienced acute exacerbations of chronic obstructive pulmonary disease hospitalization during the intervention period, odds ratio of 1.26, confidence interval 0.71-2.23, $p = 0.4$. No difference was seen in time to first hospitalization, hazard ratio 1.23, CI 0.77-1.99, $p = 0.4$. The number of hospitalizations in the intervention period was 66 in the control group and 42 in the telemonitoring group, with incidence rate ratio 1.42, confidence interval 1.04-1.95, $p = 0.03$. Adjustment for dyspnea score, smoking, and cohabitation status did not change the results, incidence rate ratio 1.44, confidence interval 1.05-1.99, $p = 0.02$.

Discussion: Patients who received telemonitoring experienced significantly fewer acute exacerbations of chronic obstructive pulmonary disease hospitalizations, although the overall risk of having at least one hospitalization and the time to first hospitalization was similar between the two groups.

Keywords: Chronic obstructive pulmonary disease; acute exacerbation; hospitalizations; monitoring; randomized clinical trial; telemedicine; telemonitoring.

Chronic Obstr Pulm Dis

. 2023 Jan 25;10(1):112-121.

doi: 10.15326/jcopdf.2022.0365.

Associations Between Muscle Weakness and Clinical Outcomes in Current and Former Smokers

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Affiliations expand

- PMID: 36599111

- DOI: 10.15326/jcopdf.2022.0365

Free article

Abstract

Introduction: Smokers with chronic obstructive pulmonary disease (COPD) are at increased risk of muscle weakness. There are limited data describing weakness in smokers with normal spirometry and preserved ratio-impaired spirometry (PRISm), 2 subgroups at risk of respiratory symptom burden and activity limitations. In this study, we evaluated the associations of 2 weakness measures, sit-to-stand (STS) and handgrip strength (HGS), with clinical outcomes in smokers with COPD, normal spirometry, and PRISm.

Methods: We evaluated 1972 current and former smokers from the COPD Genetic Epidemiology (COPDGene®) cohort with STS and HGS measurements at their 10-year study visit. Multivariable regression modeling was used to assess associations between weakness measures and the 6-minute walk distance (6MWD) test, the St George's Respiratory Questionnaire (SGRQ), the Short-Form-36 (SF-36), severe exacerbations, and prospective mortality, reported as standardized coefficients (β), odds ratios (ORs), or hazard ratios (HRs).

Results: Compared with HGS, STS was more strongly associated with the 6MWD (β=0.45, $p<0.001$ versus. β=0.25, $p<0.001$), SGRQ (β=-0.24, $p<0.001$ versus β=-0.18, $p<0.001$), SF-36 Physical Functioning (β=0.36, $p<0.001$ versus β=0.25, $p<0.001$), severe exacerbations (OR 0.95, $p=0.04$ versus OR 0.97, $p=0.01$), and prospective mortality (HR 0.83, $p=0.001$ versus HR 0.94, $p=0.03$). Correlations remained after stratification by spirometric subgroups. Compared with males, females had larger magnitude effect sizes between STS and clinical outcomes.

Conclusions: STS and HGS are easy to perform weakness measures that provide important information about functional performance, health-related quality of life, severe exacerbations, and survival in smokers, regardless of spirometric subgroup. This iterates the importance of screening current and former smokers for weakness in the outpatient setting.

Keywords: COPD outcomes; COPDGene; chronic obstructive pulmonary disease; cigarette smoking; musculoskeletal comorbidities.

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Chronic Obstr Pulm Dis
. 2023 Jan 25;10(1):89-101.
doi: 10.15326/jcopdf.2022.0349.

Physical Activity and Symptom Burden in COPD: The Canadian Obstructive Lung Disease Study

Loes Oostrik[1], Jean Bourbeau[2,3,4], Dany Doiron[2,3], Bryan Ross[4], Pei Zhi-Li[2,3], Shawn D Aaron[5], Kenneth R Chapman[6], Paul Hernandez[7], Francois Maltais[8], Darcy D Marciniuk[9], Denis O'Donnell[10], Wan C Tan[11], Don D Sin[11], Brandie Walker[12], Tania Janaudis-Ferreira[2,3,13]
Affiliations expand

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Free article

Abstract

Background: The relationship between symptom burden and physical activity (PA) in chronic obstructive pulmonary disease (COPD) remains poorly understood with limited data on undiagnosed individuals and those with mild to moderate disease.

Objective: The primary objective was to evaluate the relationship between symptom burden and moderate-to-vigorous intensity PA (MVPA) in individuals from a random population-based sampling mirroring the population at large.

Methods: Baseline participants of the Canadian Cohort Obstructive Lung Disease (n=1558) were selected for this cross-sectional sub-study. Participants with mild COPD (n=406) and moderate COPD (n=331), healthy individuals (n=347), and those at risk of developing COPD (n=474) were included. The Community Healthy Activities Model Program for Seniors (CHAMPS) questionnaire was used to estimate MVPA in terms of energy expenditure. High symptom burden was classified using the COPD Assessment Test ([CAT] ≥10).

Results: Significant associations were demonstrated between high symptom burden and lower MVPA levels in the overall COPD sample (β=-717.09; 95% confidence interval [CI]=-1079.78, -354.40; p<0.001) and in the moderate COPD subgroup (β=-694.1; 95% CI=-1206.54, -181.66; p=0.006). A total of 72% of the participants with COPD were previously undiagnosed. The undiagnosed participants had significantly higher MVPA than those with physician diagnosed COPD (β=-592.41 95% CI=-953.11, -231.71; p=0.001).

Conclusion: MVPA was found to be inversely related to symptom burden in a large general population sample that included newly diagnosed individuals, most with mild to moderate COPD. Assessment of symptom burden may help identify patients with lower MVPA, especially for moderate COPD and for relatively inactive individuals with mild COPD.

Keywords: CanCOLD; copd; physical activity; symptom burden; undiagnosed.

SUPPLEMENTARY INFO

Grant supportexpand

Chronic Obstr Pulm Dis

. 2023 Jan 25;10(1):55-63.
doi: 10.15326/jcopdf.2022.0354.

A Model to Predict Residual Volume from Forced Spirometry Measurements in Chronic Obstructive Pulmonary Disease

John W Evankovich[1], S M Nouraie[1], Frank C Sciurba[1]
Affiliations expand

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- DOI: 10.15326/jcopdf.2022.0354

Free article

Abstract

Background: Lung hyperinflation with elevated residual volume (RV) is associated with poor prognosis in adults with chronic obstructive pulmonary disease (COPD) and is a critical criterion for lung volume reduction selection. Here, we proposed that patterns within spirometric measures could represent the degree of hyperinflation.

Methods: Fractional polynomial multivariate regression was used to develop a prediction model based on age, biological sex, forced expiratory volume in 1 second (FEV_1), and forced vital capacity (FVC) to estimate plethysmography measured RV in patients in the

Pittsburgh Specialized Center for Clinically Oriented Research (SCCOR) cohort (n=450). Receiver operating characteristic area under the curve (ROC-AUC) and optimal cut-points from the model were identified. The model was validated in a separate cohort (n=793).

Results: The best fit model: RV %est=[FVC %predicted] x 3.46-[FEV_1/FVC] x 179.80- [FVC % (sqrt)] x 79.53-[age] x 0.98- [sex] x 10.88 + 737.06, where [sex], m=1. R^2 of observed versus %predicted RV was 0.71. The optimal cut-point to predict an RV % >175% was 161. At this cut-point, ROC-AUC was 0.95, with a sensitivity 0.95, specificity 0.86, positive predictive value (PPV) of 97%, negative predictive value (NPV) of 76%, positive likelihood ratio (LR) of 6.6, and negative LR of 0.06. In a validation cohort of COPD patients (n=793), the model performed similarly, with a sensitivity of 0.82, specificity of 0.83, PPV of 85%, NPV of 79%, positive LR of 4.7, and negative LR of 0.21.

Conclusion: In patients with COPD, a model using only spirometry, age, and biological sex can estimate elevated RV. This tool could facilitate the identification of candidates for lung volume reduction procedures and can be integrated into existing epidemiologic databases to investigate the clinical impact of hyperinflation.

Keywords: bronchoscopy; emphysema; hyperinflation; lung volume; lung volume reduction.

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Chronic Obstr Pulm Dis

. 2023 Jan 25;10(1):33-45.
doi: 10.15326/jcopdf.2022.0332.

Mortality Risk and Serious Cardiopulmonary Events in Moderate-to-Severe COPD: Post Hoc Analysis of the IMPACT Trial

J Michael Wells[1], Gerard J Criner[2], David M G Halpin[3], MeiLan K Han[4], Renu Jain[5], Peter Lange[6,7], David A Lipson[8,9], Fernando J Martinez[10], Dawn Midwinter[11], Dave Singh[12], Robert A Wise[13]
Affiliations expand

- PMID: 36516330

- DOI: 10.15326/jcopdf.2022.0332

Free article

Abstract

Background: In the InforMing the Pathway of COPD Treatment (IMPACT) trial, single-inhaler fluticasone furoate (FF) /umeclidinium (UMEC) /vilanterol (VI) significantly reduced severe exacerbation rates and all-cause mortality (ACM) risk versus UMEC/VI among patients with chronic obstructive pulmonary disease (COPD). This post hoc analysis aimed to define the risk of ACM during and following a moderate/severe exacerbation, and further determine the benefit-risk profile of FF/UMEC/VI versus FF/VI and UMEC/VI using a cardiopulmonary composite adverse event (AE) endpoint.

Methods: The 52-week, double-blind IMPACT trial randomized patients with symptomatic COPD and ≥1 exacerbation in the prior year 2:2:1 to once-daily FF/UMEC/VI 100/62.5/25mcg, FF/VI 100/25mcg, or UMEC/VI 62.5/25mcg. Post hoc endpoints included the risk of ACM during, 1-90 and 91-365 days post moderate or severe exacerbation and time-to-first cardiopulmonary composite event.

Results: Of the 10,355 patients included, 5034 (49%) experienced moderate/severe exacerbations. Risk of ACM was significantly increased during a severe exacerbation event compared with baseline (hazard ratio [HR]: 41.22 [95% confidence interval (CI) 26.49-64.15]; $p<0.001$) but not significantly different at 1-90 days post-severe exacerbation (HR: 2.13 [95% CI: 0.86-5.29]; $p=0.102$). Moderate exacerbations did not significantly increase the risk of ACM during or after an exacerbation. Cardiopulmonary composite events occurred in 647 (16%), 636 (15%), and 356 (17%) patients receiving FF/UMEC/VI, FF/VI, and

UMEC/VI, respectively; FF/UMEC/VI significantly reduced cardiopulmonary composite event risk versus UMEC/VI by 16.5% (95% CI: 5.0-26.7; p=0.006).

Conclusion: Results confirm a substantial mortality risk during severe exacerbations, and an underlying CV risk. FF/UMEC/VI significantly reduced the risk of a composite cardiopulmonary AE versus UMEC/VI.

Keywords: cardiovascular diseases; chronic obstructive; pneumonia; pulmonary disease; respiratory therapy.

SUPPLEMENTARY INFO

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20
Chronic Obstr Pulm Dis
. 2023 Jan 25;10(1):46-54.
doi: 10.15326/jcopdf.2022.0357.

Primary Care Provider Experience With Proactive E-Consults to Improve COPD Outcomes and Access to Specialty Care

Laura J Spece[1 2 3], William G Weppner[3 4], Bryan J Weiner[5 6], Margaret Collins[1], Rosemary Adamson[2], Douglas B Berger[2 3], Karin M Nelson[1 2 3], Jennifer McDowell[1], Eric Epler[1], Paula G Carvalho[3 4], Deborah M Woo[2], Lucas M Donovan[1 2 3], Laura C Feemster[1 2 3], David H Au[1], David H Au[2 3], George Sayre[1 5]
Affiliations expand

- PMID: 36472622

- DOI: 10.15326/jcopdf.2022.0357

Free article

Abstract

Background: Often patients with chronic obstructive pulmonary disease (COPD) receive poor quality care with limited access to pulmonologists. We tested a novel intervention, INtegrating Care After Exacerbation of COPD (InCasE), that improved patient outcomes after hospitalization for COPD. InCasE used population-based identification of patients for proactive e-consultation by pulmonologists, and tailored recommendations with pre-populated orders timed to follow-up with primary care providers (PCPs). Although adoption by PCPs was high, we do not know how PCPs experienced the intervention.

Objective: Our objective was to assess PCPs' experience with proactive pulmonary e-consults after hospitalization for COPD.

Methods: We conducted a convergent mixed methods study among study PCPs at 2 medical centers and 10 outpatient clinics. PCPs underwent semi-structured interviews and surveys. We performed descriptive analyses on quantitative data and inductive and deductive coding based on prespecified themes of acceptability, appropriateness, and feasibility for qualitative data.

Key results: We conducted 10 interviews and 37 PCPs completed surveys. PCPs perceived InCasE to be acceptable and feasible. Facilitators included the proactive consult approach to patient identification and order entry. PCPs also noted the intervention was respectful and collegial. PCPs had concerns regarding appropriateness related to an unclear role in communicating recommendations to patients. PCPs also noted a potential decrease in autonomy if overused.

Conclusion: This evaluation indicates that a proactive e-consult intervention can be deployed to collaboratively manage the health of populations with COPD in a way that is acceptable, appropriate, and feasible for primary care. Lessons learned from this study suggest the intervention may be transferable to other settings and specialties.

Keywords: copd; e-consult; primary care.

SUPPLEMENTARY INFO

Grant supportexpand

Chronic Obstr Pulm Dis
. 2023 Jan 25;10(1):64-76.
doi: 10.15326/jcopdf.2022.0351.

Persistent Steroid Exposure Before Coronavirus Disease 2019 Diagnosis and Risk of Hospitalization in Patients With Chronic Obstructive Pulmonary Disease

Laura C Myers[1,2], Richard K Murray[3], Bonnie M K Donato[4], Vincent X Liu[1,2], Patricia Kipnis[1,2], Asif Shaikh[5], Jessica Franchino-Elder[4]
Affiliations expand

- PMID: 36472621
- DOI: 10.15326/jcopdf.2022.0351

Free article

Abstract

Background: It is unclear whether persistent inhaled steroid exposure in chronic obstructive pulmonary disease (COPD) patients before coronavirus disease 2019 (COVID-19) is associated with hospitalization risk.

Objective: Our objective was to examine the association between persistent steroid exposure and COVID-19-related hospitalization risk in COPD patients.

Study design and methods: This retrospective cohort study used electronic health records from the Kaiser Permanente Northern California health care system (February 2, 2020, to September 30, 2020) for patients aged ≥40 years with COPD and a positive polymerase chain reaction test result for COVID-19. Primary exposure was persistent oral and/or inhaled steroid exposure defined as ≥6 months of prescriptions filled in the year before the COVID-19 diagnosis. Multivariable logistic regression was performed for the primary outcome of COVID-19-related hospitalization or death/hospice referral. Steroid exposure in the month before a COVID-19 diagnosis was a covariate.

Results: Of >4.3 million adults, 697 had COVID-19 and COPD, of whom 270 (38.7%) had COVID-19-related hospitalizations. Overall, 538 (77.2%) were neither exposed to steroids in the month before COVID-19 diagnosis nor persistently exposed; 53 (7.6%) were exposed in the month before but not persistently; 23 (3.3%) were exposed persistently but not in the month before; and 83 (11.9%) were exposed both persistently and in the month before. Adjusting for all confounders including steroid use in the month before, the odds ratio for hospitalization was 0.77 (95% confidence interval 0.41-1.46) for patients persistently exposed to steroids before a COVID-19 diagnosis.

Interpretation: No association was observed between persistent steroid exposure and the risk of COVID-19-related hospitalization in COPD patients.

Keywords: COVID-19; chronic obstructive pulmonary disease; copd; coronavirus disease 2019; steroids.

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Chronic Obstr Pulm Dis

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. 2023 Jan 25;10(1):22-32.
doi: 10.15326/jcopdf.2022.0326.

Urine and Plasma Markers of Platelet Activation and Respiratory Symptoms in COPD

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Affiliations expand

- PMID: 36367951

- DOI: 10.15326/jcopdf.2022.0326

Free article

Abstract

Introduction: Antiplatelet therapy has been associated with fewer exacerbations and reduced respiratory symptoms in chronic obstructive pulmonary disease (COPD). Whether platelet activation is associated with respiratory symptoms in COPD is unknown.

Methods: Former smokers with spirometry-confirmed COPD had urine 11-dehydro-thromboxane B2 (11dTxB2), plasma soluble CD40L (sCD40L), and soluble P-selectin (sP-selectin) repeatedly measured during a 6- to 9-month study period. Multivariate mixed-effects models adjusted for demographics, clinical characteristics, and medication use evaluated the association of each biomarker with respiratory symptoms, health status, and quality of life.

Results: Among 169 participants (average age 66.5±8.2 years, 51.5% female, 47.5±31 pack years, forced expiratory volume in 1 second percent predicted 53.8±17.1), a 100% increase in 11dTxB2 was associated with worse respiratory symptoms reflected by higher scores on the COPD Assessment Test (β 0.77, 95% confidence interval [CI]: 0.11-1.4) and Ease of Cough and Sputum Clearance Questionnaire β 0.77, 95%CI: 0.38-1.2, worse health status (Clinical COPD Questionnaire β 0.13, 95%CI: 0.03-0.23) and worse quality of life (St George's Respiratory Questionnaire β 1.9, 95%CI: 0.39-3.4). No statistically significant associations were observed for sCD40L or sP-selectin. There was no consistent statistically significant effect modification of the relationship between urine 11dTxB2 and respiratory

outcomes by history of cardiovascular disease, subclinical coronary artery disease, antiplatelet therapy, or COPD severity.

Conclusions: In stable moderate-severe COPD, elevated urinary11dTxB2, a metabolite of the platelet activation product thromboxane A2, was associated with worse respiratory symptoms, health status, and quality of life.

Keywords: aspirin; biomarkers; chronic obstructive pulmonary disease; platelet activation.

SUPPLEMENTARY INFO

Grant supportexpand

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23

Chronic Obstr Pulm Dis

. 2023 Jan 25;10(1):7-21.
doi: 10.15326/jcopdf.2022.0321.

Novel SERPINA1 Alleles Identified through a Large Alpha-1 Antitrypsin Deficiency Screening Program and Review of Known Variants

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Affiliations expand

- PMID: 36367950

- DOI: 10.15326/jcopdf.2022.0321

Free article

Abstract

The *SERPINA1* gene encodes the serine protease inhibitor alpha-1 antitrypsin (AAT) and is located on chromosome 14q31-32.3 in a cluster of homologous genes likely formed by exon duplication. AAT has a variety of anti-inflammatory properties. Its clinical relevance is best illustrated by the genetic disease alpha-1 antitrypsin deficiency (AATD) which is associated with an increased risk for chronic obstructive pulmonary disease (COPD) and cirrhosis. While 2 single nucleotide polymorphisms (SNPs) , S and Z, are responsible for more than 95% of all individuals with AATD, there are a number of rare variants associated with deficiency and dysfunction, as well as those associated with normal levels and function. Our laboratory has identified a number of novel AAT alleles that we report in this manuscript. We screened more than 500,000 individuals for AATD alleles through our testing program over the past 20 years. The characterization of these alleles was accomplished by DNA sequencing, measurement of AAT plasma levels and isoelectric focusing at pH 4-5. We report 22 novel AAT alleles discovered through our screening programs, such as $Z_{\text{little rock}}$ and $QO_{\text{chillicothe}}$, and review the current literature of known AAT genetic variants.

Keywords: PolyPhen-2; allele characterization; alpha-1 antitrypsin; copd; genomics; novel alleles.

SUPPLEMENTARY INFO

Grant supportexpand

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. 2023 Jan 28;24(1):35.

doi: 10.1186/s12931-022-02305-1.

Risk factors for herpes zoster: should people with asthma or COPD be vaccinated?

Ekaterina Safonova[1], Barbara P Yawn[2], Tobias Welte[3], Chengbin Wang[4,5]
Affiliations expand

- PMID: 36709298

- DOI: 10.1186/s12931-022-02305-1

Abstract

Without vaccination, an estimated 1 in 3 individuals will develop herpes zoster (HZ) in their lifetime. Increased risk of HZ is attributed to impaired cell-mediated immunity, as observed in age-related immunosenescence or in individuals immunocompromised due to disease or immunosuppressive treatments. Most vaccination guidelines recommend HZ vaccination in all adults ≥ 50 years of age, although Shingrix® was recently approved by the U.S. Food and Drug Administration for use in individuals aged ≥ 18 years who are or will be at increased risk of HZ due to immunodeficiency or immunosuppression caused by known disease or therapy, followed by approval by the European Medicines Agency for use in immunocompromised individuals aged ≥ 18 years. Chronic respiratory diseases are also risk factors for HZ. A new meta-analysis reported 24% and 41% increased risks of HZ in those with asthma and chronic obstructive pulmonary disorder (COPD), respectively, compared with healthy controls. Asthma and COPD increase a person's risk of HZ and associated complications at any age and may be further elevated in those receiving inhaled corticosteroids. Despite the increased risks, there is evidence that HZ vaccination uptake in those aged ≥ 50 years with COPD may be lower compared with the age-matched general population, potentially indicating a lack of awareness of HZ risk factors among clinicians and patients. The 2022 Global Initiative for Chronic Lung Disease report recognizes that Centers for Disease Control and Prevention recommended to vaccinate those aged ≥ 50 years against HZ, although health systems should consider the inclusion of all adults with asthma or COPD into their HZ vaccination programs. Further research into HZ vaccine efficacy/effectiveness and safety in younger populations is needed to inform vaccination guidelines.

Keywords: Asthma; COPD; Herpes zoster; Obstructive lung diseases; Prevention; Shingles; Vaccine.

Plain language summary

What is the context? After experiencing chickenpox, the varicella-zoster virus remains in the body and can be reactivated years later in a form called herpes zoster, more commonly known as shingles. Although shingles is more common in people aged ≥ 50 years, it is also more likely to occur in people with immune systems that do not work normally, which may include those with respiratory conditions such as asthma and chronic obstructive pulmonary disorder (COPD). This disease can be prevented by vaccination. Therefore, it is important for doctors to know which patients are at increased risk of shingles and who could be considered for vaccination. What is new? This review is the first to summarize the risk of shingles in people with asthma or COPD, drawing together evidence from across the world. It also evaluates the recommended use of different shingles vaccines in these patients, with a focus on two widely used vaccines: Zostavax® (ZVL) and Shingrix® (RZV). Asthma or COPD can make people more likely to develop shingles and related medical complications, even in younger people. Most guidelines recommend vaccination against this disease for those aged 50 years and above, with some also recommending vaccination in people aged 18–49 years who may be at higher risk of shingles. There is limited information on the benefit of shingles vaccination in those aged ≤ 50 years with asthma or COPD, but their increased risk of developing shingles suggests they may also benefit from inclusion in vaccination programs. What is the impact? The data presented in the review suggest that people with asthma or COPD aged 18–49 years could benefit from shingles vaccination. This group is not currently included in most vaccination guidelines, despite the evidence of increased risk of shingles and its complications. More information is needed on the risks and benefits of vaccinating this group to determine if it would be cost-effective.

- 77 references

SUPPLEMENTARY INFO

Publication typesexpand
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J Allergy Clin Immunol

. 2023 Jan 25;S0091-6749(23)00089-1.
doi: 10.1016/j.jaci.2023.01.015. Online ahead of print.

Interleukin-1 receptor antagonist attenuates pro-inflammatory responses to rhinovirus in airway epithelium

Stephen A Schworer[1], Kelly D Chason[2], Gang Chen[3], Jie Chen[4], Haibo Zhou[4], Allison J Burbank[2], Matthew J Kesic[5], Michelle L Hernandez[6]
Affiliations expand

- PMID: 36708816

- DOI: 10.1016/j.jaci.2023.01.015

Abstract

Background: Rhinoviruses (RV) are the most common trigger for asthma exacerbations, and there are currently no targeted therapies for viral-induced asthma exacerbations. RV infection causes neutrophilic inflammation, which is often resistant to effects of glucocorticoids. IL-1 receptor antagonist (IL-1RA) treatment reduces neutrophilic inflammation in humans challenged with inhaled endotoxin and thus may have therapeutic potential for RV-induced asthma exacerbations.

Objective: Test the hypothesis that IL-1RA treatment of airway epithelium reduces rhinovirus-mediated pro-inflammatory cytokine production, which is important for neutrophil recruitment.

Methods: Human bronchial epithelial cells (HBEC) from deceased donors without prior pulmonary disease were cultured at air-liquid interface and treated with IL-13 to approximate an asthmatic inflammatory milieu. HBEC were infected with human rhinovirus-16 with or without IL-1RA treatment.

Results: RV infection promoted the release of IL-1α and the neutrophil-attractant cytokines IL-6, IL-8, and CXCL10. Proinflammatory cytokine secretion was significantly reduced by IL-1RA treatment without significant change in interferon-β release or RV titer. Additionally, IL-1RA reduced MUC5B expression after RV infection without impacting MUC5AC.

Conclusions: These data suggest that IL-1RA treatment significantly reduced pro-inflammatory cytokines while preserving the antiviral response. These results provide

evidence for further investigation of IL-1RA as a novel targeted therapy against neutrophil-attractant cytokine release in rhinovirus-induced airway inflammatory responses.

Keywords: Asthma; Exacerbations; IL-13; IL-1RA; Rhinovirus; anakinra; epithelial cells.

J Allergy Clin Immunol

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doi: 10.1016/j.jaci.2022.12.825. Online ahead of print.

Rhinovirus infection of the airway epithelium enhances mast cell immune responses via epithelial-derived interferons

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Affiliations expand

- PMID: 36708815

- DOI: 10.1016/j.jaci.2022.12.825

Abstract

Background: Mast cells (MCs) within the airway epithelium in asthma are closely related to airway dysfunction, but crosstalk between airway epithelial cells (AECs) and MCs in asthma remains incompletely understood. Human rhinovirus (RV) infections are key triggers for

asthma progression and AECs from individuals with asthma may have dysregulated anti-viral responses.

Objective: We utilize primary AECs in an ex vivo coculture model system to examine crosstalk between AECs and MCs following epithelial RV infection.

Methods: Primary AECs were obtained from children with asthma (n=11) and healthy children (n=10), differentiated at air-liquid interface, and cultured in the presence of laboratory of allergic diseases-2 (LAD2) MCs. AECs were infected with RV serogroup-A 16 (RV16) for 48 hours. RNA isolated from both AECs and MCs underwent RNA-sequencing (RNAseq) analysis. Direct effects of epithelial-derived interferons on LAD2 MCs were examined by qPCR.

Results: MCs increased expression of pro-inflammatory and anti-viral genes in AECs. AECs demonstrated a robust antiviral response following RV16 infection that resulted in significant changes in MC gene expression, including upregulation of genes involved in anti-viral responses, leukocyte activation, and type-2 (T2) inflammation. Subsequent ex vivo modeling demonstrated that IFN-β induces MC T2 gene expression. The effects of AEC donor phenotype were small relative to the effects of viral infection and the presence of MCs.

Conclusions: There is significant crosstalk between AECs and MCs, which are present in the epithelium in asthma. Epithelial-derived interferons not only play a role in viral suppression, but further alter MC immune responses including specific T2 genes.

Keywords: T2 inflammation; airway epithelium; asthma; interferon; mast cell; rhinovirus.

Review

Neurosci Biobehav Rev

. 2023 Jan 25;105063.
doi: 10.1016/j.neubiorev.2023.105063. Online ahead of print.

Asthma, the central nervous system, and neurocognition: Current findings, potential mechanisms, and treatment implications

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Affiliations expand

- PMID: 36708797

- DOI: 10.1016/j.neubiorev.2023.105063

Abstract

Accumulating behavioral evidence suggests that asthma is associated with cognitive deficits. A number of studies have identified potential biological contributions to cognition in asthma; however, mechanistic pathways of central nervous system (CNS) involvement in asthma are yet to be established. We therefore conducted a literature review to identify studies examining potential CNS contributions to cognition in asthma. In this review, we discuss our general understanding of the CNS in asthma in the context of cognitive performance and outline a working model of mechanistic pathways linking the proposed neural influences of asthma pathology with cognition. To this extent, we incorporate neural, behavioral, psychological, social and environmental factors. Finally, we underscore the clinical significance of the CNS and neurocognitive sequelae in asthma, highlighting potential opportunities for routine monitoring, therapeutic intervention, and recommend key areas for future research.

Keywords: Asthma; asthma; brain; central nervous system; cognition; cognitive function; the central nervous system.

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Arch Dermatol Res
.
2023 Jan 28.
doi: 10.1007/s00403-023-02539-z. Online ahead of print.

Psoriasis associated with asthma and allergic rhinitis: a US-based cross-sectional study using the All of US Research Program

Marina Z Joel[1], Ryan Fan[2], William Damsky[3,4], Jeffrey M Cohen[5]
Affiliations expand

- PMID: 36707438

- DOI: 10.1007/s00403-023-02539-z

Abstract

Psoriasis is a common chronic inflammatory disease with multiple known comorbidities. Increasing evidence suggests some mechanistic overlap in the immunopathogenesis of psoriasis and some cases of asthma and allergic rhinitis (AR), but the potential association between psoriasis and asthma and AR has not been thoroughly investigated. The study aimed to investigate the association between psoriasis and asthma and AR. We used data from the NIH All of US Research Program, a nationwide longitudinal cohort of US adults, collected from 2018 to present. The source population comprised a demographically and socioeconomically diverse cohort of over 300,000 Americans. We used multivariable logistic regression models to examine the association between psoriasis and asthma and AR, after adjusting for sociodemographic variables, body mass index, and smoking status. In total, 235,551 participants (mean [SD] age, 54.7 [16.6] years; 59.3% female), including 5165 individuals with psoriasis and 230,386 individuals without psoriasis, were included in our analysis. Participants with psoriasis had significantly higher prevalence of asthma (26.1% vs. 12.9%; P < 0.001) and AR (31.8% vs. 13.4%; P < 0.001) compared to participants without psoriasis. Psoriasis was significantly associated with both asthma [adjusted odds ratio (aOR) 2.22; 95% confidence interval (CI) 2.08-2.37] and AR (aOR, 2.57; 95% CI 2.42-2.73). In subgroup analyses, associations remained stable in multivariable analyses after

stratification by age, sex, and income. Psoriasis is associated with both asthma and AR in our sample of US adults. Further research is needed to explore potentially unifying inflammatory pathways among psoriasis, asthma, and AR.

Keywords: Allergic rhinitis; Asthma; Cross-sectional; Epidemiology; Psoriasis.

- 15 references

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J Allergy Clin Immunol Pract

. 2023 Jan 25;S2213-2198(23)00079-X.
doi: 10.1016/j.jaip.2023.01.014. Online ahead of print.

The Role of Lung Function in Determining which Children Develop Asthma

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Affiliations expand

- PMID: 36706985

- DOI: 10.1016/j.jaip.2023.01.014

Abstract

Longitudinal studies have demonstrated that altered indices of airway function, assessed shortly after birth, are a risk factor for the subsequent development of wheezing illnesses and asthma, and that these indices predict airway size and airway wall thickness in adult life. Pre- and post-natal factors that directly alter early airway function such as extreme

prematurity and cigarette smoke may continue to affect airway function and hence the risks for wheeze and asthma. Early airway function and an associated asthma risk may also be indirectly influenced by immune system responses, respiratory viruses, the airway microbiome, genetics and epigenetics, especially if they affect airway epithelial dysfunction. Few if any interventions, apart from smoking avoidance, have been proven to alter the risks of developing asthma, but vitamin C supplementation to pregnant smokers my help decrease the effects of in utero smoke on offspring lung function. We conclude that airway size and the factors influencing this play an important role in determining the risk for asthma across the lifetime. Progress in asthma prevention is long overdue and this may benefit from carefully designed interventions in well phenotyped longitudinal birth cohorts with early airway function assessments monitored through to adulthood.

Keywords: airway function; asthma; lung function; prenatal determinants; wheeze.

J Allergy Clin Immunol Pract

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. 2023 Jan 24;S2213-2198(23)00088-0.
doi: 10.1016/j.jaip.2023.01.019. Online ahead of print.

Generational Consequences from Historical Redlining: Longitudinal Impacts on Air Pollution and Asthma Health Outcomes

Adam S Price[1], Akilah A Jefferson[2], Tamara T Perry[2]
Affiliations expand

- PMID: 36706984

- DOI: 10.1016/j.jaip.2023.01.019

No abstract available

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Allergy

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. 2023 Jan 27.

doi: 10.1111/all.15658. Online ahead of print.

Global hypomethylation in childhood asthma identified by genome-wide DNA-methylation sequencing preferentially affects enhancer regions

Loreen Thürmann[#1], Matthias Klös[#1], Sebastian D Mackowiak[#2], Matthias Bieg[#2], Tobias Bauer[3], Naveed Ishaque[2], Marey Messingschlager[1], Carl Herrmann[4], Stefan Röder[5], Mario Bauer[5], Sascha Schäuble[6 7], Erik Faessler[6], Udo Hahn[6], Dieter Weichenhan[8], Oliver Mücke[8], Christoph Plass[8 9], Michael Borte[10], Erika von Mutius[9 11 12], Gabriele I Stangl[13], Roger Lauener[14], Anne M Karvonen[15], Amandine Divaret-Chauveau[16 17 18], Josef Riedler[19], Joachim Heinrich[9 20 21], Marie Standl[9 21], Andrea von Berg[22], Beate Schaaf[23], Gunda Herberth[5], Michael Kabesch[24], Roland Eils[#2 4 9], Saskia Trump[#1], Irina Lehmann[#1 9]

Affiliations expand

- PMID: 36704932

- DOI: 10.1111/all.15658

Abstract

Background: Childhood asthma is a result of a complex interaction of genetic and environmental components causing epigenetic and immune dysregulation, airway inflammation and impaired lung function. Although different microarray based EWAS studies have been conducted, the impact of epigenetic regulation in asthma development is still widely unknown. We have therefore applied unbiased whole genome bisulfite

sequencing (WGBS) to characterize global DNA-methylation profiles of asthmatic children compared to healthy controls.

Methods: Peripheral blood samples of 40 asthmatic and 42 control children aged 5-15 years from three birth cohorts were sequenced together with paired cord blood samples. Identified differentially methylated regions (DMRs) were categorized in genotype-associated, cell-type-dependent, or prenatally-primed. Network analysis and subsequent natural language processing of DMR-associated genes was complemented by targeted analysis of functional translation of epigenetic regulation on the transcriptional and protein level.

Results: In total, 158 DMRs were identified in asthmatic children compared to controls of which 37% were related to the eosinophil content. A global hypomethylation was identified affecting predominantly enhancer regions and regulating key immune genes such as IL4, IL5RA, and EPX. These DMRs were confirmed in n=267 samples and could be linked to aberrant gene expression. Out of the 158 DMRs identified in the established phenotype, 56 were perturbed already at birth and linked, at least in part, to prenatal influences such as tobacco smoke exposure or phthalate exposure.

Conclusion: This is the first epigenetic study based on whole genome sequencing to identify marked dysregulation of enhancer regions as a hallmark of childhood asthma.

Keywords: DNA-methylation; asthma; cord blood; prenatal exposure.

Pediatr Pulmonol

. 2023 Jan 26.
doi: 10.1002/ppul.26333. Online ahead of print.

Impulse oscillometry in preschool children with persistent asthma can predict spirometry at school age

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Affiliations expand

- PMID: 36704870

- DOI: 10.1002/ppul.26333

Abstract

Background: Lung function in children with persistent asthma may be impaired during preschool and school ages. The aim of this study was to describe if some preschool IOS parameters are related to spirometry alterations on reaching school age.

Methods: In 66 diagnosed with persistent asthma an IOS was performed at entrance and followed-up to school age where a spirometry was done.

Results: The mean age was 4.9 years at the first evaluation and 7.9 years at the second evaluation, and 59.1% were male. During preschool, R5, R20, Fres, AX, and D5-20 were found to have diagnostic accuracy (AUC>0.7) for predicting abnormal spirometry during school age (defined as FEV1 and/or FEV/FVC and/or FVC values below the lower limit of normality according to Quanjer predictive values). AX, D5-20, and R5 had the best LR+ to increase the probability of abnormal spirometry (50, 10, and 7.1, respectively). R20, R5 and AX was the best IOS parameters for discriminating bronchodilator response (BDR) in schoolchildren (LR+ = 3.4, 2.9 and 2.8, respectively).

Conclusion: The findings of this study indicate that some IOS parameters between 3 and 5 years of age are useful for predicting abnormal spirometry and BDR at school age. This article is protected by copyright. All rights reserved.

Keywords: Asthma; IOS; preschoolers; pulmonary function testing; schoolchildren; spirometry.

J Allergy Clin Immunol
. 2023 Jan 24;S0091-6749(23)00006-4.
doi: 10.1016/j.jaci.2023.01.002. Online ahead of print.

Biologics in the treatment of asthma in children and adolescents

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Affiliations expand

- PMID: 36702649

- DOI: 10.1016/j.jaci.2023.01.002

Abstract

Severe asthma in childhood confers substantial patient- and society-level burdens. Although biologics have been available for the management in adults and adolescents for nearly 20 years, research on the efficacy and safety of biologics in children and adolescents has lagged. Fortunately, more recent research specifically in children has provided an evidence base for biologic use in this age group. Most children with severe asthma demonstrate a type 2 inflammatory phenotype, the primary target of currently approved biologics. Three biologics, omalizumab, mepolizumab, and duplilumab, are Food and Drug Administration-approved for children as young as 6 years, whereas benralizumab and tezepelumab are approved for adolescents older than 12 years. All these agents reduce the rates of severe asthma exacerbations, whereas their effects on pulmonary function vary across agents. Safety profiles are reassuring, although additional long-term safety data in children are still needed. The choice of a biologic agent follows a careful assessment of other factors that contribute to uncontrolled asthma and includes biomarkers of blood eosinophils, fractional exhaled nitric oxide, allergic sensitization, and IgE levels. This review focuses on the underlying pathophysiology of childhood asthma, an approach to phenotyping patients, and the efficacy, safety, and use of biologics in children and adolescents with severe asthma.

Keywords: Childhood asthma; biologics; severe asthma.

SUPPLEMENTARY INFO

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11
Am J Epidemiol
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. 2023 Jan 24;kwad015.
doi: 10.1093/aje/kwad015. Online ahead of print.

The Impact of Neighborhood Disadvantage on Asthma Prevalence in a Predominantly African American Chicago-based Cohort

Jiajun Luo[1], Muhammad G Kibriya[1,2], Sameep Shah[1], Andrew Craver[1], Sebastian De La Cruz[1], Jaime King[1], Christopher O Olopade[3,4], Karen Kim[5,3], Habibul Ahsan[1,2], Jayant Pinto[5,3], Briseis Aschebrook-Kilfoy[1,2]
Affiliations expand

- PMID: 36702470

- DOI: 10.1093/aje/kwad015

Abstract

This study aims to investigate the joint effect of neighborhood disadvantages on asthma prevalence and evaluate whether individual-level variables protect residents against neighborhood disadvantages. Data from the Chicago Multiethnic Prevention and Surveillance Study between 2013 and 2020 were analyzed. Eight neighborhood characteristics were measured using the Chicago Health Atlas, including neighborhood unsafety, limited access to healthy food, neighborhood alienation, severe rent-burden, vacant housing, single-parent household, neighborhood poverty, and unemployment. A structured questionnaire measured asthma diagnosis (childhood or adulthood) and

individual-level variables including sex, age, income, education, and race. Weighted quantile sum (WQS) regression was used to evaluate the impact of neighborhood disadvantages. Stratified analysis was performed by income and education. A total of 6592 participants (mean age: 53.5±11.1) were included. Most of the study population were non-Hispanic black (82.5%) and reported an annual household income <$15,000 (53%). Asthma prevalence was 23.6%. The WQS index, which represents the overall neighborhood disadvantages, was associated with asthma prevalence (odds ratio = 1.10, 95% CI: 1.03, 1.18) when adjusted for individual-level confounders. Neighborhood poverty contributed 40.8% to the overall impact, followed by vacant housing (23.1%) and neighborhood alienation (22.9%). When stratified by individual-level income or education, no difference was observed for the association between WQS index and asthma prevalence.

Keywords: Neighborhood; asthma; mixture.

Sci Total Environ

. 2023 Jan 23;869:161760.
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Interaction of high temperature and NO_2 exposure on asthma risk: In vivo experimental evidence of inflammation and oxidative stress

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Affiliations expand

- PMID: 36702287

- DOI: 10.1016/j.scitotenv.2023.161760

Abstract

Allergic asthma is a complicated respiratory disease with many concerns. Mounting epidemiological evidence linked temperature (T) and NO_2 with allergic asthma, yet toxicological studies remain scarce. We conducted an in vivo study to explore toxicological evidence in T-NO_2 interaction on allergic asthma, to investigate underlying toxicological mechanisms. 90 male Balb/c mice were randomly and equally divided into 6 groups including saline control, ovalbumin (OVA)-sensitized, OVA + 35 °C, OVA + NO_2, OVA + 35 °C + NO_2, and OVA + 35 °C + NO_2 + capsazepine (CZP), adopting treatment for 38 days. We measured pulmonary functions of inspiratory resistance (Ri), expiratory resistance (Re) and airway compliance (Cldyn), serum protein biomarkers, indexes of pulmonary inflammation, histopathological changes and protective effects of CZP. Airway hyperresponsiveness (AHR) was aggravated by high T (35 °C) and NO_2 (5 ppm) co-exposure with a series of aggravating asthmatic symptoms including airway wall thickening, lumen stenosis, goblet cell proliferation, mucus hypersecretion, and subepithelial fibrotic hyperplasia, providing evidence in the toxicological impact of high T-NO_2 interaction. The biomarkers of serum immune functions (Total-IgE, OVA-sIgE and IL-4), pro-inflammation (IL-6 and TNF-α), oxidative stress cytokines (8-OHdG, ROS and MDA), airway resistance (Ri and Re), and TRPV1 expression significantly increased, while IFN-γ, GSH and airway compliance (Cldyn) significantly decreased with co-exposure to high T and NO_2. We observed that CZP addition significantly ameliorated these toxicological effects and biomarker levels induced by heat-NO_2 interaction. Our results suggest a toxicity of heat-NO_2 interaction on asthma with clear mechanisms, which can be ameliorated by CZP, indicating that both oxidative stress and TRPV1 expression may be primarily responsible for asthma of heat-NO_2-induced toxicity.

Keywords: Allergic asthma; Capsazepine; Oxidative stress; TRPV1 ion pathways; Temperature-pollution interaction.

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.

. 2023 Jan 23;S2213-2198(23)00075-2.
doi: 10.1016/j.jaip.2023.01.010. Online ahead of print.

"As-needed" inhaled corticosteroids for patients with asthma

Juan Carlos Cardet[1], Alberto Papi[2], Helen Reddel[3]
Affiliations expand

- PMID: 36702246

- DOI: 10.1016/j.jaip.2023.01.010

Abstract

Prevention of severe asthma exacerbations is a primary management goal for asthma across the severity spectrum. Inhaled corticosteroids (ICS) decrease the risk of asthma exacerbations, but patient adherence to ICS-containing medications as a daily maintenance therapy is poor, and many patients overuse short-acting beta2-agonist relievers; both are associated with increased risk of severe exacerbations and death. Airway inflammation also varies over time, influenced by exposures such as viral infections and allergen. As-needed ICS strategies, in which patients receive ICS (or additional ICS, if already taking controller therapy) whenever they take their reliever inhaler, empower patients to adjust their ICS intake in response to symptom fluctuation. These strategies can improve asthma morbidity outcomes, particularly by reducing severe exacerbations and reducing the risk of adverse effects of oral corticosteroids. In this review, the evidence for combination ICS-formoterol in a single inhaler, ICS and short-acting beta2-agonists in separate inhalers, and combination ICS-albuterol in a single inhaler is presented, along with practical considerations, evidence gaps, and implications for clinical practice for each strategy, presented by level of asthma severity and age group. Improving access to such strategies on a global scale is imperative in order to improve asthma outcomes and achieve equity across populations.

Keywords: AIR; Asthma pharmacotherapy; PARTICS; SMART; as-needed; asthma control; asthma exacerbations; asthma management; intermittent; reliever; rescue.

Review

Ann Allergy Asthma Immunol
.
. 2023 Jan 23;S1081-1206(23)00041-8.
doi: 10.1016/j.anai.2023.01.016. Online ahead of print.

Implementation of standardized asthma management programs in outpatient settings

Jessica P Hollenbach[1], Melanie Sue Collins[2], Caleb Wasser[2], David Fedele[3]
Affiliations expand

- PMID: 36702245

- DOI: 10.1016/j.anai.2023.01.016

Abstract

Purpose of review: This article reviews new approaches, facilitators, barriers, and opportunities to increasing adoption of standardized asthma management programs in the outpatient care setting.

Recent findings: Primary care clinicians providing asthma care in the outpatient setting are challenged by the complexity of guidelines and want standardization of tools that are easy to use and that can be integrated within their practice's workflow. Programs that integrate clinical decision support tools within a practice's electronic health record and provide support from specialists may enhance uptake of asthma management programs in the outpatient setting and reduce asthma morbidity. Lack of an implementation science framework, consideration for organizational context, and clinician buy-in are recently recognized barriers to adoption of asthma programs and improved asthma outcomes. In

addition, many of these interventions are labor intensive, costly, and may not be capable of wide dissemination due to the EHR interoperability problem.

Conclusion: Programs that simplify the guidelines, integrate clinical decision support within the EHR, and ground their approach with an implementation science framework may improve the quality of asthma care provided in the outpatient setting.

Keywords: Asthma; implementation; management; outpatient; primary care; standardized.

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Respir Med

. 2023 Jan 23;107130.
doi: 10.1016/j.rmed.2023.107130. Online ahead of print.

Imaging-derived biomarkers in Asthma: Current status and future perspectives

Esther Pompe[1], Anastasia Kal Kwee[2], Vickram Tejwani[3], Trishul Siddharthan[4], Firdaus Aa Mohamed Hoesein[5]
Affiliations expand

- PMID: 36702169

- DOI: 10.1016/j.rmed.2023.107130

Abstract

Asthma is a common disorder affecting around 315 million individuals worldwide. The heterogeneity of asthma is becoming increasingly important in the era of personalized treatment and response assessment. Several radiological imaging modalities are available in asthma including chest x-ray, computed tomography (CT) and magnetic resonance imaging (MRI) scanning. In addition to qualitative imaging, quantitative imaging could play an important role in asthma imaging to identify phenotypes with distinct disease course and response to therapy, including biologics. MRI in asthma is mainly performed in research settings given cost, technical challenges, and there is a need for standardization. Lastly, imaging analysis applications of artificial intelligence (AI) to subclassify asthma using image analysis have demonstrated initial feasibility, though additional work is necessary to inform the role of AI in clinical practice.

Keywords: Artificial intelligence (AI); Asthma; Imaging; Quantitative.

Conflict of interest statement

Declaration of competing interest No conflicts of interest.

Lancet Respir Med

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doi: 10.1016/S2213-2600(22)00492-1. Online ahead of print.

Long-term safety and efficacy of tezepelumab in people with severe, uncontrolled asthma (DESTINATION): a randomised, placebo-controlled extension study

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Simonsson[11], Kaitlyn Lawson[12], Karin Bowen[13], Gene Colice[14]; DESTINATION study investigators
Collaborators, Affiliations expand

- PMID: 36702146

- DOI: 10.1016/S2213-2600(22)00492-1

Abstract

Background: Tezepelumab is a human monoclonal antibody that blocks thymic stromal lymphopoietin. The drug has been tested previously in the phase 3 NAVIGATOR (NCT03347279) and SOURCE (NCT03406078) studies, and was subsequently approved as a treatment for severe asthma. This extension study recruited from NAVIGATOR and SOURCE and aimed to evaluate the long-term safety and efficacy of tezepelumab in individuals with severe, uncontrolled asthma.

Methods: DESTINATION was a phase 3, multicentre, randomised, double-blind, placebo-controlled, long-term extension study. The study was done across 182 sites (including hospitals, clinics, medical centres, clinical trial centres, and private practices) in 18 countries. Participants (aged 12-80 years) were required to have good treatment compliance in the parent study. Randomisation was stratified by the parent study and all participants were re-randomised. Those who were previously randomised to receive tezepelumab in either parent study continued treatment of subcutaneous tezepelumab (210 mg every 4 weeks); those who were previously randomised to receive placebo in either parent study were re-randomised 1:1 to receive either subcutaneous tezepelumab (210 mg every 4 weeks) or placebo (every 4 weeks) using a randomisation list prepared by a computerised system. Total treatment duration (including the parent studies) was 104 weeks for all groups. Participants, investigators, and site staff were masked to treatment assignment. The primary endpoints were exposure-adjusted incidence of adverse events and serious adverse events and the secondary endpoint was the annualised asthma exacerbation rate; these were assessed from week 0 of the parent studies to week 104 of DESTINATION in all participants who were randomised and who received at least one dose of tezepelumab or placebo in either of the parent studies. The trial is registered with ClinicalTrials.gov, NCT03706079, and is closed to new participants.

Findings: Participants were recruited between Jan 7, 2019, and Oct 15, 2020. For individuals who initially received tezepelumab (n=528) in NAVIGATOR, incidence of adverse events over 104 weeks was 49·62 (95% CI 45·16 to 54·39) per 100 patient-years, compared with 62·66 (56·93 to 68·81) for those receiving placebo (n=531; difference -13·04, 95% CI -17·83 to -8·18). For serious adverse events, incidence was 7·85 (6·14 to 9·89) per 100 patient-years for individuals who initially received tezepelumab and 12·45 (9·97 to 15·35) for those who received placebo (difference -4·59, -7·69 to -1·65). In SOURCE,

incidence of adverse events was 47·15 (36·06 to 60·56) per 100 patient-years for those who initially received tezepelumab (n=74) and 69·97 (54·54 to 88·40) for those who received placebo (n=76; difference -22·82, -34·77 to -10·01). For serious adverse events, incidence was 13·14 (7·65 to 21·04) per 100 patient-years for those who initially received tezepelumab and 17·99 (10·66 to 28·44) for those who received placebo (difference -4·85, -14·88 to 4·53). Tezepelumab reduced the annualised asthma exacerbation rate over 104 weeks compared with placebo. In participants initially from NAVIGATOR, the annualised asthma exacerbation rate ratio over 104 weeks was 0·42 (95% CI 0·35 to 0·51); in those initially from SOURCE, the ratio over 104 weeks was 0·61 (0·38 to 0·96).

Interpretation: Tezepelumab treatment was well tolerated for up to 2 years and resulted in sustained, clinically meaningful reductions in asthma exacerbations in individuals with severe, uncontrolled asthma. These findings are consistent with previous randomised, placebo-controlled studies and show the long-term safety and sustained efficacy of tezepelumab in individuals with severe, uncontrolled asthma.

Funding: AstraZeneca and Amgen.

Conflict of interest statement

Declaration of interests AM-G has attended advisory board meetings for AstraZeneca, GlaxoSmithKline, Novartis, Regeneron, Sanofi, and Teva Pharmaceuticals; has received speaker fees from AstraZeneca, Novartis, Sanofi, and Teva Pharmaceuticals; has participated in research with AstraZeneca, for which his institution has been remunerated; has attended international conferences with Teva Pharmaceuticals; and has consultancy agreements with AstraZeneca and Sanofi. MEW is an employee of National Jewish Health and has received consultancy fees from AstraZeneca, Equillium, Genentech, GlaxoSmithKline, Novartis, Regeneron Pharmaceuticals, resTORbio, Sanofi, and Teva Pharmaceuticals. CEB has received consultancy fees and grants from 4D Pharma, AstraZeneca, Chiesi, Genentech, GlaxoSmithKline, Mologic, Novartis, Regeneron, Roche, and Sanofi. SK has received fees for lectures or advisory board meetings from AstraZeneca, GlaxoSmithKline, Novartis, Roche, Sanofi Aventis, and Teva Pharmaceuticals. JC has received grants and personal fees from AstraZeneca, Genentech, and Vectura and has received grants from Optinose, Sanofi, and Teva Pharmaceuticals. EI has served as a consultant to and received personal fees from 4D Pharma, AB Science, Amgen, AstraZeneca, Avillion, Biometry, Cowen, Equillium, Genentech, GlaxoSmithKline, Merck, Novartis, Pneuma Respiratory, PPS Healthcare, Regeneron Pharmaceuticals, Sanofi, Sienna Biopharmaceuticals, and Teva Pharmaceuticals; has received non-financial support from Circassia, Teva Pharmaceuticals, and Vorso Corp; and has received clinical research grants from AstraZeneca, Avillion, Genentech, Gossamer Bio, Novartis, and Sanofi. GCh has received speaker and consultancy fees from Amgen, AstraZeneca, Boehringer Ingelheim, Genentech, GlaxoSmithKline, Novartis, Regeneron Pharmaceuticals, Sanofi Genzyme, and Teva Pharmaceuticals. AB, SP, GA, MG, KB, and GCo are employees of AstraZeneca and

might own stock or stock options in AstraZeneca. SC is an employee of Amgen and owns stock in Amgen. LS is a consultant to AstraZeneca. KL is an employee of Cytel.

SUPPLEMENTARY INFO

Associated dataexpand
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17
Lancet Respir Med
.
. 2023 Jan 23;S2213-2600(22)00530-6.
doi: 10.1016/S2213-2600(22)00530-6. Online ahead of print.

Is tezepelumab the ubiquitous biologic for severe asthma?

Richard Beasley[1], Anne B Chang[2]
Affiliations expand

- PMID: 36702145
- DOI: 10.1016/S2213-2600(22)00530-6

No abstract available

Conflict of interest statement

RB declares grant funding to the Medical Research Institute of New Zealand from AstraZeneca, Genentech, and the New Zealand Health Research Council and personal consulting fees from AstraZeneca, Cipla, Avillion, Health Research Council (New Zealand), CSL Seqirus, and Teva Pharmaceuticals. ABC declares no competing interests.
Proceed to details
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18

Am J Respir Crit Care Med

. 2023 Jan 26.
doi: 10.1164/rccm.202209-1795CI. Online ahead of print.

Differential Diagnosis of Suspected COPD Exacerbations in the Acute Care Setting: Best Practice

Bartolome R Celli[1,2], Leonardo M Fabbri[3], Shawn D Aaron[4], Alvar Agusti[5], Robert D Brook[6], Gerard J Criner[7], Frits M E Franssen[8], Marc Humbert[9], John R Hurst[10], Maria Montes de Oca[11], Leonardo Pantoni[12], Alberto Papi[13], Roberto Rodriguez-Roisin[14], Sanjay Sethi[15], Daiana Stolz[16], Antoni Torres[17], Claus F Vogelmeier[18], Jadwiga A Wedzicha[19]
Affiliations expand

- PMID: 36701677

- DOI: 10.1164/rccm.202209-1795CI

Abstract

Patients with chronic obstructive pulmonary disease (COPD) may suffer from acute episodes of worsening dyspnea, often associated with increased cough, sputum and/or sputum purulence. These exacerbations (ECOPDs) impact health status, accelerate lung function decline, and increase the risk of hospitalization. Importantly, close to 20% of patients are readmitted within 30 days after hospital discharge, with great cost to the person and to society. Approximately 25% and 65% of patients hospitalized for an ECOPD die within 1 and 5 years, respectively. Patients with COPD are usually older, and frequently have concomitant chronic diseases, including heart failure, coronary artery disease, arrhythmias, interstitial lung diseases, bronchiectasis, asthma, anxiety, and depression, and are also at increased risk of developing pneumonia, pulmonary embolism, and pneumothorax. All of these morbidities not only increase the risk of subsequent ECOPDs, but can also mimic or aggravate them. Importantly, close to 70% of readmissions following an ECOPD hospitalization result from decompensation of other morbidities. These observations suggest that in patients with COPD with worsening dyspnea but without the other classic characteristics of ECOPD, careful search for these morbidities can help detect them and allow appropriate treatment. For most morbidities , a thorough clinical evaluation supplemented by appropriate clinical investigations can guide the healthcare

provider to make a precise diagnosis. This perspective integrates the currently dispersed information available, and provides a practical approach to patients with COPD complaining of worsening respiratory symptoms, particularly dyspnea. A systematic approach should help improve outcomes and the personal and societal cost of ECOPDs.

Keywords: Algorithms; Chronic Obstructive Pulmonary Disease; Differential Diagnosis; Symptom Flare Up.

Am J Respir Crit Care Med

. 2023 Jan 26.
doi: 10.1164/rccm.202209-1708OC. Online ahead of print.

Allergen Immunotherapy Enhances Airway Epithelial Antiviral Immunity in Patients with Allergic Asthma (VITAL Study): A Double Blind Randomized Controlled Trial

Christian Woehlk[1], Sangeetha Ramu[2], Asger Sverrild[3], Juan José Nieto-Fontarigo[4], Sara Vázquez-Mera[5], Samuel Cerps[6], Alexis Pulga[3], Louise Munkholm Andreasson[3], Lise Lotte Eriksen[3], Nanna Dyhre-Petersen[3], Mandy Menzel[7], Ditte K Klein[8], Susanne Hansen[9], Lena Uller[6], Celeste Porsbjerg[10][11]
Affiliations expand

- PMID: 36701676

- DOI: 10.1164/rccm.202209-1708OC

Abstract

Introduction: Allergic asthma is linked to impaired bronchial epithelial secretion of interferons (IFNs) which may be causally linked with the increased risk of viral exacerbations. We have previously shown that allergen immunotherapy (AIT) effectively reduces asthma exacerbations and prevents respiratory infections requiring antibiotics; however, whether AIT alters antiviral immunity is still unknown.

Aims and objectives: To investigate the effect of house dust mite-sublingual allergen immunotherapy (HDM-SLIT) on the bronchial epithelial antiviral and inflammatory responses in patients with allergic asthma.

Methods: In this double blind randomized controlled trial (VITAL), adult patients with HDM allergic asthma received HDM-SLIT 12-SQ or placebo for 24-weeks. Bronchoscopy was performed at baseline and at week-24 which included sampling for human bronchial epithelial cells (HBECs). HBECs were cultured at baseline and at week-24 and stimulated with the viral mimic poly(I:C). mRNA expression was quantified by RT-qPCR and protein levels were measured by multiplex ELISA.

Results: Thirty-nine patients were randomized to HDM-SLIT (n=20) or placebo (n=19). HDM-SLIT resulted in increased poly(I:C)-induced expression of IFN-β, both at gene (p=.009) and protein (p=0.02) level. IFN-λ gene expression was also increased (p=0.03), whereas IL-33 tended to be decreased (p=0.09). On the other hand, pro-inflammatory cytokines IL-6 (p=.009) and TNF-α (p=0.08) increased compared with baseline in HDM-SLIT group. There was no significant change in TSLP, IL-4, IL-13, and IL-10.

Conclusion: HDM-SLIT improves bronchial epithelial antiviral resistance to viral infection. These results potentially explain the efficacy of HDM-SLIT reducing exacerbations in allergic asthma. Clinical trial registration available at www.

Clinicaltrials: gov, ID: NCT04100902.

Keywords: airway resistance; allergen immunotherapy; allergic asthma; antiviral immunity; bronchial epithelium.

. 2023 Jan 26.
doi: 10.1165/rcmb.2023-0004ED. Online ahead of print.

Inflammation during Pregnancy Predisposes to Childhood Asthma by Altering Long Noncoding RNA Expression

Tetsu Kobayashi[1], Taro Yasuma[2], Esteban C Gabazza[3]
Affiliations expand

- PMID: 36701649

- DOI: 10.1165/rcmb.2023-0004ED

No abstract available

Keywords: asthma; inflammation; long noncoding RNA; pregnancy.

Review

Eur Respir Rev
. 2023 Jan 25;32(167):220144.
doi: 10.1183/16000617.0144-2022. Print 2023 Mar 31.

Targeting interleukin-33 and thymic stromal lymphopoietin pathways for

novel pulmonary therapeutics in asthma and COPD

Ariel A Calderon[1], Colin Dimond[1], David F Choy[1], Rajita Pappu[1], Michele A Grimbaldeston[1], Divya Mohan[2], Kian Fan Chung[3]
Affiliations expand

- PMID: 36697211

- DOI: 10.1183/16000617.0144-2022

Free article

Abstract

Interleukin-33 (IL-33) and thymic stromal lymphopoietin (TSLP) are alarmins that are released upon airway epithelial injury from insults such as viruses and cigarette smoke, and play critical roles in the activation of immune cell populations such as mast cells, eosinophils and group 2 innate lymphoid cells. Both cytokines were previously understood to primarily drive type 2 (T2) inflammation, but there is emerging evidence for a role for these alarmins to additionally mediate non-T2 inflammation, with recent clinical trial data in asthma and COPD cohorts with non-T2 inflammation providing support. Currently available treatments for both COPD and asthma provide symptomatic relief with disease control, improving lung function and reducing exacerbation rates; however, there still remains an unmet need for further improving lung function and reducing exacerbations, particularly for those not responsive to currently available treatments. The epithelial cytokines/alarmins are involved in exacerbations; biologics targeting TSLP and IL-33 have been shown to reduce exacerbations in moderate-to-severe asthma, either in a broad population or in specific subgroups, respectively. For COPD, while there is clinical evidence for IL-33 blockade impacting exacerbations in COPD, clinical data from anti-TSLP therapies is awaited. Clinical data to date support an acceptable safety profile for patients with airway diseases for both anti-IL-33 and anti-TSLP antibodies in development. We examine the roles of IL-33 and TSLP, their potential use as drug targets, and the evidence for target patient populations for COPD and asthma, together with ongoing and future trials focused on these targets.

Conflict of interest statement

Conflict of interest: A.A. Calderon has nothing to declare. C. Dimond, D.F. Choy, R. Pappu, M.A. Grimbaldeston and D. Mohan are employees of Genentech, Inc., a member of the Roche group, and are Roche stockholders. D.F. Choy and M.A. Grimbaldeston are co-inventors on patents that have been filed or are pending relating to the diagnosis and treatment of chronic respiratory diseases for Genentech, Inc. D. Mohan was previously an employee and shareholder of GSK. K.F. Chung received personal payments for service on an advisory board for Roche, Merck, Rickett-Beckinson and Shinogi, data safety monitoring board for Nocion, and for speaking engagements from Novartis and AstraZeneca; and received the MRC, EPSRC, and GSK grants for his institution.

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

FULL TEXT LINKS

Review

Eur Respir Rev
. 2023 Jan 25;32(167):220109.
doi: 10.1183/16000617.0109-2022. Print 2023 Mar 31.

Physical activity promotion interventions in chronic airways disease: a systematic review and meta-analysis

Caroline Reilly[1], Joe Sails[1], Antonios Stavropoulos-Kalinoglou[1], Rebecca J Birch[2], Jim McKenna[1], Ian J Clifton[2,3], Daniel Peckham[2,3], Karen M Birch[4], Oliver J Price[5,3,4]
Affiliations expand

- PMID: 36697208

- DOI: 10.1183/16000617.0109-2022

Free article

Abstract

Physical inactivity is common in people with chronic airways disease (pwCAD) and associated with worse clinical outcomes and impaired quality of life. We conducted a systematic review and meta-analysis to characterise and evaluate the effectiveness of interventions promoting step-based physical activity (PA) in pwCAD. We searched for studies that included a form of PA promotion and step-count outcome measure. A random-effects model was used to determine the overall effect size using post-intervention values. 38 studies (n=32 COPD; n=5 asthma; n=1 bronchiectasis; study population: n=3777) were included. Overall, implementing a form of PA promotion resulted in a significant increase in step-count: median (IQR) 705 (183-1210) when compared with usual standard care: -64 (-597-229), standardised mean difference (SMD) 0.24 (95% CI: 0.12-0.36), p<0.01. To explore the impact of specific interventions, studies were stratified into subgroups: PA promotion+wearable activity monitor-based interventions (n=17) (SMD 0.37, p<0.01); PA promotion+step-count as an outcome measure (n=9) (SMD 0.18, p=0.09); technology-based interventions (n=12) (SMD 0.16, p=0.01). Interventions promoting PA, particularly those that incorporate wearable activity monitors, result in a significant and clinically meaningful improvement in daily step-count in pwCAD.

Conflict of interest statement

Conflict of interest: I.J. Clifton reports personal fees from GlaxoSmithKline, outside the submitted work. The remaining authors have no conflicts to declare.

23
Pediatr Pulmonol
.
. 2023 Jan 25.
doi: 10.1002/ppul.26327. Online ahead of print.

Effect of lockdowns on the epidemiology of pediatric respiratory disease – A retrospective analysis of the 2021 summer epidemic

Matthijs D Kruizinga[1], Jeroen G Noordzij[2], Marlies A van Houten[3], Jantien Wieringa[4], Gerdien A Tramper-Stranders[5], Vishal Hira[6], Jolita Bekhof[7], Nienke J Vet[8], Gertjan Ja Driessen[9], Mirjam van Veen[1]
Affiliations expand

- PMID: 36695757

- DOI: 10.1002/ppul.26327

Abstract

Background: The imposition of lockdowns during the SARS-CoV-2 pandemic led to a significant decrease in pediatric care utilization in 2020. After restrictions were loosened, a surge in pediatric respiratory disease was observed in pediatric wards. The aim of this study was to quantify the effect of the lockdown(s) on the incidence of pediatric respiratory disease.

Methods: For this multicentre retrospective study, emergency department (ED) visit and admission data between January 2017 and September 2021 was collected from eight general hospitals in the Netherlands. Clinical diagnoses were extracted and categorized in groups ('communicable infectious disease', 'all respiratory infections', 'upper respiratory tract infection', 'lower respiratory tract infection', and 'asthma/preschool wheezing'). The incidence of admissions and ED visits during 2020 and 2021 was compared to the incidence in 2017-2019.

Results: Successive lockdowns resulted in a maximum decrease of 61% and 57% in ED visits and admissions, respectively. After loosening restrictions during the summer of 2021, a 48% overall increase in ED visits and 31% overall increase in admission numbers was observed in July compared to the average July in 2017-2019. This was explained by a 381% increase in ED visits and a 528% increase in ward admissions due to overall respiratory infections, mainly due to lower respiratory tract infections.

Conclusions: Successive lockdowns in the spring and winter of 2020 and 2021 led to a decreased incidence of communicable infections, especially respiratory tract infections. The resulting lack of pediatric immunity resulted in an off-season surge in care utilization at an unexpected moment.

Keywords: COVID-19; ED visits; SARS-CoV-2; admissions; asthma; bronchiolitis; corona; lockdown; pediatrics; pneumonia; wheezing.

J Aerosol Med Pulm Drug Deliv

. 2023 Jan 25.

doi: 10.1089/jamp.2021.0061. Online ahead of print.

In Vitro Drug Delivery of a Fixed-Dose Combination of Fluticasone Furoate/Umeclidinium/Vilanterol from a Dry Powder Inhaler

Melanie Hamilton[1], Martin Anderson[2], Rajiv Dhand[3], Oonagh Patmore[1], David Prime[1], Edward Taylor[1]

Affiliations expand

- PMID: 36695722

- DOI: 10.1089/jamp.2021.0061

Abstract

Background: Dry powder inhalers (DPIs) require patients to impart sufficient energy through inhalation to ensure adequate dose emission, medication deaggregation, and resultant particle sizes suitable for lung deposition. There is an ongoing debate regarding the level of inspiratory effort, and therefore inspiratory flow rate, needed for optimal dose delivery from DPIs. ***Materials and Methods:*** The delivered dose (DD) and fine particle fraction (FPF) for each component of fluticasone furoate/umeclidinium/vilanterol (FF/UMEC/VI) 100/62.5/25 µg and FF/UMEC/VI 200/62.5/25 µg ELLIPTA DPIs were assessed at flow rates of 30, 60, and 90 L/min. Electronic lung (eLung) (eLung; an electronic breathing simulator) assessments were conducted to replicate inhalation profiles representing a wide range of inhalation parameters and inhaled volumes achieved by patients with chronic obstructive pulmonary disease (COPD) or asthma of all severity levels. Timing and duration of dose emission were assessed using a particle detector located at the entrance of an anatomical throat cast attached to the eLung. ***Results:*** During DD assessment, a mean of >80% of the nominal blister content (nbc) was emitted from the ELLIPTA DPI at all flow rates. In Next Generation Impactor assessments, the observed mean DD across flow rates for FF/UMEC/VI 100/62.5/25 µg ranged from 85.9% to 97.0% of nbc and 84.0% to 93.5% for FF/UMEC/VI 200/62.5/25 µg. In eLung assessments, 82.8% to 95.5% of nbc was delivered across the PIF range, 43.5 to 129.9 L/min (COPD), and 85.1% to 92.3% across the PIF range, 67.4 to 129.9 L/min (asthma). The FPF (mass <5 µm; % nbc) for each component was comparable across all flow rates and inhalation profiles. Dose emission timings indicated that near-complete dose emission occurs before reaching PIF. ***Conclusions:*** Dose delivery assessments across all flow rates and inhalation profiles indicate that patients with all severity levels of COPD or asthma can achieve the required inspiratory effort for efficient delivery of all components of FF/UMEC/VI from the ELLIPTA DPI. Dose emission profiles suggest rapid and near-complete dose delivery from the ELLIPTA DPI before reaching PIF.

Keywords: asthma; chronic obstructive pulmonary disease; delivered dose; dose emission; peak inspiratory flow; peak inspiratory flow rate.

Observational Study

Respir Res
.
2023 Jan 24;24(1):26.
doi: 10.1186/s12931-023-02323-7.

Nasal TSLP and periostin in infants with severe bronchiolitis and risk of asthma at 4 years of age

Maria Luz Garcia-Garcia[1 2 3 4], Beatriz Sastre[5], Maria Arroyas[6 7], Maite Beato[6 7], Patricia Alonso[6 7], José Manuel Rodrigo-Muñoz[5 8], Victoria Del Pozo[5 8], Inmaculada Casas[9], Cristina Calvo[10 11 12 13 14]
Affiliations expand

- PMID: 36694181
- PMCID: PMC9872300
- DOI: 10.1186/s12931-023-02323-7

Free PMC article

Abstract

Background: Severe bronchiolitis is often associated with subsequent respiratory morbidity, mainly recurrent wheezing and asthma. However, the underlying immune mechanisms remain unclear. The main goal of this study was to investigate the association of nasal detection of periostin and thymic stromal lymphopoietin (TSLP) during severe bronchiolitis with the development of asthma at 4 years of age.

Methods: Observational, longitudinal, post-bronchiolitis, hospital-based, follow-up study. Children hospitalized for bronchiolitis between October/2013 and July/2017, currently

aged 4 years, included in a previous study to investigate the nasal airway secretion of TSLP and periostin during bronchiolitis, were included. Parents were contacted by telephone, and were invited to a clinical interview based on a structured questionnaire to obtain information on the respiratory evolution. The ISAAC questionnaire for asthma symptoms for 6-7-year-old children, was also employed.

Results: A total of 248 children were included (median age 4.4 years). The mean age at admission for bronchiolitis was 3.1 (IQR: 1.5-6.5) months. Overall, 21% had ever been diagnosed with asthma and 37% had wheezed in the last 12 months. Measurable nasal TSLP was detected at admission in 27(11%) cases and periostin in 157(63%). The detection of nasal TSLP was associated with the subsequent prescription of maintenance asthma treatment (p = 0.04), montelukast (p = 0.01), and the combination montelukast/inhaled glucocorticosteroids (p = 0.03). Admissions for asthma tended to be more frequent in children with TSLP detection (p = 0.07). In the multivariate analysis, adjusting for potential confounders, the detection of TSLP remained independently associated with chronic asthma treatment prescription (aOR:2.724; CI 1.051-7.063, p:0.04) and with current asthma (aOR:3.41; CI 1.20-9.66, p:0.02). Nasal detection of periostin was associated with lower frequency of ever use of short-acting beta2-agonists (SABA) (p = 0.04), lower prevalence of current asthma (p = 0.02), less prescription of maintenance asthma treatment in the past 12 months (p = 0.02, respectively). In the multivariate analysis, periostin was associated with lower risk of asthma at 4 years, independently of the atopic status (aOR:0.511 CI 95% 0.284-0.918, p:0.025).

Conclusions: Our results show a positive correlation between nasal TSLP detection in severe bronchiolitis and the presence of current asthma, prescription of asthma maintenance treatment and respiratory admissions up to the age of 4 years. By contrast, we found a protective association between nasal periostin detection and current asthma at 4 years, ever diagnosis of asthma, maintenance asthma treatment prescription, and respiratory admissions.

Keywords: Asthma; Bronchiolitis; Periostin; Recurrent wheezing; Respiratory syncytial virus (RSV); Rhinovirus (HRV); Thymic stromal lymphopoietin (TSLP).

Conflict of interest statement

The authors declare that they have no competing interests.

- 44 references
- 2 figures

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substances, Grant supportexpand

Eur J Pediatr

. 2023 Jan 24.
doi: 10.1007/s00431-023-04826-3. Online ahead of print.

Influence of sex on the requirement for and outcomes following late postnatal corticosteroid treatment

Rebecca Lee[1], Emily Kostina[1], Theodore Dassios[1,2], Anne Greenough[3,4,5]
Affiliations expand

- PMID: 36692623

- DOI: 10.1007/s00431-023-04826-3

Abstract

There remains a disparity between the outcomes of male and female prematurely born infants. Our aim was to assess the influence of sex on the requirement for late (> 7 days) postnatal corticosteroid (PNS) treatment and the outcomes following treatment. A retrospective whole population study of infants born at less than 28 weeks of gestation in all neonatal units in England between 2014 and 2018. The impact of exposure to at least five consecutive days of dexamethasone or hydrocortisone on bronchopulmonary dysplasia (BPD) at 36 weeks corrected gestation and survival to discharge from neonatal care was determined. Ten thousand, six hundred and fifty-five infants survived to seven days. Male sex was associated with an increased incidence of BPD (OR 1.41, 95%CI 1.287-1.552, p < 0.001) and death (OR 1.227, 95%CI 1.123-1.452, p < 0.001). Two thousand, three hundred and forty-four infants (22%) received at least one course of PNS at a median of 23

(IQR 15-40) days after birth. Males (23.6%) were more likely to receive PNS than females (20.1%), p < 0.001 and receive repeated courses (mean 1.67 compared to a mean of 1.59 in the females), p = 0.027. Multivariate regression analysis identified no significant differences in the incidence of BPD or death between male and females who received PNS. Conclusions: Males and females had similar outcomes after receiving PNS, but a significantly greater proportion of males met the clinical threshold to receive PNS and were more likely to receive repeated courses which may expose them to a greater risk of adverse long-term outcomes. What is Known: • There remains a difference in outcomes of male and female infants born prematurely. • Prematurely born male infants were more likely to receive postnatal corticosteroids and a greater number of courses but had similar outcomes compared to female infants. What is New: • Postnatal corticosteroids have long-term adverse effects. Such outcomes should be considered when weighing up the risk-benefit ratio of prescribing postnatal corticosteroids, particularly in very prematurely born male infants.

Keywords: BPD; Mortality; Postnatal corticosteroids; Prematurely born infants.

- 25 references

Allergy

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. 2023 Jan 23.
doi: 10.1111/all.15654. Online ahead of print.

Medical algorithm: Diagnosis and treatment of house dust mite-driven allergic asthma

J Schulze[1], I Agache[2], I Eguiluz-Gracia[3], J Trischler[1], S Zielen[1]
Affiliations expand

- PMID: 36691365

- DOI: 10.1111/all.15654

No abstract available

SUPPLEMENTARY INFO

Publication typesexpand

FULL TEXT LINKS

WILEY Full Text Article

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Review

Annu Rev Pathol

. 2023 Jan 24;18:387-409.
doi: 10.1146/annurev-pathol-042220-015902. Epub 2022 Oct 21.

The Pathology of Asthma: What Is Obstructing Our View?

Helena Aegerter[1,2], Bart N Lambrecht[1,2,3]
Affiliations expand

- PMID: 36270294

- DOI: 10.1146/annurev-pathol-042220-015902

Free article

Abstract

Despite the advent of sophisticated and efficient new biologics to treat inflammation in asthma, the disease persists. Even following treatment, many patients still experience the well-known symptoms of wheezing, shortness of breath, and coughing. What are we missing? Here we examine the evidence that mucus plugs contribute to a substantial portion of disease, not only by physically obstructing the airways but also by perpetuating inflammation. In this way, mucus plugs may act as an immunogenic stimulus even in the absence of allergen or with the use of current therapeutics. The alterations of several parameters of mucus biology, driven by type 2 inflammation, result in sticky and tenacious sputum, which represents a potent threat, first due to the difficulties in expectoration and second by acting as a platform for viral, bacterial, or fungal colonization that allows exacerbations. Therefore, in this way, mucus plugs are an overlooked but critical feature of asthmatic airway disease.

Keywords: airway obstruction; asthma; galectin-10; mucus; neutrophils.

Review

Annu Rev Pathol

. 2023 Jan 24;18:361-386.
doi: 10.1146/annurev-pathmechdis-031521-042618. Epub 2022 Oct 21.

New Insights into the Pathogenesis of Mastocytosis: Emerging Concepts in Diagnosis and Therapy

Peter Valent[1,2], Cem Akin[3], Wolfgang R Sperr[1,2], Hans-Peter Horny[4], Michel Arock[5], Dean D Metcalfe[6], Stephen J Galli[7]
Affiliations expand

- PMID: 36270293

- DOI: 10.1146/annurev-pathmechdis-031521-042618

Free article

Abstract

Mastocytosis is a heterogeneous group of neoplasms defined by a numerical increase and accumulation of clonal mast cells (MCs) in various organ systems. The disease may present as cutaneous mastocytosis or systemic mastocytosis (SM). On the basis of histopathological and molecular features, clinical variables, and organ involvement, SM is divided into indolent SM, smoldering SM, SM with an associated hematologic neoplasm, aggressive SM, and MC leukemia. Each variant is defined by unique diagnostic criteria and a unique spectrum of clinical presentations. A key driver of MC expansion and disease evolution is the oncogenic machinery triggered by mutant forms of *KIT*. The genetic background, additional somatic mutations, and comorbidities also contribute to the course and prognosis. Patients with SM may also suffer from mediator-related symptoms or even an MC activation syndrome. This article provides an update of concepts on the genetics, etiology, and pathology of mastocytosis, with emphasis on diagnostic criteria and new treatment concepts.

Keywords: KIT D816V; anaphylaxis; etiology; genetic risk; mast cells; mastocytosis; prognostication; targeted therapies; tryptase.

RHINITIS

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Arch Dermatol Res
.
. 2023 Jan 28.
doi: 10.1007/s00403-023-02539-z. Online ahead of print.

Psoriasis associated with asthma and allergic rhinitis: a US-based cross-sectional study using the All of US Research Program

Marina Z Joel[1], Ryan Fan[2], William Damsky[3,4], Jeffrey M Cohen[5]
Affiliations expand

- PMID: 36707438

- DOI: 10.1007/s00403-023-02539-z

Abstract

Psoriasis is a common chronic inflammatory disease with multiple known comorbidities. Increasing evidence suggests some mechanistic overlap in the immunopathogenesis of psoriasis and some cases of asthma and allergic rhinitis (AR), but the potential association between psoriasis and asthma and AR has not been thoroughly investigated. The study aimed to investigate the association between psoriasis and asthma and AR. We used data from the NIH All of US Research Program, a nationwide longitudinal cohort of US adults, collected from 2018 to present. The source population comprised a demographically and socioeconomically diverse cohort of over 300,000 Americans. We used multivariable logistic regression models to examine the association between psoriasis and asthma and AR, after adjusting for sociodemographic variables, body mass index, and smoking status. In total, 235,551 participants (mean [SD] age, 54.7 [16.6] years; 59.3% female), including 5165 individuals with psoriasis and 230,386 individuals without psoriasis, were included in our analysis. Participants with psoriasis had significantly higher prevalence of asthma

(26.1% vs. 12.9%; P < 0.001) and AR (31.8% vs. 13.4%; P < 0.001) compared to participants without psoriasis. Psoriasis was significantly associated with both asthma [adjusted odds ratio (aOR) 2.22; 95% confidence interval (CI) 2.08-2.37] and AR (aOR, 2.57; 95% CI 2.42-2.73). In subgroup analyses, associations remained stable in multivariable analyses after stratification by age, sex, and income. Psoriasis is associated with both asthma and AR in our sample of US adults. Further research is needed to explore potentially unifying inflammatory pathways among psoriasis, asthma, and AR.

Keywords: Allergic rhinitis; Asthma; Cross-sectional; Epidemiology; Psoriasis.

- 15 references

Proceed to details
Cite

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Pediatrics
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. 2023 Jan 27;e2022058380.
doi: 10.1542/peds.2022-058380. Online ahead of print.

Complementary and Allergenic Food Introduction in Infants: An Umbrella Review

Victoria X Soriano[1,2], Daniela Ciciulla[1,2,3], Grace Gell[2], Yichao Wang[2,3,4], Rachel L Peters[1,2], Vicki McWilliam[2,3,5], Shyamali C Dharmage[1,6], Jennifer J Koplin[1,2,3]
Affiliations expand

- PMID: 36704902

- DOI: 10.1542/peds.2022-058380

Abstract

Background: Multiple systematic reviews examine the introduction of foods in relation to individual health outcomes, but the balance of harms and benefits has not been overviewed systematically.

Objectives: We aimed to perform an overview of systematic reviews on age of introduction of complementary and allergenic foods to the infant diet and long and short-term health outcomes.

Data sources: We searched Medline, Embase, Cochrane, and PubMed (July 25, 2022).

Study selection: Included systematic reviews examining the introduction of complementary or allergenic foods before age 1. Outcomes included allergic, autoimmune, and inflammatory diseases, neurodevelopment, nutrition, and weight.

Data extraction: Extraction and quality assessment were performed in duplicate (A Measurement Tool to Assess Systematic Reviews) and strength of evidence was assessed.

Results: We screened 4015 articles and included 32 systematic reviews. There was moderate evidence that peanut and egg should be introduced from 4 to 11 months to prevent food allergy (6 of 10 reviews). Complementary food introduction was not associated with food allergy. Moderate certainty evidence suggested age of complementary food introduction was not associated with eczema. Age at introduction of gluten was not associated with celiac disease (high certainty evidence; 3 of 4 reviews). Low certainty evidence indicated that introducing solids before 4 months may increase the risk of childhood obesity, but not growth. There was insufficient evidence regarding an association between any food introduction and bone health, gastrointestinal diseases, autoimmune disorders, asthma, or allergic rhinitis.

Limitations: Gray literature was not included.

Conclusions: Current evidence supports introducing complementary foods around 6 months and allergenic foods before 11 months.

Conflict of interest statement

CONFLICT OF INTEREST DISCLOSURES: The authors have indicated they have no conflicts of interest relevant to this article to disclose.

Pediatr Pulmonol

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Development and Validation of a Prediction Model to Predict School-age Asthma in Preschool Children

Yan Zhao[1,2], Jenil Patel[3], Ximing Xu[1,4], Guangli Zhang[1,2], Qinyuan Li[1], Liangqin Yi[1], Zhengxiu Luo[1]
Affiliations expand

- PMID: 36698223

- DOI: 10.1002/ppul.26331

Abstract

Objective: To develop and validate a clinical prediction model to identify school-age asthma in preschool asthmatic children.

Study design: In this retrospective prognosis cohort study, asthmatic children aged 3-5 years were enrolled with at least 2 years of follow-up, and their potential variables at baseline and the prognosis of school-age asthma were collected from medical records. A clinical prediction model was developed using Logistic regression. The performance of prediction model was assessed and quantified by discrimination of the area under the receiver operating characteristic curve (AUC) and calibration of Brier score. The model was validated by the temporal-validation method.

Results: In the development dataset, 2748 preschool asthmatic children were included for model development, and 883 (32.13%) children were translated to school-age asthma. The independent prognostic variables with an increased risk for school-age asthma were used to develop the prediction model, including: age, parental asthma, early frequent wheezing, allergic rhinitis, eczema, allergic conjunctivitis, obesity and aeroallergen of dust mite. While assessing model performance, the discrimination power of AUC was moderate [0.788 (0.770-0.805)] with sensitivity (81.5%) and specificity (60.9%), and the calibration of Brier score was 0.169, supporting the calibration ability. In the temporal-validation dataset of 583 preschool asthmatic children, our model showed satisfactory discrimination (AUC

0.818) and calibration (Brier score0.150). The prediction model was presented by the web-based calculator (https://casthma.shinyapps.io/dynnomapp/) and a nomogram for clinical application.

Conclusion: In preschool asthmatic children, our prediction model could be used to predict the risk of school-age asthma. This article is protected by copyright. All rights reserved.

Keywords: Childhood asthma; Nomogram; Prediction model; Preschool age; Prognosis; School-age; Web-based calculator.

Review

Curr Allergy Asthma Rep

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doi: 10.1007/s11882-022-01063-w. Online ahead of print.

Multimorbidities in Allergic Rhinitis–Current Evidence from Epidemiological Studies, Treatment Trials, and Molecular Data

Ioannis M Vlastos[1], Zacharias Kalentakis[2], Maria Doulaptsi[3], Alexander Karatzanis[3], Emmanuel P Prokopakis[3]
Affiliations expand

- PMID: 36692819

- DOI: 10.1007/s11882-022-01063-w

Abstract

Purpose of review: Given that allergic rhinitis (AR) commonly coexists with other diseases, the present narrative review attempts a brief presentation of current theories on multimorbidities in relation to phenotypes, genotypes, age, and treatment responses with the term "multimorbidities" indicating the uncertainty regarding the primary defect, organ, or pathophysiologic mechanism involved.

Recent findings: Though age-related manifestations allow for the generation of several hypotheses on AR's specific mechanisms, the various theories regarding the initiation or the aggravation of atopic disorders have yet to be proved. Multimorbid AR seems to have a different genetic basis from "stand-alone" AR as well a more severe phenotype. Most studies on the treatment of AR and its multimorbidities focus on allergen immunotherapy, which improves the atopic symptoms and may play a preventive role in the onset of new allergen sensitizations. The use of biological factors may also have a beneficial effect, even though it has currently been approved only for some comorbidities of AR, such as asthma. Employing the use of phenotypes and genotypes concerning multimorbidity broadens current knowledge, but further research is needed to develop diagnostic, stratificational, and predictive algorithms for single and multimorbid allergic diseases (Fig. 1). The real-time data obtained by mobile apps and the new insights on the pathophysiology of AR and its comorbidities will permit both timed preventive measures and better individualized and effective antiallergic treatment. Fig. 1 Current concepts and future trends in diagnosis and management of multimorbid allergic rhinitis.

Keywords: Allergic rhinitis; Comorbidities; Genotypes; Multimorbidity; Phenotypes.

- 75 references

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Review

Am J Rhinol Allergy
. 2023 Jan 23;19458924231152331.
doi: 10.1177/19458924231152331. Online ahead of print.

Efficacy of Cryoablation on Chronic Rhinitis Management: A Systematic Review and Meta-Analysis

Kurtis Young[1,2], Hannah Bulosan[1], Sameer Kejriwal[1], Jonathan Liang[3], Arthur W Wu[4], Dennis M Tang[4], Andrew C Birkeland[2], Toby O Steele[2]
Affiliations expand

- PMID: 36691694

- DOI: 10.1177/19458924231152331

Abstract

Background: ClariFix for posterior nasal nerve ablation has been approved for use since 2017, and this is the first study attempting to synthesize and assess the efficacy of this new device on the management of chronic rhinitis.

Objective: The primary objective of this meta-analysis is to assess the efficacy of ClariFix in the symptomatic management of patients with chronic rhinitis. The main outcome measure is the mean difference in the reflective total nasal symptom score (rTNSS).

Methods: A systematic search of Pubmed/Medline, Web of Science, and EBSCOhost was conducted from inception to May 2022. Peer-reviewed clinical trials reporting postcryotherapy rTNSS at both 1- and 3-month intervals for patients with chronic rhinitis were included. A random-effects model was utilized for meta-analysis. Study heterogeneity, bias, and overall quality were all assessed. The authors followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline. The primary outcome measures included mean differences in rTNSS from baseline to both 1- and 3-month postoperative time points. Secondary measures included other questionnaires including the Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ).

Results: There were 5 studies that met the criteria (247 individuals). The pooled rTNSS mean difference from baseline to 1 and 3 months postoperatively was found to be -3.48 points (95% CI: -3.73 to -3.23, I^2 = 0.13). and -3.50 (95% CI: -3.71 to -3.29, I^2 = 0.00), respectively. The mean difference from baseline to 3 months postoperatively regarding the RQLQ was found to be -1.53 (95% CI: -1.74 to -1.31, I^2 = 0.00). The most common adverse effects included facial or surgical site pain (40.4%), followed by headache (18.2%), oral numbness (11.1%), and sinusitis (4.0%).

Conclusions: The findings of this systematic review suggest that cryoablation with Clarifix is an effective treatment modality for chronic rhinitis. However, higher-quality randomized controlled trials will need to be performed to affirm the findings of this study.

Keywords: ClariFix; allergic rhinitis; chronic rhinitis; cryotherapy; nonallergic rhinitis; posterior nasal nerve.

Dupilumab reduces symptom burden in allergic rhinitis and suppresses allergen-specific IgE production

Nicholas James Campion[#1], Anna Doralt[#1], Christian Lupinek[2], Markus Berger[3], Katharina Poglitsch[4], Jonas Brugger[5], Tamara Quint[4], Katharina Gangl[1], Christoph Sinz[4], Tina Bartosik[1], David Tianxiang Liu[1], Lukas David Landegger[1], Aldine Tu[1], Victoria Stanek[1], Uwe Berger[1], Christine Bangert[4], Sven Schneider[1], Julia Eckl-Dorna[1]

Affiliations expand

- PMID: 36691369

- DOI: 10.1111/all.15653

No abstract available

Keywords: Dupilumab; IgE; allergen-specific; allergy; birch pollen; grass pollen.

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Review

Int Forum Allergy Rhinol

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. 2023 Jan 23.
doi: 10.1002/alr.23135. Online ahead of print.

Biological sex as a modulator in rhinologic anatomy, physiology and pathology: A scoping review

Shreya P Ramkumar[1,2], Tripti Brar[1], Lisa Marks[3], Michael J Marino[1], Devyani Lal[1]
Affiliations expand

- PMID: 36688669

- DOI: 10.1002/alr.23135

Abstract

Background: Biological sex is increasingly recognized as a critical variable in healthcare. We reviewed the current literature regarding sex-based differences in rhinology to summarize the data and identify critical knowledge gaps.

Methods: A scoping review was conducted. Publications reporting sex-based differences in anatomy, physiology, and pathology focusing on disease prevalence, disease burden, and outcomes in rhinology were identified.

Results: Seventy-five relevant manuscripts were identified. While paranasal sinuses are of similar size at birth, they become larger in males leading to differences in ostium location. Females outperform males in olfactory identification but only in the 18-50 years age group. Estrogen and progesterone administration can impact muscarinic and α1-adrenergic nasal mucosa receptor density. Chronic rhinosinusitis (CRS) and CRS without nasal polyps are more prevalent in females while CRS with nasal polyps is more prevalent in males. CRS symptom burden is higher in females before and after endoscopic sinus surgery (ESS); however, no difference in ESS utilization was found based on sex. Allergic rhinitis is more common in males before puberty and in females after puberty. Epistaxis is more prevalent in males and postmenopausal females compared to premenopausal females, perhaps from differences in sex-hormonal and hypertension status. In nasopharyngeal carcinoma, the incidence of sinus abnormalities was higher in males than females.

Conclusions: Although many sex-based differences exist in rhinology, further research is necessary to offer evidence-based treatment guidelines. Gonadal hormones should be studied as a therapeutic in rhinologic pathology as baseline physiologic differences exist such as those found in nasal mucosa receptor density. This article is protected by copyright. All rights reserved.

Keywords: chronic rhinosinusitis; epistaxis; gender; olfaction; quality of life; sex-related; sinus anatomy; sinusitis.

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Med Lett Drugs Ther
.
. 2023 Jan 23;65(1668):12-14.
doi: 10.58347/tml.2023.1668c.

Olopatadine/mometasone (Ryaltris) for allergic rhinitis

No authors listed

- PMID: 36651792

- DOI: 10.58347/tml.2023.1668c

No abstract available

Keywords: Astepro Allergy; Dymista; Flonase Allergy Relief; Nasonex; Patanase; Ryaltris; adverse effects; allergic rhinitis; antihistamines; azelastine; azelastine/fluticasone propionate; corticosteroids; dosage; drug interactions; efficacy; fluticasone propionate; lactation; mometasone; olopatadine; pregnancy; safety.

SUPPLEMENTARY INFO

MeSH terms, Substancesexpand

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The Medical Letter FULL TEXT
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Balkan Med J

. 2023 Jan 23;40(1):57-65.
doi: 10.4274/balkanmedj.galenos.2022.2022-9-31. Epub 2022 Dec 26.

Silencing SOX11 Alleviates Allergic Rhinitis by Inhibiting Epithelial-Derived Cytokines

Li Jiang[1], Chunrui Wang[1], Rui Zhao[2], Jing Cao[2], Yaohui Liu[2], Linli Tian[2], Ming Liu[2]
Affiliations expand

- PMID: 36571426

- DOI: 10.4274/balkanmedj.galenos.2022.2022-9-31

Free article

Abstract

Background: Allergic rhinitis is a chronic inflammatory disease of the nasal mucosa affecting the quality of life of patients. SRY-box transcription factor 11 (SOX11) was reported to play important roles in inflammatory responses, but its role in AR is poorly understood.

Aims: To explore the role of SOX11 in the development of allergic rhinitis.

Study design: Cell culture and animal study.

Methods: An in vivo murine allergic rhinitis model was established using ovalbumin treatment in female mice. Interleukin-13-stimulated human nasal mucosa epithelial cells were used for in vitro studies. Expression levels of SOX11, epithelial-derived cytokines, and mucin were determined in both modesls.

Results: SOX11 was highly expressed in allergic rhinitis mice. Allergy symptoms, serum ovalbumin-specific IgE, histamine, eosinophils, goblet cells, and type 2 cytokine secretion were increased in ovalbumin-treated mice. Furthermore, allergic rhinitis mice exhibited overproduction of epithelial-derived cytokines (thymic stromal lymphopoietin, interleukin-25, interleukin-33), C-C motif chemokine ligand 26 (CCL26), and mucin 5 AC (MUC5AC). Silencing SOX11 alleviated the behavioral symptoms and upregulation of epithelial-derived

cytokines, CCL26, and MUC5AC. In human nasal mucosa epithelial cells, interleukin-13 enhanced SOX11 expression in a time-dependent manner, and signal transducer and activator of transcription 6 (STAT6) was involved in the interleukin-13-mediated expression of SOX11 by regulating transcription. Knockdown of SOX11 reduced epithelial-derived cytokine expression and MUC5AC levels in interleukin-13-treated human nasal mucosa epithelial cells.

Conclusion: SOX11 plays a critical role in allergic rhinitis development by regulating epithelial-derived cytokines and might be a new therapeutic target for allergic rhinitis.

SUPPLEMENTARY INFO

MeSH terms, Substancesexpand

FULL TEXT LINKS

CHRONIC COUGH

1
Inn Med (Heidelb)
.
. 2023 Jan 27.
doi: 10.1007/s00108-022-01466-x. Online ahead of print.

[Gefapixant in the treatment of chronic coughing]

[Article in German]

T Kühlein[1], C Hasford[2], S Nitschmann[3]
Affiliations expand

- PMID: 36705677
- DOI: 10.1007/s00108-022-01466-x

No abstract available

- 5 references

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Review

Inn Med (Heidelb)
.
. 2023 Jan 26.
doi: 10.1007/s00108-022-01467-w. Online ahead of print.

[Chronic cough]

[Article in German]
M Schellenberg[1], F J F Herth[2]
Affiliations expand

- PMID: 36703081

- DOI: 10.1007/s00108-022-01467-w

Abstract

in English, German

Coughing is an important protective reflex of the respiratory tract and primarily serves clearance of the bronchial system. It is also an exceptionally common symptom in outpatient care that can be an expression of a variety of diseases. Coughing duration of longer than 8 weeks is referred to as chronic cough. A structured, often interdisciplinary diagnostic process is essential. The aim here is to identify causal treatment options, avoiding overdiagnosis and simultaneously not overlooking severe illness. This article discusses current diagnostic procedures, important differential diagnoses and possible treatment options.

Keywords: Antitussive agents; Chronic idiopathic cough; Cough/diagnosis, differential; Cough/etiology; Interdisciplinary diagnostic process.

- 23 references

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3
Am J Respir Crit Care Med

. 2023 Jan 26.
doi: 10.1164/rccm.202209-1795CI. Online ahead of print.

Differential Diagnosis of Suspected COPD Exacerbations in the Acute Care Setting: Best Practice

Bartolome R Celli[1,2], Leonardo M Fabbri[3], Shawn D Aaron[4], Alvar Agusti[5], Robert D Brook[6], Gerard J Criner[7], Frits M E Franssen[8], Marc Humbert[9], John R Hurst[10], Maria Montes de Oca[11], Leonardo Pantoni[12], Alberto Papi[13], Roberto Rodriguez-Roisin[14], Sanjay Sethi[15], Daiana Stolz[16], Antoni Torres[17], Claus F Vogelmeier[18], Jadwiga A Wedzicha[19]
Affiliations expand

- PMID: 36701677

- DOI: 10.1164/rccm.202209-1795CI

Abstract

Patients with chronic obstructive pulmonary disease (COPD) may suffer from acute episodes of worsening dyspnea, often associated with increased cough, sputum and/or sputum purulence. These exacerbations (ECOPDs) impact health status, accelerate lung function decline, and increase the risk of hospitalization. Importantly, close to 20% of patients are readmitted within 30 days after hospital discharge, with great cost to the person and to society. Approximately 25% and 65% of patients hospitalized for an ECOPD die within 1 and 5 years, respectively. Patients with COPD are usually older, and frequently have concomitant chronic diseases, including heart failure, coronary artery disease, arrhythmias, interstitial lung diseases, bronchiectasis, asthma, anxiety, and depression, and are also at increased risk of developing pneumonia, pulmonary embolism, and pneumothorax. All of these morbidities not only increase the risk of subsequent ECOPDs, but can also mimic or aggravate them. Importantly, close to 70% of readmissions following an ECOPD hospitalization result from decompensation of other morbidities. These observations suggest that in patients with COPD with worsening dyspnea but without the other classic characteristics of ECOPD, careful search for these morbidities can help detect them and allow appropriate treatment. For most morbidities , a thorough clinical evaluation supplemented by appropriate clinical investigations can guide the healthcare provider to make a precise diagnosis. This perspective integrates the currently dispersed information available, and provides a practical approach to patients with COPD complaining of worsening respiratory symptoms, particularly dyspnea. A systematic approach should help improve outcomes and the personal and societal cost of ECOPDs.

Keywords: Algorithms; Chronic Obstructive Pulmonary Disease; Differential Diagnosis; Symptom Flare Up.

Lung

. 2023 Jan 26;1-10.
doi: 10.1007/s00408-023-00595-w. Online ahead of print.

Healthcare-Seeking Behaviour Due to Cough in Finnish Elderly: Too Much and Too Little

Johanna Tuulikki Kaulamo[1,2], Anne Marika Lätti[3], Heikki Olavi Koskela[4,3]

Affiliations expand

- PMID: 36700959

- PMCID: PMC9879231

- DOI: 10.1007/s00408-023-00595-w

Abstract

Introduction: Cough-related healthcare-seeking has not been studied specifically in the elderly, although chronic cough is most prevalent among them. We studied the frequencies and predictors of any (≥ 1) and repeated (≥ 3) doctor's visits due to any cough episode during the past year, and due to the current cough episode.

Methods: This was a cross-sectional email survey among a Finnish community-based elderly population. Participants with current cough and age ≥ 64 years were included in the analyses (n = 1109).

Results: The proportions of participants with ≥ 1 and ≥ 3 cough-related doctor's visits during the past year were 25.9% and 7.1%, respectively. Repeated visitors accounted for 55.9% of the visits during the past year. These visits first increased with cough duration but decreased after 5 years. In the multivariate analysis, bronchiectasis [aOR 3.22 (CI95% 1.08-9.58)], asthma [2.62 (1.56-4.40)], chronic sputum production [1.61 (0.94-2.76)], low self-assessed health status [1.40 (1.04-1.88)] and Leicester Cough Questionnaire total score [1.34 per tertile (1.10-1.62)] predicted repeated cough-related doctor's visits during the past year. The proportions of ≥ 1 and ≥ 3 doctor's visits due to current cough were 31.8% and 15.5%, respectively. Among participants with current chronic cough, 60.1% had not visited a doctor.

Conclusion: A minority of participants accounted for most of the cough-related doctor's visits during the past year, whereas most participants with chronic cough had never sought medical help for it. The heavy healthcare users were not those with the longest cough episodes. Repeated visitors due to cough were characterised by chronic phlegmy respiratory conditions, and quality-of-life impairment.

Keywords: Asthma; Bronchiectasis; Chronic cough; Health-seeking behaviour; Quality-of-life.

Conflict of interest statement

Johanna T Kaulamo has received funding for the present study from Kuopion Seudun Hengityssäätiö, Hengityssairauksien Tutkimussäätiö, Suomen Tuberkuloosin vastustamisyhdistyksen Säätiö, Väinö ja Laina Kiven Säätiö, and Suomen Kulttuurirahasto foundations, and travel support from Boehringer Ingelheim for attending a scientific meeting. Anne M Lätti has received funding for the present study from Kuopion Seudun Hengityssäätiö, Hengityssairauksien Tutkimussäätiö, KYS:n Tutkimussäätiö, Suomen Tuberkuloosin Vastustamisyhdistyksen Säätiö, and Väinö ja Laina Kiven Säätiö Foundations, travel support from Orion, Boehringer Ingelheim and Roche for attending a scientific meeting, and payment for lectures and Advisory Board participations from Farmasian oppimiskeskus, MSD and GlaxoSmithKline. Heikki O Koskela has received funding for the present study from Kuopion Seudun Hengityssäätiö and Hengityssairauksien Tutkimussäätiö Foundations, payments for lectures from Boehringer Ingelheim and MSD, and owns shares of a medical company Orion. The authors have no other financial or non-financial competing interests.

- 22 references
- 5 figures

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ERJ Open Res

. 2023 Jan 23;9(1):00279-2022.
doi: 10.1183/23120541.00279-2022. eCollection 2023 Jan.

Validation of a small cough detector

Manuel Kuhn[1,2], Elif Nalbant[3], Dario Kohlbrenner[2], Mitja Alge[3], Laura Kuett[3], Alexandra Arvaji[2], Noriane A Sievi[2], Erich W Russi[1], Christian F Clarenbach[1,2]
Affiliations expand

- PMID: 36699651
- PMCID: PMC9868968

- DOI: 10.1183/23120541.00279-2022

Free PMC article

Abstract

Research question: The assessment of cough frequency in clinical practice relies predominantly on the patient's history. Currently, objective evaluation of cough is feasible with bulky equipment during a brief time (*i.e.* hours up to 1 day). Thus, monitoring of cough has been rarely performed outside clinical studies. We developed a small wearable cough detector (SIVA-P3) that uses deep neural networks for the automatic counting of coughs. This study examined the performance of the SIVA-P3 in an outpatient setting.

Methods: We recorded cough epochs with SIVA-P3 over eight consecutive days in patients suffering from chronic cough. During the first 24 h, the detector was validated against cough events counted by trained human listeners. The wearing comfort and the device usage were assessed using a questionnaire.

Results: In total, 27 participants (mean±sd age 50±14 years) with either chronic unexplained cough (n=12), COPD (n=4), asthma (n=5) or interstitial lung disease (n=6) were studied. During the daytime, the sensitivity of SIVA-P3 cough detection was 88.5±2.49% and the specificity was 99.97±0.01%. During the night-time, the sensitivity was 84.15±5.04% and the specificity was 99.97±0.02%. The wearing comfort and usage of the device was rated as very high by most participants.

Conclusion: SIVA-P3 enables automatic continuous cough monitoring in an outpatient setting for objective assessment of cough over days and weeks. It shows comparable sensitivity or higher sensitivity than other devices with fully automatic cough counting. Thanks to its wearing comfort and the high performance for cough detection, it has the potential for being used in routine clinical practice.

Conflict of interest statement

Conflict of interest: C.F. Clarenbach reports consulting fees from GSK, Novartis, Vifor, Boehringer Ingelheim, AstraZeneca, Sanofi, Vifor and Daiichi Sanko outside the submitted work. He reports payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from GSK, Novartis, Vifor, Boehringer Ingelheim, AstraZeneca, Sanofi and Vifor. M. Alge is employed by and owns shares in SIVA Health AG. E. Nalbant has received consulting fees from Siva Health AG. L. Kuett is employed by SIVA Health AG. E.W. Russi has received consulting fees from Siva Health AG. He participates in the ESTxENDS Trial (study supported by SNF, University of Bern) and is a participant in the

Data and Safety Monitoring Board. N.A. Sievi, A. Arvaji, D. Kohlbrenner and M. Kuhn have no conflicts of interests.

- 22 references
- 7 figures

FULL TEXT LINKS

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Review

Eur Respir Rev

. 2023 Jan 25;32(167):220141.
doi: 10.1183/16000617.0141-2022. Print 2023 Mar 31.

Mucolytics for acute exacerbations of chronic obstructive pulmonary disease: a meta-analysis

Efthymia Papadopoulou[1], Jan Hansel[2], Zsofia Lazar[3], Konstantinos Kostikas[4], Stavros Tryfon[1], Jørgen Vestbo[5,6], Alexander G Mathioudakis[7,6]
Affiliations expand

- PMID: 36697209

- DOI: 10.1183/16000617.0141-2022

Free article

Abstract

This meta-analysis explored the safety and effectiveness of mucolytics as an add-on treatment for chronic obstructive pulmonary disease (COPD) exacerbations. Based on a

pre-registered protocol and following Cochrane methods, we systematically searched for relevant randomised or quasi-randomised controlled trials (RCTs). We used the Risk of Bias v2 tool for appraising the studies and performed random-effect meta-analyses when appropriate. We assessed certainty of evidence using GRADE. This meta-analysis included 24 RCTs involving 2192 patients with COPD exacerbations, entailing at least some concerns of methodological bias. We demonstrated with moderate certainty that mucolytics increase the rate of treatment success (relative risk 1.37, 95% CI 1.08-1.73, n=383), while they also exert benefits on overall symptom scores (standardised mean difference 0.86, 95% CI 0.63-1.09, n=316), presence of cough at follow-up (relative risk 1.93, 95% CI 1.15-3.23) and ease of expectoration (relative risk 2.94, 95% CI 1.68-5.12). Furthermore, low or very low certainty evidence suggests mucolytics may also reduce future risk of exacerbations and improve health-related quality of life, but do not impact on breathlessness, length of hospital stay, indication for higher level of care or serious adverse events. Overall, mucolytics could be considered for COPD exacerbation management. These findings should be validated in further, rigorous RCTs.

Conflict of interest statement

Conflicts of interest: The authors declare no conflict of interest related to this work. E. Papadopoulou, J. Hansel, and Z. Lazar report no conflict of interest. K. Kostikas reports grants from AstraZeneca, Boehringer Ingelheim, Chiesi, Innovis, ELPEN, GSK, Menarini, Novartis and NuvoAir, consulting fees from AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, ELPEN, GSK, Menarini, Novartis and Sanofi Genzyme, honoraria from AstraZeneca, Boehringer Ingelheim, Chiesi, ELPEN, GILEAD, GSK, Menarini, MSD, Novartis, Sanofi Genzyme and WebMD. S. Tryfon reports honoraria from Menarini, Boehringer-Ingelheim and ELPEN, support for attending meetings from Chiesi and Menarini, and patents with GSK, AstraZeneca and ELPEN, not related to this work. J. Vestbo reports consulting fees and/or honoraria from ALK-Abello, AstraZeneca, Boehringer Ingelheim, GSK and TEVA, not related to this work. A.G. Mathioudakis reports a research grant from Boehringer Ingelheim, not related to this work.

7
Laryngoscope
.
2023 Jan 23.
doi: 10.1002/lary.30570. Online ahead of print.

Superior Laryngeal Nerve Block Response Rates in 54 Neurogenic Cough Patients

Nicholas Talbot[1], Margaret Heller[1], Sarah Nyirjesy[2], Brandon Kim[2], Brad DeSilva[2], Laura Matrka[2]
Affiliations expand

- PMID: 36688251

- DOI: 10.1002/lary.30570

Abstract

Objective: Neurogenic cough related to hypersensitivity of the internal branch of the superior laryngeal nerve (SLN) is often treated with neuromodulating medications, which can cause considerable side effects. An alternative therapy is steroid and local anesthetic injection of the SLN ("SLN block"), initially proposed to benefit those with lateralizing symptoms (tenderness over the thyrohyoid membrane or unilateral cough source). Our objectives are to determine if SLN block produces subjective symptomatic improvements and if repeat injections further improve symptoms, and evaluate clinical factors potentially predictive of response.

Methods: Retrospective chart review of 54 patients receiving SLN blocks at a tertiary medical academic center from January 2010 to June 2020. Medical history and anticipated predictors of positive response, including stigmata of laryngeal hypersensitivity, were recorded. Outcomes included symptomatic response, number of injections required, and side effects. Response was defined subjectively by asking patients whether the injection was beneficial and objectively by using CSI scores.

Results: Fifty-four patients met the inclusion criteria. Thirty-eight patients (70.4%) endorsed improvement. No variables were identified as positive predictors of response.

Thirty-two of the 38 (84.2%) endorsed improvement after one injection. Six of 15 (40%) patients who failed the first injection had positive response to the second. No significant side effects were reported.

Conclusion: No localizing symptoms, specific cough features, or aspects of the medical history helped predict response, suggesting that a broader range of patients may be offered the intervention. The majority of patients reported symptomatic improvement and repeat injections may benefit patients with initial nonresponse.

Level of evidence: 4 Laryngoscope, 2023.

Keywords: Cough/PVFM/Irritable Larynx; chronic cough; neurolaryngology; quality of life; superior laryngeal nerve.

- 35 references

Chronic Obstr Pulm Dis

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Urine and Plasma Markers of Platelet Activation and Respiratory Symptoms in COPD

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Affiliations expand

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Free article

Abstract

Introduction: Antiplatelet therapy has been associated with fewer exacerbations and reduced respiratory symptoms in chronic obstructive pulmonary disease (COPD). Whether platelet activation is associated with respiratory symptoms in COPD is unknown.

Methods: Former smokers with spirometry-confirmed COPD had urine 11-dehydro-thromboxane B2 (11dTxB2), plasma soluble CD40L (sCD40L), and soluble P-selectin (sP-selectin) repeatedly measured during a 6- to 9-month study period. Multivariate mixed-effects models adjusted for demographics, clinical characteristics, and medication use evaluated the association of each biomarker with respiratory symptoms, health status, and quality of life.

Results: Among 169 participants (average age 66.5±8.2 years, 51.5% female, 47.5±31 pack years, forced expiratory volume in 1 second percent predicted 53.8±17.1), a 100% increase in 11dTxB2 was associated with worse respiratory symptoms reflected by higher scores on the COPD Assessment Test (β 0.77, 95% confidence interval [CI]: 0.11-1.4) and Ease of Cough and Sputum Clearance Questionnaire β 0.77, 95%CI: 0.38-1.2, worse health status (Clinical COPD Questionnaire β 0.13, 95%CI: 0.03-0.23) and worse quality of life (St George's Respiratory Questionnaire β 1.9, 95%CI: 0.39-3.4). No statistically significant associations were observed for sCD40L or sP-selectin. There was no consistent statistically significant effect modification of the relationship between urine 11dTxB2 and respiratory outcomes by history of cardiovascular disease, subclinical coronary artery disease, antiplatelet therapy, or COPD severity.

Conclusions: In stable moderate-severe COPD, elevated urinary11dTxB2, a metabolite of the platelet activation product thromboxane A2, was associated with worse respiratory symptoms, health status, and quality of life.

Keywords: aspirin; biomarkers; chronic obstructive pulmonary disease; platelet activation.

SUPPLEMENTARY INFO

Grant supportexpand

BRONCHIECTASIS

Lancet

. 2023 Jan 28;401(10373):303.
doi: 10.1016/S0140-6736(22)02165-1.

An imaging pitfall: misdiagnosis of pulmonary embolism in a patient with advanced cystic fibrosis and bronchiectasis

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Affiliations expand

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No abstract available

Conflict of interest statement

Declaration of interests We declare no competing interests.

Editorial

Eur Respir J

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The transcriptomic landscape of diffuse radiological bronchiectasis

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Affiliations expand

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- DOI: 10.1183/13993003.01733-2022

No abstract available

Conflict of interest statement

Conflict of interest: All authors declare no potential conflict of interest related to this paper

Comment on

- Bronchial gene expression alterations associated with radiological bronchiectasis. Xu K, Diaz AA, Duan F, Lee M, Xiao X, Liu H, Liu G, Cho MH, Gower AC, Alekseyev YO, Spira A, Aberle DR, Washko GR, Billatos E, Lenburg ME; DECAMP investigators.Eur Respir J. 2023 Jan 27;61(1):2200120. doi: 10.1183/13993003.00120-2022. Print 2023 Jan.PMID: 36229050

Am J Respir Crit Care Med

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Differential Diagnosis of Suspected COPD Exacerbations in the Acute Care Setting: Best Practice

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Abstract

Patients with chronic obstructive pulmonary disease (COPD) may suffer from acute episodes of worsening dyspnea, often associated with increased cough, sputum and/or sputum purulence. These exacerbations (ECOPDs) impact health status, accelerate lung function decline, and increase the risk of hospitalization. Importantly, close to 20% of patients are readmitted within 30 days after hospital discharge, with great cost to the person and to society. Approximately 25% and 65% of patients hospitalized for an ECOPD die within 1 and 5 years, respectively. Patients with COPD are usually older, and frequently have concomitant chronic diseases, including heart failure, coronary artery disease, arrhythmias, interstitial lung diseases, bronchiectasis, asthma, anxiety, and depression, and are also at increased risk of developing pneumonia, pulmonary embolism, and pneumothorax. All of these morbidities not only increase the risk of subsequent ECOPDs, but can also mimic or aggravate them. Importantly, close to 70% of readmissions following an ECOPD hospitalization result from decompensation of other morbidities. These observations suggest that in patients with COPD with worsening dyspnea but without the other classic characteristics of ECOPD, careful search for these morbidities can help detect them and allow appropriate treatment. For most morbidities , a thorough clinical evaluation supplemented by appropriate clinical investigations can guide the healthcare

provider to make a precise diagnosis. This perspective integrates the currently dispersed information available, and provides a practical approach to patients with COPD complaining of worsening respiratory symptoms, particularly dyspnea. A systematic approach should help improve outcomes and the personal and societal cost of ECOPDs.

Keywords: Algorithms; Chronic Obstructive Pulmonary Disease; Differential Diagnosis; Symptom Flare Up.

Lung
.
. 2023 Jan 26;1-10.
doi: 10.1007/s00408-023-00595-w. Online ahead of print.

Healthcare-Seeking Behaviour Due to Cough in Finnish Elderly: Too Much and Too Little

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Affiliations expand

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- DOI: 10.1007/s00408-023-00595-w

Abstract

Introduction: Cough-related healthcare-seeking has not been studied specifically in the elderly, although chronic cough is most prevalent among them. We studied the

frequencies and predictors of any (≥ 1) and repeated (≥ 3) doctor's visits due to any cough episode during the past year, and due to the current cough episode.

Methods: This was a cross-sectional email survey among a Finnish community-based elderly population. Participants with current cough and age ≥ 64 years were included in the analyses (n = 1109).

Results: The proportions of participants with ≥ 1 and ≥ 3 cough-related doctor's visits during the past year were 25.9% and 7.1%, respectively. Repeated visitors accounted for 55.9% of the visits during the past year. These visits first increased with cough duration but decreased after 5 years. In the multivariate analysis, bronchiectasis [aOR 3.22 (CI95% 1.08-9.58)], asthma [2.62 (1.56-4.40)], chronic sputum production [1.61 (0.94-2.76)], low self-assessed health status [1.40 (1.04-1.88)] and Leicester Cough Questionnaire total score [1.34 per tertile (1.10-1.62)] predicted repeated cough-related doctor's visits during the past year. The proportions of ≥ 1 and ≥ 3 doctor's visits due to current cough were 31.8% and 15.5%, respectively. Among participants with current chronic cough, 60.1% had not visited a doctor.

Conclusion: A minority of participants accounted for most of the cough-related doctor's visits during the past year, whereas most participants with chronic cough had never sought medical help for it. The heavy healthcare users were not those with the longest cough episodes. Repeated visitors due to cough were characterised by chronic phlegmy respiratory conditions, and quality-of-life impairment.

Keywords: Asthma; Bronchiectasis; Chronic cough; Health-seeking behaviour; Quality-of-life.

Conflict of interest statement

Johanna T Kaulamo has received funding for the present study from Kuopion Seudun Hengityssäätiö, Hengityssairauksien Tutkimussäätiö, Suomen Tuberkuloosin vastustamisyhdistyksen Säätiö, Väinö ja Laina Kiven Säätiö, and Suomen Kulttuurirahasto foundations, and travel support from Boehringer Ingelheim for attending a scientific meeting. Anne M Lätti has received funding for the present study from Kuopion Seudun Hengityssäätiö, Hengityssairauksien Tutkimussäätiö, KYS:n Tutkimussäätiö, Suomen Tuberkuloosin Vastustamisyhdistyksen Säätiö, and Väinö ja Laina Kiven Säätiö Foundations, travel support from Orion, Boehringer Ingelheim and Roche for attending a scientific meeting, and payment for lectures and Advisory Board participations from Farmasian oppimiskeskus, MSD and GlaxoSmithKline. Heikki O Koskela has received funding for the present study from Kuopion Seudun Hengityssäätiö and Hengityssairauksien Tutkimussäätiö Foundations, payments for lectures from Boehringer Ingelheim and MSD, and owns shares of a medical company Orion. The authors have no other financial or non-financial competing interests.

- 22 references
- 5 figures

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BMC Pulm Med

. 2023 Jan 25;23(1):36.
doi: 10.1186/s12890-023-02324-8.

Active cycle of breathing technique versus oscillating PEP therapy versus walking with huffing during an acute exacerbation of bronchiectasis: a randomised, controlled trial protocol

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Affiliations expand

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- PMCID: PMC9875756
- DOI: 10.1186/s12890-023-02324-8

Free PMC article

Abstract

Background: Airway clearance techniques (ACTs) for individuals with bronchiectasis are routinely prescribed in clinical practice and recommended by international guidelines, especially during an acute exacerbation. However, there is limited evidence of the efficacy of these techniques during an exacerbation to improve sputum expectoration, health-related quality-of-life (HRQOL) or exercise tolerance. The primary aim of this study is to compare the effects of the active cycle of breathing technique (ACBT), oscillating positive expiratory pressure (O-PEP) therapy, and walking with huffing on sputum expectoration for adults hospitalised with an acute exacerbation of bronchiectasis. Secondary aims are to compare the effects of these interventions on HRQOL, health status, exacerbation rates and hospital admissions in a six-month period following hospital discharge.

Methods: This multi-centre randomised controlled trial will recruit adults with an acute exacerbation of bronchiectasis requiring hospital admission. Participants will be randomised to receive one of three interventions: ACBT, O-PEP therapy, and walking with huffing. Outcome measures including sputum volume during and 1-h post ACT session, and 24-h sputum, as well as health status, HRQOL and exercise capacity will be completed during inpatient stay on day 2 and day 6 of admission, and within 24 h of hospital discharge. Time to first exacerbation, and time to first hospitalisation will be monitored via monthly phone calls for six months post hospital discharge. Health status and HRQOL will be assessed after discharge at two and six months, and exercise capacity will be assessed at six months post hospital discharge.

Discussion: Despite recommendations regarding the importance of ACT for individuals with bronchiectasis during an acute exacerbation, there is a gap in the literature regarding effectiveness of ACT when undertaken by individuals in this clinical state. This study will add to the evidence base regarding the effectiveness of commonly implemented ACTs during a hospital admission with an exacerbation of bronchiectasis. Additionally, it will contribute to knowledge of the long term effects on important and patient-centred outcomes, including incidence of future exacerbations, and HRQOL, which has not been previously established. Trial registration Registered on the Australian and New Zealand Clinical Trials Registry (ACTRN12621000428864).

Keywords: Airway clearance; Bronchiectasis; Exacerbation; Sputum clearance.

Conflict of interest statement

The authors have no competing interests to declare.

- 55 references
- 2 figures

SUPPLEMENTARY INFO

Review

Eur Respir Rev

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doi: 10.1183/16000617.0109-2022. Print 2023 Mar 31.

Physical activity promotion interventions in chronic airways disease: a systematic review and meta-analysis

Caroline Reilly[1], Joe Sails[1], Antonios Stavropoulos-Kalinoglou[1], Rebecca J Birch[2], Jim McKenna[1], Ian J Clifton[2,3], Daniel Peckham[2,3], Karen M Birch[4], Oliver J Price[5,3,4]
Affiliations expand

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Free article

Abstract

Physical inactivity is common in people with chronic airways disease (pwCAD) and associated with worse clinical outcomes and impaired quality of life. We conducted a systematic review and meta-analysis to characterise and evaluate the effectiveness of interventions promoting step-based physical activity (PA) in pwCAD. We searched for

studies that included a form of PA promotion and step-count outcome measure. A random-effects model was used to determine the overall effect size using post-intervention values. 38 studies (n=32 COPD; n=5 asthma; n=1 bronchiectasis; study population: n=3777) were included. Overall, implementing a form of PA promotion resulted in a significant increase in step-count: median (IQR) 705 (183-1210) when compared with usual standard care: -64 (-597-229), standardised mean difference (SMD) 0.24 (95% CI: 0.12-0.36), p<0.01. To explore the impact of specific interventions, studies were stratified into subgroups: PA promotion+wearable activity monitor-based interventions (n=17) (SMD 0.37, p<0.01); PA promotion+step-count as an outcome measure (n=9) (SMD 0.18, p=0.09); technology-based interventions (n=12) (SMD 0.16, p=0.01). Interventions promoting PA, particularly those that incorporate wearable activity monitors, result in a significant and clinically meaningful improvement in daily step-count in pwCAD.

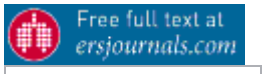
Conflict of interest statement

Conflict of interest: I.J. Clifton reports personal fees from GlaxoSmithKline, outside the submitted work. The remaining authors have no conflicts to declare.

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

FULL TEXT LINKS



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Eur Respir J

. 2023 Jan 27;61(1):2200120.
doi: 10.1183/13993003.00120-2022. Print 2023 Jan.

Bronchial gene expression alterations associated with radiological bronchiectasis

Ke Xu[1,2], Alejandro A Diaz[3,2], Fenghai Duan[4], Minyi Lee[1], Xiaohui Xiao[1], Hanqiao Liu[1], Gang Liu[1], Michael H Cho[3,5], Adam C Gower[1], Yuriy O Alekseyev[1], Avrum Spira[1], Denise R Aberle[6], George R Washko[3], Ehab Billatos[1,7], Marc E Lenburg[8,7]; DECAMP investigators
Affiliations expand

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- DOI: 10.1183/13993003.00120-2022

Abstract

Objectives: Discovering airway gene expression alterations associated with radiological bronchiectasis may improve the understanding of the pathobiology of early-stage bronchiectasis.

Methods: Presence of radiological bronchiectasis in 173 individuals without a clinical diagnosis of bronchiectasis was evaluated. Bronchial brushings from these individuals were transcriptomically profiled and analysed. Single-cell deconvolution was performed to estimate changes in cellular landscape that may be associated with early disease progression.

Results: 20 participants have widespread radiological bronchiectasis (three or more lobes). Transcriptomic analysis reflects biological processes associated with bronchiectasis including decreased expression of genes involved in cell adhesion and increased expression of genes involved in inflammatory pathways (655 genes, false discovery rate <0.1, $\log_2$ fold-change >0.25). Deconvolution analysis suggests that radiological bronchiectasis is associated with an increased proportion of ciliated and deuterosomal cells, and a decreased proportion of basal cells. Gene expression patterns separated participants into three clusters: normal, intermediate and bronchiectatic. The bronchiectatic cluster was enriched by participants with more lobes of radiological bronchiectasis ($p<0.0001$), more symptoms ($p=0.002$), higher SERPINA1 mutation rates ($p=0.03$) and higher computed tomography derived bronchiectasis scores ($p<0.0001$).

Conclusions: Genes involved in cell adhesion, Wnt signalling, ciliogenesis and interferon-γ pathways had altered expression in the bronchus of participants with widespread radiological bronchiectasis, possibly associated with decreased basal and increased ciliated

cells. This gene expression pattern is not only highly enriched among individuals with radiological bronchiectasis, but also associated with airway-related symptoms in those without discernible radiological bronchiectasis, suggesting that it reflects a bronchiectasis-associated, but non-bronchiectasis-specific lung pathophysiological process.

Conflict of interest statement

Conflict of interest: A.A. Diaz reports a provisional patent for genetic signatures to identify bronchiectasis filed in the United States Patent and Trademark Office (Patent of Novel Essays to Detect Respiratory Diseases and Disorders) outside the submitted work. M.H. Cho reports grants from GSK and Bayer; consulting fees from AstraZeneca and Genentech; lecture honoraria from Illumina; outside the submitted work. A.C. Gower reports grants from Novartis and Johnson & Johnson (JNJ) Immunology; outside the submitted work. A. Spira reports being a current employee of JNJ. D.R. Aberle reports grants from American College of Radiology, Boston University, NIH/NCI (R01 CA226079, U01 CA233370, R01 CA210360, U01 CA214182) and Kaiser Foundation Research Institute/PCORI (prime); travel support from American Institute for Medical and Biological Engineering (AIMBE), Cleveland Clinic, Specialized Programs of Research Excellence (SPOREs) Workshop and International Association for the Study of Lung Cancer (IASLC); outside the submitted work. G.R. Washko reports grants from NIH and DoD; consulting fees from Boehringer Ingelheim, CSL Behring, GlaxoSmithKline, Novartis, Philips and Vertex Pharmaceuticals; travel support from Philips; participation on advisory board with Pulmonx; outside the submitted work; is a co-founder and equity share holder in Quantitative Imaging Solutions, a company that provides consulting services for image and data analytics; and G.R. Washko's spouse works for Biogen. E. Billatos reports grants from NIH (1R01HL149861-01A1), Novartis Institutes of Biomedical Research and International Association for the Study of Lung Cancer; a patent application filed stemming from research described in this manuscript from Boston University; outside the submitted work. M.E. Lenburg reports Johnson and Johnson, Novartis Institute for Biomedical Research; consulting fees from Johnson and Johnson; a patent application filed stemming from research described in this manuscript from Boston University; outside the submitted work. All other authors have nothing to disclose.

Comment in

- The transcriptomic landscape of diffuse radiological bronchiectasis.
  Guan WJ, Hu PC, Martinez-Garcia MA.Eur Respir J. 2023 Jan 27;61(1):2201733. doi: 10.1183/13993003.01733-2022. Print 2023 Jan.PMID: 36707228 No abstract available.

Review

Annu Rev Med
.
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Cystic Fibrosis Modulator Therapies

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Affiliations expand

- PMID: 35973718

- DOI: 10.1146/annurev-med-042921-021447

Abstract

Cystic fibrosis (CF) is an inherited multisystemic disease that can cause progressive bronchiectasis, pancreatic endocrine and exocrine insufficiency, distal intestinal obstruction syndrome, liver dysfunction, and other disorders. Traditional therapies focused on the treatment or prevention of damage to each organ system with incremental modalities such as nebulized medications for the lungs, insulin for diabetes, and supplementation with pancreatic enzymes. However, the advent of highly effective modulator therapies that target specific cystic fibrosis transmembrane conductance regulator protein malformations resulting from individual genetic mutations has transformed the lives and prognosis for persons with CF.

Keywords: CFTR modulators; cystic fibrosis; cystic fibrosis transmembrane conductance regulator; modulator therapies.

SUPPLEMENTARY INFO

Publication typesexpand

FULL TEXT LINKS