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COPD

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BMC Pulm Med
.
. 2023 Mar 17;23(1):89.
doi: 10.1186/s12890-023-02359-x.

Spatial association between green space and COPD mortality: a township-level ecological study in Chongqing, China

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Affiliations expand

- PMID: 36932348

- DOI: 10.1186/s12890-023-02359-x

Abstract

Background: There are regional differences in the effect of green space on mortality of Chronic obstructive pulmonary disease (COPD). We conduct an ecological study, using the administrative divisions of Chongqing townships in China as the basic unit, to investigate

the association between COPD mortality and green space based on data of 313,013 COPD deaths in Chongqing from 2012 to 2020. Green space is defined by Fractional vegetation cover (FVC), which is further calculated based on the normalised vegetation index (NDVI) from satellite remote sensing imagery maps.

Methods: After processing the data, the non-linear relationship between green space and COPD mortality is revealed by generalised additive models; the spatial differences between green space and COPD mortality is described by geographically weighted regression models; and finally, the interpretive power and interaction of each factor on the spatial distribution of COPD mortality is examined by a geographic probe.

Results: The results show that the FVC local regression coefficients ranged from - 0.0397 to 0.0478, 63.0% of the regions in Chongqing have a positive correlation between green space and COPD mortality while 37.0% of the regions mainly in the northeast and west have a negative correlation. The interpretive power of the FVC factor on the spatial distribution of COPD mortality is 0.08.

Conclusions: Green space may be a potential risk factor for increased COPD mortality in some regions of Chongqing. This study is the first to reveal the relationship between COPD mortality and green space in Chongqing at the township scale, providing a basis for public health policy formulation in Chongqing.

Keywords: COPD; China; Chongqing; GAMs; GWR; Green space.

- 46 references

SUPPLEMENTARY INFO

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. 2023 Mar 15;S2254-8874(23)00038-3.
doi: 10.1016/j.rceng.2023.03.002. Online ahead of print.

Ultrasound assessment of diaphragmatic dynamics in patients with chronic obstructive pulmonary disease after treatment with indacaterol/glycopyrronium

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- PMID: 36931625

- DOI: 10.1016/j.rceng.2023.03.002

Abstract

Introduction: Air trapping is one of the main determinants of dyspnea in patients with chronic obstructive pulmonary disease (COPD). An increase in air trapping leads to a change in the normal diaphragmatic configuration with associated functional impairment. Said deterioration improves with bronchodilator therapy. Chest ultrasound (CU) has been used to assess changes in diaphragmatic motility after short-acting bronchodilator therapy, but there are no previous studies on these changes after long-acting bronchodilator treatment.

Material and methods: Interventional prospective study. Patients with COPD and moderate to very severe ventilatory obstruction were included in the study. Diaphragm motion and thickness were assessed by CU before and after 3 months of treatment with indacaterol/glycopirronium 85/43 mcg.

Results: Thirty patients were included in the study (56.6% men, mean age: 69.4 ± 6.2 years). Diaphragmatic excursions, measured during resting breathing, deep breathing and nasal sniffing, before and after treatment, were 19.9 ± 7.1 mm and 26.4 ± 8.7 mm ($p < 0.0001$); 42.5±14.1 mm and 64.5±25.9 mm ($p < 0.0001$); 36.5 ± 17.4 mm and 46.7 ± 18.5 mm ($p = 0.012$), respectively. A significant improvement was found in the minimum and maximum diaphragm thickness ($p < 0.05$), but there were no significant changes in diaphragmatic shortening fraction after bronchodilator treatment ($p = 0.341$).

Conclusions: Diaphragmatic motility improved after 3 months of treatment with indacaterol/glycopyrronium 85/43 mcg every 24 hours in patients with COPD and moderate to very severe ventilatory obstruction. CU may be useful to assess the response to treatment in these patients.

Keywords: COPD; Diaphragmatic excursion; EPOC; Excursión diafragmática; Ultrasonografía; Ultrasound.

Medicine (Baltimore)

. 2023 Mar 17;102(11):e33329.
doi: 10.1097/MD.0000000000033329.

Shear wave elastography of the diaphragm in acute exacerbation of chronic obstructive pulmonary disease: A prospective observational study

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- PMID: 36930088

- DOI: 10.1097/MD.0000000000033329

Abstract

Patients with acute exacerbation of chronic obstructive pulmonary disease (AECOPD) are prone to diaphragmatic dysfunction. However, dynamic assessment of diaphragmatic function is complex and difficult, and whether the assessment of diaphragmatic function can reflect clinical indicators such as lung function in AECOPD patients remains unclear. We studied diaphragm stiffness and diaphragm stiffening rate (DSR) in AECOPD patients with acute exacerbations ≥ 2 times within 1 year and their correlation with clinical data, the diaphragmatic thickening fraction (DTF), lung function, and blood gas values. In total, 112 AECOPD patients in group C and Group D who had acute exacerbations ≥ 2 times within 1 year in the Global Initiative for Chronic Obstructive Lung Disease Guideline A (low risk, few symptoms), B (low risk, many symptoms), C (High risk, few symptoms), D (High risk, many symptoms) grouping system were included in the study. Their general clinical data, chronic obstructive pulmonary disease assessment test (CAT), modified medical research council (mMRC), number of acute exacerbations in 1 year, DTF, lung function, and blood gas analysis were collected. The diaphragm shear wave elasticity at functional residual capacity (DsweFRC) and DSR were measured by ultrasound. The DsweFRC and DSR of Group D were higher than those of Group C ($P < .05$). DsweFRC, DSR were negatively correlated with DTF, forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC) and FEV1/FVC (r ranged from -0.293 to -0.697, all $P < .05$), and positively correlated with CAT score, mMRC score, and arterial carbon dioxide pressure (r ranged from 0.274 to 0.462, all $P < .05$) in both groups; the correlation coefficients of DsweFRC, DSR and DTF, FEV1/FVC in group D were greater than those in group C. There was no correlation between DsweFRC, DSR and arterial oxygen partial pressure in both groups ($P > .05$). The DsweFRC, DSR increased with the number of acute exacerbations per year in both groups. We found that diaphragmatic stiffness in AECOPD patients increased with the number of acute exacerbations within 1 year, correlated with DTF, CAT, mMRC, lung function, and arterial carbon dioxide pressure and provides a simple and practical method for dynamically assessing diaphragmatic function and disease severity in AECOPD patients.

Conflict of interest statement

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

- 31 references

. 2023 Mar 16.
doi: 10.1080/17476348.2023.2190887. Online ahead of print.

Relationship between patient functionality impairment and caregiver burden: is there a cut-off point for the severe COPD patient?

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- PMID: 36924330

- DOI: 10.1080/17476348.2023.2190887

Abstract

Background: Chronic obstructive pulmonary disease (COPD) patients experience a progressive limitation of their functionality accompanying their clinical evolution. Concretely, severe COPD patients usually require the figure of a caregiver. Caregiver burden have been yet explored in other similar chronic diseases. The objective is to propose a cut-off point in different functional impairment aspects, to predict the presence of caregiver burden.

Methods: Severe COPD patients were divided into two groups according to the caregiver burden, measured with the Zarit Burden Interview (ZBI). The patients were assessed with the London Chest Activity of Daily Living (LCADL) scale, the Functional Independence Measure (FIM), and the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0).

Results: : 70 COPD patients and their caregivers were included in this cross-sectional study. The ROC curve indicated a cutoff point of 19 in the LCADL scale (AUC=0.722). Dependence in daily life activities had a cutoff point of 123 in the FIM (AUC=0.776). Social participation in activities of daily living had a cutoff point of 37 in the WHODAS 2.0 (AUC=0.739).

Conclusion: Dyspnea related to functional status, dependence in daily life activities, and social participation in activities of daily living of severe COPD patients can predict caretaker burden.

Keywords: Pulmonary disease; ROC curve; caregivers; chronic obstructive; dependence; global burden of disease.

5
Clin Respir J
. 2023 Mar 16.
doi: 10.1111/crj.13600. Online ahead of print.

Cytomegalovirus serology in young to mid-adult life and decline of lung function

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- PMID: 36924061
- DOI: 10.1111/crj.13600

Abstract

Introduction: Cytomegalovirus (CMV) seropositivity has been recently linked to severity and progression of asthma, cystic fibrosis, and chronic obstructive pulmonary disease (COPD). To date, no longitudinal study has addressed the relation of CMV serology to levels and decline of lung function in the general adult population.

Methods: We evaluated 403 participants from the Tucson Epidemiological Study of Airway Obstructive Disease (TESAOD) who at enrollment were aged 28-55 years and completed lung function tests. During follow-up, the 403 participants completed on average 7.2 lung function tests per subject for a total of 2908 observations over a mean period of 14.7 years. We tested CMV serology in serum samples from enrollment and categorized participants into low, medium, and high CMV serology based on tertiles. The relation of CMV serology at enrollment to lung function levels and decline during follow-up was tested in multivariate random coefficients models.

Results: After full adjustment, participants in the highest CMV serology tertile had faster declines of forced expiratory volume in 1 s (FEV_1) and FEV_1/forced vital capacity (FVC) compared with subjects in the lowest tertile (by -7.9 ml/year 95% confidence interval [-13.9 ml/year, -1.93 ml/year], and by -0.13%/year [-0.23%/year, -0.026%/year], respectively). These CMV effects were additive with those of cigarette smoking. No associations were found between CMV serology and FVC, indicating specific effects of CMV seropositivity on airflow limitation.

Conclusion: High CMV serology in young to mid-adult life may be linked to increased COPD risk through an accelerated decline of lung function.

Keywords: CMV; COPD; airflow limitation; epidemiology; lung function.

- 11 references

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ERJ Open Res

. 2023 Mar 13;9(2):00436-2022.
doi: 10.1183/23120541.00436-2022. eCollection 2023 Mar.

Comparison of two scores for short-term outcomes in patients with COPD exacerbation in the emergency department: the Ottawa COPD Risk Scale and the DECAF score

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- PMID: 36923568
- PMCID: PMC10009697
- DOI: 10.1183/23120541.00436-2022

Free PMC article

Abstract

Background: While clinical decision rules have been developed to evaluate exacerbations and decisions on hospitalisation and discharge in emergency departments (EDs) in patients with chronic obstructive pulmonary disease (COPD), these rules are not widely used in EDs. In this study, we compare the predictive efficacy of the Ottawa Chronic Obstructive Pulmonary Disease Risk Scale (OCRS) and the Dyspnea, Eosinopenia, Consolidation, Acidemia, and Atrial Fibrillation (DECAF) score in estimating the short-term poor outcome of patients in our ED with exacerbations of COPD.

Methods: This single-centre prospective observational study was conducted over 6 months. Patients with acute exacerbations of COPD admitted to the ED during the study period were included in the study. A poor outcome was defined as any of the following: readmission and requiring hospitalisation within 14 days of discharge, requiring mechanical ventilation on the first admission, hospitalisation for longer than 14 days on the first admission, or death within 30 days. The sensitivity and specificity of the OCRS and the DECAF score for a poor outcome and for mortality were calculated.

Results: Of the 385 patients who participated in the study, 85 were excluded based on the exclusion criteria. 66% of the patients were male, and the mean age was 70.15±10.36 years.

A total of 20.7% of all patients (n=62) experienced poor outcomes. The sensitivity of an OCRS score <1 for predicting a poor outcome in patients was 96.8% (95% CI 88.8-99.6%) and the specificity was 18.5% (95% CI 13.8-24.0%). The sensitivity and specificity of an OCRS score <2 were 83.3% (95% CI 35.9-99.6%) and 65.5% (95% CI 59.6-70.7%), respectively. The sensitivity and specificity of a DECAF score <1 were 88.7% (95% CI 78.1-95.3%) and 34.5% (95% CI 28.4-40.9%), respectively. When the DECAF score was <2, sensitivity and specificity were 69.3% (95% CI 56.4-80.4%) and 74.8% (95% CI 68.8-80.2%), respectively.

Conclusion: Our physicians achieved high specificity but low sensitivity in predicting a poor outcome. The OCRS is the more sensitive of the two tools, while the DECAF score is more specific in predicting a poor outcome when all threshold values are evaluated. While both tools may results in unnecessary hospitalisation, they can reduce the incidence of hospital discharge of patients with exacerbations of COPD who will develop poor outcomes in the ED.

Conflict of interest statement

Conflict of interest: The authors certify that they have no affiliations with or involvement in any organisation or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

- 26 references
- 3 figures

BMC Pulm Med

. 2023 Mar 15;23(1):86.
doi: 10.1186/s12890-023-02380-0.

Structural features on quantitative chest computed tomography of patients with maximal mid-expiratory flow impairment in a normal lung function population

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- PMID: 36922831
- PMCID: PMC10015933
- DOI: 10.1186/s12890-023-02380-0

Free PMC article

Abstract

Background: Maximal mid-expiratory flow (MMEF) is an earlier predictor of chronic obstructive pulmonary disease (COPD) development than forced expiratory volume in 1 s (FEV_1). Changes of lung structure in patients with MMEF impairment only is still not clear. Therefore, this study aimed to investigate the structural features of patients with decreased MMEF by quantitative computed tomography (QCT) and develop a predictive model for predicting patients with reduced MMEF in normal lung function population.

Methods: In this study, 131 patients with normal spirometry results and available volumetric chest CT images were enrolled and divided into the reduced MMEF group (FEV_1/forced expiratory vital capacity (FEV_1/FVC) > 0.7, FEV_1% predictive values (FEV_1%pred) > 80%, MMEF%pred < 80%, n = 52) and the normal MMEF group (FEV_1/FVC > 0.7, FEV_1%pred > 80%, MMEF%pred ≥ 80%, n = 79). The emphysema, small airway disease and medium-size airway parameters were measured by a commercial software. The differences were investigated in clinical features, spirometrical parameters and QCT parameters between the two groups. A nomogram model was constructed based on the results of the multivariable logistic regression model. Spearman's correlation coefficients were calculated between QCT measurements and spirometrical parameters.

Results: There were more males in reduced MMEF group than normal group (P < 0.05). Lung parenchyma parameter (PRM^{Emph}) and airway-related parameters (functional small airway disease (PRM^{fSAD}), luminal area of fifth- and sixth- generation airway (LA_5, LA_6) were significantly different between the reduced MMEF group and the normal group (20.2 ± 17.4 vs 9.4 ± 6.7, 3.4 ± 3.5 vs 1.9 ± 2.0, 12.2 ± 2.5 vs 13.7 ± 3.4, 7.7 ± 2.4 vs 8.9 ± 2.8, respectively, all P < 0.01). After multivariable logistical regression, only sex (odds ratio [OR]: 2.777; 95% confidence interval [CI]:1.123-3.867), PRM^{fSAD} (OR:1.102, 95%CI:1.045-1.162) and LA_6 (OR:0.650, 95%CI:0.528-0.799) had significant differences between the two groups (P < 0.05) and a model incorporating with the three indicators was constructed (area under curve, 0.836). Correlation analysis showed MMEF%pred had mild to moderate correlation with airway-related measurements.

Conclusion: In normal lung function population, patients with reduced MMEF have potential medium-size and small airway changes, and MMEF%pred is significantly associated with airway-related CT parameters. The nomogram incorporating with sex, PRM^{fSAD} and LA_6 has good predictive value and offers more objective evidences in a group with reduced MMEF.

Keywords: COPD; Maximal mid-expiratory flow; Quantitative computed tomography.

Conflict of interest statement

The authors declare no competing interests.

- 43 references
- 4 figures

. 2023 Mar 15.
doi: 10.1111/resp.14489. Online ahead of print.

Contemporary Concise Review 2022: Chronic obstructive pulmonary disease

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- PMID: 36922031

- DOI: 10.1111/resp.14489

Abstract

International respiratory organizations now recommend using lower limit of normal and standardized residuals to diagnose airflow obstruction and COPD though using a fixed ratio <0.7 is simpler and robustly predicts important clinical outcomes. The most common COPD comorbidities are coronary artery calcification, emphysema and bronchiectasis. COPD patients with psychological (high anxiety and depression) and cachectic (underweight and osteoporotic) comorbidity have higher mortality and exacerbate more. Serum eosinophil count remains an important COPD biomarker and we have greater clarity about normal eosinophil levels in COPD and the wider population. Criteria for entry into COPD clinical trials continue to exclude many patients, in particular those at greater risk of exacerbation and death. The effect of hyperinflation on cardiac function impacts COPD mortality and is an important target for successful lung volume reduction procedures.

Keywords: COPD comorbidity; COPD diagnosis; COPD exacerbation; COPD treatment; chronic obstructive pulmonary disease.

- 62 references

SUPPLEMENTARY INFO

Publication typesexpand

Interact J Med Res

. 2023 Mar 15;12:e41182.
doi: 10.2196/41182.

The Impact of Digital Health on Smoking Cessation

Raquel Cobos-Campos[1], Jose Aurelio Cordero-Guevara[1], Antxon Apiñaniz[1234], Arantza Sáez de Lafuente[1], Cristina Bermúdez Ampudia[1], Julene Argaluza Escudero[1], Iraida Pérez Llanos[12], Naiara Parraza Diez[14]
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- PMID: 36920468

- DOI: 10.2196/41182

Free article

Abstract

Background: Smartphones have become useful tools for medicine, with the use of specific apps making it possible to bring health care closer to inaccessible areas, continuously monitor a patient's pathology at any time and place, promote healthy habits, and ultimately improve patients' quality of life and the efficiency of the health care system. Since 2020, the use of smartphones has reached unprecedented levels. There are more than 350,000 health apps, according to a 2021 IQVIA Institute report, that address, among other things, the management of patient appointments; communication among different services or professionals; the promotion of lifestyle changes related to adopting healthy habits; and the monitoring of different pathologies and chronic conditions, including

smoking cessation. The number of mobile apps for quitting smoking is high. As early as 2017, a total of 177 unique smoking cessation-relevant apps were identified in the iPhone App Store, 139 were identified in Google Play, 70 were identified in the BlackBerry app store, and 55 were identified in the Windows Phone Store, but very few have adequate scientific support. It seems clear that efforts are needed to assess the quality of these apps, as well as their effectiveness in different population groups, to have tools that offer added value to standard practices.

Objective: This viewpoint aims to highlight the benefits of mobile health (mHealth) and its potential as an adjuvant tool in health care.

Methods: A review of literature and other data sources was performed in order to show the current status of mobile apps that can offer support for smoking cessation. For this purpose, the PubMed, Embase, and Cochrane databases were explored between May and November 2022.

Results: In terms of smoking cessation, mHealth has become a powerful coadjuvant tool that allows health workers to perform exhaustive follow-ups for the process of quitting tobacco and provide support anytime and anywhere. mHealth tools are effective for different groups of smokers (eg, pregnant women, patients with chronic obstructive pulmonary disease, patients with mental illness, and the general population) and are cost-effective, generating savings for the health system. However, there are some patient characteristics that can predict the success of using mobile apps in the smoking cessation process, such as the lower age of patients, dependence on tobacco, the number of quit attempts, and the previous use of mobile apps, among others. Therefore, it is preferable to offer these tools to patients with a higher probability of quitting tobacco.

Conclusions: mHealth is a promising tool for helping smokers in the smoking cessation process. There is a need for well-designed clinical studies and economic evaluations to jointly assess the effectiveness of new interventions in different population groups, as well as their impact on health care resources.

Keywords: care delivery; cessation; digital health; eHealth; health app; health service; health technology; mHealth; mobile app; mobile applications; mobile health; quit; service delivery; smartphone; smoker; smoking; smoking cessation; trend.

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J Telemed Telecare
.
2023 Mar 15;1357633X231156631.
doi: 10.1177/1357633X231156631. Online ahead of print.

Effectiveness of patient decision aid supported shared decision-making intervention in in-person and virtual hybrid pulmonary rehabilitation in older adults with chronic obstructive pulmonary disease: A pilot randomized controlled trial

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- PMID: 36919365

- DOI: 10.1177/1357633X231156631

Abstract

Introduction: Tele-pulmonary rehabilitation is increasingly advocated but cannot completely substitute for in-person services for chronic conditions. Adherence to Pulmonary rehabilitation (PR) remains low in chronic obstructive pulmonary disease (COPD) patients. Shared decision-making (SDM) promotes patients' participation in PR decisions and helps patients and healthcare providers to jointly make decisions that patients are informed and aligned with patient preferences and values, which are critical for patient adherence to PR.

Objective: This study aimed to develop a hybrid in-person and virtual model of home-based PR services for older COPD patients and study the effectiveness of the patient decision aid (PDA)-supported recurring SDM intervention on patient adherence to PR, rehabilitation outcomes, and decision-related outcomes, as well as to explore the mechanisms of the intervention on PR adherence.

Methods: A total of 78 older COPD patients were randomly assigned to the PR group (n = 39) or PDA-PR group (n = 39). Both groups were conducted hybrid in-person and virtual PR intervention for 3 months. The primary outcomes were patients' quality of life and PR adherence. The secondary outcomes were dyspnea symptoms, exercise self-efficacy, knowledge, and decision-related outcomes.

Results: A total of 72 participants completed the 3-month PR program. There were statistically significant differences in PR adherence (p = 0.033), COPD assessment test (CAT) scores (p = 0.016), PR knowledge (p < 0.001), decision self-efficacy (p < 0.001), decision conflict (p < 0.001), and decision regret scores (p = 0.027) between the two groups. The modified Medical Research Council Dyspnoea scale (mMRC) score was significantly decreased only in PDA-PR group (p = 0.011). No statistically significant differences were observed in St George's Respiratory Questionnaire (SGRQ) score (p = 0.078), Exercise Self-Regulatory Efficacy Scale (Ex-SRES) score (p = 0.29) and COPD knowledge (p = 0.086) between the two groups. PR value score had a significant effect on adherence to PR (p = 0.007) and CAT score (p = 0.028).

Conclusions: PDA supported recurring SDM intervention was helpful in maintaining older COPD patients' PR adherence and had advantages in improving quality of life, enhancing PR knowledge, decision self-efficacy, and reducing decision conflict and decision regret, but did not improve SGRQ and Ex-SRES. PR value score influenced patients' rehabilitation adherence and quality of life.

Trial registration: Chinese Clinical Trial Registry (ChiCTR): ChiCTR1900028563; http://apps.who.int/trialsearch/default.aspx.

Keywords: Chronic obstructive pulmonary disease; patient decision aid; randomized controlled trial; shared decision-making; telemedicine.

. 2023 Mar 12;S0953-6205(23)00068-7.
doi: 10.1016/j.ejim.2023.02.026. Online ahead of print.

The influence of comorbidities on the prognosis after an acute heart failure decompensation and differences according to ejection fraction: Results from the EAHFE and RICA registries

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- PMID: 36914535

- DOI: 10.1016/j.ejim.2023.02.026

Abstract

Objective: The role of comorbidities in heart failure (HF) outcome has been previously investigated, although mostly individually. We investigated the individual effect of 13 comorbidities on HF prognosis and looked for differences according to left-ventricular ejection fraction (LVEF), classified as reduced (HFrEF), mildly-reduced (HFmrEF) and preserved (HFpEF).

Methods: We included patients from the EAHFE and RICA registries and analysed the following comorbidities: hypertension, dyslipidaemia, diabetes mellitus (DM), atrial fibrillation (AF), coronary artery disease (CAD), chronic kidney disease (CKD), chronic obstructive pulmonary disease (COPD), heart valve disease (HVD), cerebrovascular disease (CVD), neoplasia, peripheral artery disease (PAD), dementia and liver cirrhosis (LC). Association of each comorbidity with all-cause mortality was assessed by an adjusted Cox regression analysis that included the 13 comorbidities, age, sex, Barthel index, New York

Heart Association functional class and LVEF and expressed as adjusted Hazard Ratios (HR) with 95% confidence intervals (95%CI).

Results: We analysed 8,336 patients (82 years-old; 53% women; 66% with HFpEF). Mean follow-up was 1.0 years. Respect to HFrEF, mortality was lower in HFmrEF (HR:0.74;0.64-0.86) and HFpEF (HR:0.75;0.68-0.84). Considering patients all together, eight comorbidities were associated with mortality: LC (HR:1.85;1.42-2.42), HVD (HR:1.63;1.48-1.80), CKD (HR:1.39;1.28-1.52), PAD (HR:1.37;1.21-1.54), neoplasia (HR:1.29;1.15-1.44), DM (HR:1.26;1.15-1.37), dementia (HR:1.17;1.01-1.36) and COPD (HR:1.17;1.06-1.29). Associations were similar in the three LVEF subgroups, with LC, HVD, CKD and DM remaining significant in the three subgroups.

Conclusion: HF comorbidities are associated differently with mortality, LC being the most associated with mortality. For some comorbidities, this association can be significantly different according to the LVEF.

Keywords: Comorbidity; Heart failure; Internal medicine; Liver cirrhosis; Mortality.

Conflict of interest statement

Declaration of Competing Interest The authors state that they have no conflict of interests with the present work. The ICA-SEMES Research Group has received unrestricted support from Orion Pharma, Novartis and Boehringer. The present study has been designed, performed, analysed and written exclusively by the authors independently of these pharmaceutical companies.

BMJ Open

. 2023 Mar 13;13(3):e061050.
doi: 10.1136/bmjopen-2022-061050.

Phase III, two arm, multi-centre, open label, parallel-group randomised designed clinical investigation of the use of a personalised early warning decision support system to predict and prevent acute exacerbations of chronic obstructive pulmonary disease: 'Predict & Prevent AECOPD' – study protocol

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- PMID: 36914185
- PMCID: PMC10016266
- DOI: 10.1136/bmjopen-2022-061050

Free PMC article

Abstract

Introduction: With 65 million cases globally, chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death and imposes a heavy burden on patients' lives and healthcare resources worldwide. Around half of all patients with COPD have frequent (≥2 per year) acute exacerbations of COPD (AECOPD). Rapid readmissions are also common. Exacerbations impact significantly on COPD outcomes, causing significant lung function decline. Prompt exacerbation management optimises recovery and delays the time to the next acute episode.

Methods/analysis: The Predict & Prevent AECOPD trial is a phase III, two arm, multi-centre, open label, parallel-group individually randomised clinical trial investigating the use of a personalised early warning decision support system (COPDPredict) to predict and

prevent AECOPD. We aim to recruit 384 participants and randomise each individual in a 1:1 ratio to either standard self-management plans with rescue medication (RM) (control arm) or COPDPredict with RM (intervention arm).The trial will inform the future standard of care regarding management of exacerbations in COPD patients. The main outcome measure is to provide further validation, as compared with usual care, for the clinical effectiveness of COPDPredict to help guide and support COPD patients and their respective clinical teams in identifying exacerbations early, with an aim to reduce the total number of AECOPD-induced hospital admissions in the 12 months following each patient's randomisation.

Ethics and dissemination: This study protocol is reported in accordance with the guidance set out in the Standard Protocol Items: Recommendations for Interventional Trials statement. Predict & Prevent AECOPD has obtained ethical approval in England (19/LO/1939). On completion of the trial and publication of results a lay findings summary will be disseminated to trial participants.

Trial registration number: NCT04136418.

Keywords: Chronic airways disease; RESPIRATORY MEDICINE (see Thoracic Medicine); Thoracic medicine.

Conflict of interest statement

Competing interests: The CI of the trial (AMT) does not have any relevant direct financial disclosures, nor do members of the Trial Management Group (TMG) who are authors of this paper, with the exception of NP who is a founder, director and shareholder of NEPeSMO, who developed the intervention. In addition, MS is CI of the overall NIHR-funded project and is a founder, director and shareholder of NEPeSMO. NEPeSMO is a start-up company from the University Hospitals of North Midlands NHS Trust, owns all intellectual property rights of COPDPredict and is a project collaborator on the grant. AMT has grants from pharmaceutical companies working in the area of COPD (Chiesi, AstraZeneca) and has conducted advisory work for such (Boehringer, CSL Behring) but not in the area of medical devices or admission prevention. Neither has she worked for, or received monies from, any company working on admission prevention in the last 3 years.

- 35 references
- 1 figure

SUPPLEMENTARY INFO

Publication types, MeSH terms, Associated dataexpand

FULL TEXT LINKS

Review

Eur J Med Chem

. 2023 Mar 15;250:115195.
doi: 10.1016/j.ejmech.2023.115195. Epub 2023 Feb 9.

Advances in the development of phosphodiesterase-4 inhibitors

Gang Li[1], Dengqin He[2], Xiaojia Cai[2], Wen Guan[1], Yali Zhang[1], Jia-Qiang Wu[2], Hongliang Yao[3]
Affiliations expand

- PMID: 36809706

- DOI: 10.1016/j.ejmech.2023.115195

Abstract

Phosphodiesterase 4 (PDE4) hydrolyzes cyclic adenosine monophosphate (cAMP) and plays a vital roles in many biological processes. PDE4 inhibitors have been widely studied as therapeutics for the treatment of various diseases, including asthma, chronic obstructive pulmonary disease (COPD) and psoriasis. Many PDE4 inhibitors have progressed to clinical trials and some have been approved as therapeutic drugs. Although many PDE4 inhibitors have been approved to enter clinical trials, however, the development of PDE4 inhibitors for the treatment of COPD or psoriasis has been hampered by their side effects of emesis. Herein, this review summarizes advances in the development of PDE4 inhibitors over the last ten years, focusing on PDE4 sub-family selectivity, dual target drugs, and therapeutic potential. Hopefully, this review will contribute to the development of novel PDE4 inhibitors as potential drugs.

Keywords: Asthma; COPD; PDE4; Psoriasis; cAMP.

Conflict of interest statement

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

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

FULL TEXT LINKS

Editorial

Am J Respir Crit Care Med

. 2023 Mar 15;207(6):651-653.
doi: 10.1164/rccm.202211-2138ED.

Can Long-term Residential Air Cleaning Reduce Cardiovascular Morbidity in Patients with Chronic Obstructive Pulmonary Disease?

Daniel P Croft[1], Mark J Utell[2], David Q Rich[3]
Affiliations expand

- PMID: 36470239

- DOI: 10.1164/rccm.202211-2138ED

No abstract available

Comment on

- Indoor Air Pollution and Impaired Cardiac Autonomic Function in Chronic Obstructive Pulmonary Disease.
  Raju S, Woo H, Koehler K, Fawzy A, Liu C, Putcha N, Balasubramanian A, Peng RD, Lin CT, Lemoine C, Wineke J, Berger RD, Hansel NN, McCormack MC.Am J Respir Crit Care Med. 2023 Mar 15;207(6):721-730. doi: 10.1164/rccm.202203-0523OC.PMID: 36288428

Am J Respir Crit Care Med

. 2023 Mar 15;207(6):721-730.
doi: 10.1164/rccm.202203-0523OC.

Indoor Air Pollution and Impaired Cardiac Autonomic Function in Chronic Obstructive Pulmonary Disease

Sarath Raju[1], Han Woo[1], Kirsten Koehler[2], Ashraf Fawzy[1], Chen Liu[1], Nirupama Putcha[1], Aparna Balasubramanian[1], Roger D Peng[3], Cheng Ting Lin[4], Chantal Lemoine[5], Jennifer Wineke[6], Ronald D Berger[1], Nadia N Hansel[1,2], Meredith C McCormack[1,2]

Affiliations expand

- PMID: 36288428

- DOI: 10.1164/rccm.202203-0523OC

Abstract

Rationale: Indoor air pollution represents a modifiable risk factor for respiratory morbidity in chronic obstructive pulmonary disease (COPD). The effects of indoor air pollution, as well as the impact of interventions to improve indoor air quality, on cardiovascular morbidity in COPD remain unknown. **Objectives:** To determine the association between indoor particulate matter (PM) and heart rate variability (HRV), a measure of cardiac autonomic function tied to cardiovascular morbidity and mortality, as well as the impact of household air purifiers on HRV. **Methods:** Former smokers with moderate-severe COPD were recruited from a 6-month randomized controlled trial of a portable air cleaner intervention to undergo paired assessment of both in-home PM and HRV using 24-hour Holter monitoring at up to five time points. Primary outcomes were HRV measures tied to cardiovascular morbidity (standard deviation of normal-to-normal intervals [SDNN] and root mean square of successive differences between normal-to-normal intervals [RMSSD]). **Measurements and Results:** Eighty-five participants contributed 317 HRV measurements. A twofold increase in household PM $\leqslant$2.5 μm in aerodynamic diameter was associated with decreases in SDNN (β, -2.98% [95% confidence interval (CI), -5.12 to -0.78]) and RMSSD (β, -4.57% [95% CI, -10.1 to -1.60]). The greatest effects were observed with ultrafine particles (<100 nm) (RMSSD; β, -16.4% [95% CI, -22.3 to -10.1]) and among obese participants. Participants randomized to the active air cleaner saw improvements in RMSSD (β, 25.2% [95% CI, 2.99 to 52.1]), but not SDNN (β, 2.65% [95% CI, -10.8 to 18.1]), compared with the placebo group. **Conclusions:** This is the first U.S. study to describe the association between household PM and cardiac autonomic function among individuals with COPD, as well as the potential cardiovascular health benefits of household air cleaners.

Keywords: COPD; indoor air pollution.

Comment in

- Can Long-term Residential Air Cleaning Reduce Cardiovascular Morbidity in Patients with Chronic Obstructive Pulmonary Disease?
  Croft DP, Utell MJ, Rich DQ.Am J Respir Crit Care Med. 2023 Mar 15;207(6):651-653. doi: 10.1164/rccm.202211-2138ED.PMID: 36470239 No abstract available.

ASTHMA

1
Pediatr Int
.
. 2023 Mar 17;e15530.
doi: 10.1111/ped.15530. Online ahead of print.

Clinical risk factors at 3 months of age for the development of bronchial asthma at 36 months of age

Shiro Sugiura[1], Yoshimichi Hiramitsu[2], Masaki Futamura[3], Naomi Kamioka[4], Chikae Yamaguchi[5], Harue Umemura[6], Yasuto Kondo[7], Komei Ito[1]
Affiliations expand

- PMID: 36932701

- DOI: 10.1111/ped.15530

Abstract

Background: We examined the associations between factors evident at the routine 3-month well child visit (WCV) and the risk of developing 36-month parent-reported physician-diagnosed bronchial asthma (BA).

Methods: This longitudinal study was conducted in Nagoya City, Japan, and included 40,242 children who qualified for the 3-month WCVs in the city between April 1, 2016 and March 31, 2018. In total, 22,052 (54.8%) questionnaires linked to their 36-month WCVs were analyzed.

Results: The prevalence of BA was 4.5%. The multivariable Poisson regression model identified male sex (adjusted risk ratio [aRR], 1.59; 95% confidence interval [CI]: 1.40-1.81), born in autumn (aRR, 1.30; 95% CI: 1.09-1.55), having at least one sibling (aRR, 1.31; 95% CI: 1.15-1.49), wheeze history before 3-month WCVs [with clinic/hospital visit: aRR, 1.99;

95% CI: 1.53-2.56; hospitalization: aRR, 2.99; 95% CI: 2.09-4.12], eczema with itch (aRR, 1.51; 95% CI: 1.27-1.80), paternal history of BA (aRR, 1.98; 95% CI: 1.66-2.34), maternal history of BA (aRR, 2.11; 95% CI: 1.77-2.49), and rearing pets with fur (aRR, 1.35; 95% CI: 1.15-1.58) were independent risk factors for BA at 36 months of age. The combination of severe wheeze history (with clinic/hospital visit or hospitalization) and maternal and paternal BA could identify high-risk infants whose prevalence of BA was 20%.

Conclusions: The combined assessment of important clinical factors enabled us to identify high-risk infants set to derive optimal benefit from health guidance provided to the parent or caregiver of the child or infant at WCVs.

Keywords: bronchial asthma; bronchiolitis; child health services; family medical history; wheezing.

Review

Eur J Immunol

. 2023 Mar 17;e2249919.
doi: 10.1002/eji.202249919. Online ahead of print.

Immunoregulation of asthma by type2 cytokine therapies – treatments for all ages?

Sejal Saglani[1,2], Laura Yates[1], Clare M Lloyd[1]
Affiliations expand

- PMID: 36932669

- DOI: 10.1002/eji.202249919

Abstract

Asthma is classically considered to be a disease of type 2 immune dysfunction, since many patients exhibit the consequences of excess secretion of cytokines such as IL-4, IL-5 and IL-13 concomitant with inflammation typified by eosinophils. Mouse and human disease models have determined that many of the canonical pathophysiologic features of asthma may be caused by these disordered type 2 immune pathways. As such considerable efforts have been made to develop specific drugs targeting key cytokines. There are currently available multiple biologic agents that successfully reduce the functions of IL-4, IL-5 and IL-13 in patients, and many improve the course of severe asthma. However, none are curative, and do not always minimise the key features of disease - such as airway hyperresponsiveness. Here, we review the current therapeutic landscape targeting type 2 immune cytokines and discuss evidence of efficacy and limitations of their use in adults and children with asthma.

Keywords: Immunoregulation; asthma; asthma biologics; type2.

Editorial

Respir Investig

. 2023 Mar 15;61(3):333-334.
doi: 10.1016/j.resinv.2023.02.003. Online ahead of print.

Evolution of asthma treatment goals

Takuro Sakagami[1]
Affiliations expand

- PMID: 36931093

- DOI: 10.1016/j.resinv.2023.02.003

No abstract available

Keywords: Asthma; Biologics; Clinical remission.

Conflict of interest statement

Conflict of Interest TS has received research funding from Boehringer Ingelheim and speaker fees from AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Kyorin Pharmaceutical, Novartis Pharma, and Chugai Pharmaceutical.

SUPPLEMENTARY INFO

Publication typesexpand
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Review

Pediatr Pulmonol

. 2023 Mar 17.
doi: 10.1002/ppul.26387. Online ahead of print.

Severe asthma guidelines in children and adolescents: A practical document for physicians

Federica Porcaro[1], Nicola Ullmann[1], Antonio Di Marco[1], Annalisa Allegorico[1], Claudio Cherchi[1], Maria Giovanna Paglietti[1], Renato Cutrera[1]
Affiliations expand

- PMID: 36929867

- DOI: 10.1002/ppul.26387

Abstract

Asthma is a common disease in childhood with a minority of affected children suffering from severe asthma. Patients with severe asthma require high dose inhaled glucocorticoids plus a second controller and/or systemic corticosteroids to be well-controlled or remain uncontrolled despite such treatment. Although only a small subset of children and adolescents falls in this category, the management of affected patients represents a major concern for pediatricians. Guidelines and recommendations have been designed to guide the management of this group of patients. Though the terms "recommendations" and "guidelines" are often used interchangeably, it should be noted that the first one should be used more narrowly to identify specific actions and the second one to broadly refer to the umbrella under which multiple recommendations for a specific condition are provided. Moreover, the availability of several and sometimes-conflicting documents on severe asthma management both in adult and pediatric age could generate confusion among health care professionals. The manuscript analyses seven papers addressing severe asthma, comparing any key aspects and differences. Finally, we tried to create a more practical document for physicians to simplify the interpretation of the several available documents on severe asthma management focusing the pediatric age.

Keywords: asthma; children; guidelines; recommendations; severe asthma.

- 23 references

SUPPLEMENTARY INFO

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Pediatr Pulmonol

. 2023 Mar 17.
doi: 10.1002/ppul.26386. Online ahead of print.

Dexamethasone versus methylprednisolone for critical asthma:

A single center, open-label, parallel-group clinical trial

Meghan R Roddy[1], Austin R Sellers[2], Kristina K Darville[3], Beatriz Teppa-Sanchez[3], Scott D McKinley[4], Meghan Martin[5], Neil A Goldenberg[2,6,7], Thomas A Nakagawa[8], Anthony A Sochet[2,3,9]
Affiliations expand

- PMID: 36929864

- DOI: 10.1002/ppul.26386

Abstract

Background: Evidence for the use of dexamethasone for pediatric critical asthma is limited. We sought to compare the clinical efficacy and safety of dexamethasone versus methylprednisolone among children hospitalized in the pediatric intensive care unit (PICU) for critical asthma.

Methods: A prospective, single center, open-label, two-arm, parallel-group, nonrandomized trial among children ages 5-17 years hospitalized within the PICU from April 2019 to December 2021 for critical asthma consented to receive methylprednisolone (standard care) or dexamethasone (intervention) at a 2:1 allocation ratio, respectively. The intervention arm received intravenous dexamethasone 0.25 mg/kg/dose (max: 15 mg/dose) every 6 h for 48 h and the standard care arm intravenous methylprednisolone 1 mg/kg/dose every 6 h (max dose: 60 mg/dose) for 5 days. Study endpoints were clinical efficacy (i.e., length of stay [LOS], continuous albuterol duration, and a composite of adjunctive asthma interventions) and safety (i.e., corticosteroid-related adverse events).

Results: Ninety-two participants were analyzed of whom 31 were allocated to the intervention arm and 61 the standard care arm. No differences in demographics, clinical characteristics, or acute/chronic asthma severity indices were observed. Regarding efficacy and safety endpoints, no differences in hospital LOS, continuous albuterol duration, adjunctive asthma intervention rates, or corticosteroid-related adverse events were noted. Compared to the intervention arm, participants in the standard care arm more frequently were prescribed corticosteroids at discharge (72% vs. 13%, $p < 0.001$).

Conclusions: Among children hospitalized for critical asthma, dexamethasone appears safe and warrants further investigation to fully assess clinical efficacy and potential advantages over commonly applied agents such as methylprednisolone.

Keywords: corticosteroids; glucocorticoids; pediatric critical care medicine; pediatric intensive care unit; status asthmaticus.

- 35 references

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6
Allergy
-
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. 2023 Mar 17.
doi: 10.1111/all.15711. Online ahead of print.

Comparative effectiveness of Anti-IL5 and Anti-IgE biologic classes in patients with severe asthma eligible for both

Paul E Pfeffer[1,2], Nasloon Ali[3,4], Ruth Murray[4], Charlotte Ulrik[5], Trung N Tran[6], Jorge Maspero[7,8], Matthew Peters[9], George C Christoff[10], Mohsen Sadatsafavi, Carlos A Torres-Duque[11], Alan Altraja[12], Lauri Lehtimäki[13], Nikolaos G Papadopoulos[14,15], Sundeep Salvi[16], Richard W Costello[17], Breda Cushen[18], Enrico Heffler[19,20], Takashi Iwanaga[21], Mona Al-Ahmad[22], Désirée Larenas-Linnemann[23], Piotr Kuna[24], João A Fonseca[25], Riyad Al-Lehebi[26,27], Chin Kook Rhee[28], Luis Perez-de-Llano[29,30], Diahn-Warng Perng Steve[31,32], Bassam Mahboub[33,34], Eileen Wang[35,36], Celine Goh[3,4], Juntao Lyu[3,37], Anthony Newell[3,37], Marianna Alacqua[38], Andrey S Belevskiy[39], Mohit Bhutani[40], Leif Bjermer[41], Unnur Bjornsdottir[42], Arnaud Bourdin, Anna von Bulow[43], John Busby[44], Giorgio Walter Canonica[19,20], Borja G Cosio[45], Del Dorscheid[46], Mariana Muñoz-Esquerre[47,48], J Mark FitzGerald[49], Esther Garcia Gil[50], Peter G Gibson[51,52], Liam G Heaney[53], Mark Hew[54,55], Ole Hilberg[56], Flavia Hoyte[35,36], David J Jackson[57,58], Mariko Siyue Koh[59,60], Hsin-Kuo Ko Bruce[61], Jae Ha Lee[62], Sverre Lehmann[63,64], Cláudia Chaves Loureiro[65], Dóra Lúðvíksdóttir[66], Andrew N Menzies-Gow[67], Patrick Mitchell[68], Andriana I Papaioannou[69], Todor A Popov[70], Celeste M Porsbjerg[71], Laila Salameh[33,34], Concetta Sirena[72], Camille Taillé[73], Christian Taube[74], Yuji Tohda[75], Michael E Wechsler[76], David Price[3,4,77]

Affiliations expand

- PMID: 36929509

- DOI: 10.1111/all.15711

Abstract

Background: Patients with severe asthma may present with characteristics representing overlapping phenotypes, making them eligible for more than one class of biologic. Our aim was to describe the profile of adult patients with severe asthma eligible for both anti-IgE and anti-IL5/5R and to compare the effectiveness of both classes of treatment in real life.

Methods: This was a prospective cohort study that included adult patients with severe asthma from 22 countries enrolled into the International Severe Asthma registry (ISAR) who were eligible for both anti-IgE and anti-IL5/5R. The effectiveness of anti-IgE and anti-IL5/5R was compared in a 1:1 matched cohort. Exacerbation rate was the primary effectiveness endpoint. Secondary endpoints included long-term-oral corticosteroid (LTOCS) use, asthma-related emergency room (ER) attendance and hospital admissions.

Results: In the matched analysis (n=350/group), the mean annualized exacerbation rate decreased by 47.1% in the anti-IL5/5R group and 38.7% in the anti-IgE group. Patients treated with anti-IL5/5R were less likely to experience a future exacerbation (adjusted IRR 0.76; 95% CI 0.64, 0.89; p<0.001) and experienced a greater reduction in mean LTOCS dose than those treated with anti-IgE (37.44% vs 20.55% reduction; p=0.023).) There was some evidence to suggest that patients treated with anti-IL5/5R experienced fewer asthma-related hospitalizations (IRR 0.64; 95% CI 0.38, 1.08), but not ER visits (IRR 0.94, 95% CI 0.61, 1.43).

Conclusions: In real life, both anti-IgE and anti-IL5/5R improve asthma outcomes in patients eligible for both biologic classes, however anti-IL5/5R was superior in terms of reducing asthma exacerbations and LTOCS use.

Keywords: ISAR; biologics; exacerbation; oral corticosteroids; real life.

Eur Ann Allergy Clin Immunol
.
. 2023 Mar 16.
doi: 10.23822/EurAnnACI.1764-1489.289. Online ahead of print.

A real life cohort of Mepolizumab treatment in severe eosinophilic asthma

D Laorden[1], I Hernández[2,3], J Domínguez-Ortega[2], D Romero[1], R Álvarez-Sala[1], S Quirce[2]
Affiliations expand

- PMID: 36927725

- DOI: 10.23822/EurAnnACI.1764-1489.289

Abstract

Background. Mepolizumab, a monoclonal antibody that interacts with IL-5, was the first anti-IL-5 approved for uncontrolled severe eosinophilic asthma. In several randomised, placebo-controlled trials, treatment with mepolizumab has shown a significant improvement in asthma symptoms and the need to use of oral corticosteroids (OCS). Several studies have correlated blood levels of eosinophil cationic protein (ECP) with the degree of eosinophilic inflammation, which could make it an indirect marker of eosinophilic activity. **Methods.** This was a single-centre retrospective study that included all patients diagnosed with severe eosinophilic asthma under treatment with mepolizumab. We recorded the number of exacerbations, daily prednisone intake, asthma control test scores and forced expiratory volume in the first second. **Results.** We followed 22 patients, 14 of whom were OCS-dependent with a mean daily dose of 15.85 ± 15.62 mg prednisone. After 12 months, only five continued taking OCS and the mean daily dose was reduced by up to 2.50 ± 3.84 mg (p less than 0.007). The exacerbation rate at baseline was 2.91 ± 2.27 and decreased to 0.82 ± 1.14 in the following year (p less than 0.001). ACT scores increased significantly from 16.00 ± 5.85 to 20.71 ± 4.45 after six months (p = 0.003). We also observed a decrease in ECP from 81.46 ± 43.99 µg/L to 19.12 ± 18.80 µg/L (p > 0.001). **Conclusions.** These real-life results are consistent with previous clinical trials demonstrating the efficacy and safety of mepolizumab in routine clinical practice for severe uncontrolled eosinophilic asthma. We observed a significant decrease in blood

eosinophil counts and in ECP levels, suggesting a reduction in eosinophil activity following mepolizumab treatment.

Keywords: Asthma; anti-IL5; eosinophils; mepolizumab; oral systemic corticosteroids.

BMC Public Health

. 2023 Mar 16;23(1):509.
doi: 10.1186/s12889-023-15335-1.

Paternal preconception modifiable risk factors for adverse pregnancy and offspring outcomes: a review of contemporary evidence from observational studies

Tristan Carter[1], Danielle Schoenaker[2,3], Jon Adams[4], Amie Steel[4]
Affiliations expand

- PMID: 36927694
- PMCID: PMC10022288
- DOI: 10.1186/s12889-023-15335-1

Abstract

Background: The preconception period represents transgenerational opportunities to optimize modifiable risk factors associated with both short and long-term adverse health outcomes for women, men, and children. As such, preconception care is recommended to

couples during this time to enable them to optimise their health in preparation for pregnancy. Historically, preconception research predominately focuses on maternal modifiable risks and health behaviours associated with pregnancy and offspring outcomes; limited attention has been given to inform paternal preconception health risks and outcomes. This systematic review aims to advance paternal preconception research by synthesising the current evidence on modifiable paternal preconception health behaviours and risk factors to identify associations with pregnancy and/or offspring outcomes.

Methods: Medline, Embase, Maternity and Infant care, CINAHL, PsycINFO, Scopus, and ISI Proceedings were searched on the 5th of January 2023, a date limit was set [2012-2023] in each database. A Google Scholar search was also conducted identifying all other relevant papers. Studies were included if they were observational, reporting associations of modifiable risk factors in the preconception period among males (e.g., identified as reproductive partners of pregnant women and/or fathers of offspring for which outcomes were reported) with adverse pregnancy and offspring outcomes. Study quality was assessed using the Newcastle-Ottawa Scale. Exposure and outcome heterogeneity precluded meta-analysis, and results were summarised in tables.

Results: This review identified 56 cohort and nine case control studies. Studies reported on a range of risk factors and/or health behaviours including paternal body composition (n = 25), alcohol intake (n = 6), cannabis use (n = 5), physical activity (n = 2), smoking (n = 20), stress (n = 3) and nutrition (n = 13). Outcomes included fecundability, IVF/ISCI live birth, offspring weight, body composition/BMI, asthma, lung function, leukemia, preterm birth, and behavioural issues. Despite the limited number of studies and substantial heterogeneity in reporting, results of studies assessed as good quality showed that paternal smoking may increase the risk of birth defects and higher paternal BMI was associated with higher offspring birthweight.

Conclusion: The current evidence demonstrates a role of paternal preconception health in influencing outcomes related to pregnancy success and offspring health. The evidence is however limited and heterogenous, and further high-quality research is needed to inform clinical preconception care guidelines to support men and couples to prepare for a health pregnancy and child.

Keywords: Modifiable; Offspring outcomes; Paternal; Preconception; Pregnancy outcomes; Risk factor.

Conflict of interest statement

The authors declare that they have no competing interests.

- 113 references
- 2 figures

Ital J Pediatr
.
2023 Mar 16;49(1):31.
doi: 10.1186/s13052-023-01437-4.

An analysis of risk factors associated with recurrent wheezing in the pediatric population

Yibing Zhu[#1,2], Lumin Chen[#2], Yecheng Miao[3], Jinying Chen[4], Meng Bai[4], Haiyan Gao[5], Zhirong Zhu[6], Yuxuan Zhang[7], Jianzhong Zhang[8], Hafiz Khuram Raza[8], Guanghua Liu[9,10]
Affiliations expand

- PMID: 36927514
- PMCID: PMC10022094
- DOI: 10.1186/s13052-023-01437-4

Abstract

Background: Recurrent wheezing is a common clinical problem in early childhood, which is associated with significant morbidity. There is no international consensus on the management and prevention of recurrent wheezing; therefore, identifying the risk factors associated with recurrent wheezing is crucial to prevent episodes of wheezing in young children.

Methods: In this retrospective study, we collected the data of 24,737 patients who were admitted to our hospital between 27th April 2012 and 11th September 2019. After screening for patients with wheezing, we identified 8572 patients with a primary diagnosis

of pneumonia with wheezing. Patients' clinical data were collected from the hospital medical records. Patients were stratified for age in the groups of < 6 months, 6-12 months, and > 12 months.

Results: Among the 8569 pediatric pneumonia patients with wheezing, there were 343 patients with recurrent wheezing. Most enrolled patients were under 6 months of age (45.17%) and had a normal birth weight (86.95%). Winter was the most common onset season for the first episode of wheezing, while spring was the most common season for the second episode of wheezing for those with recurrent wheezing. The univariate and multivariate logistic regression analysis for the risk factor associated with recurrent wheezing showed that male gender, past history of respiratory and cardiovascular diseases, low birth weight, development of severe pneumonia, and PICU admission were significantly associated with recurrent wheezing.

Conclusion: Male gender, past history of respiratory and cardiovascular diseases, low birth weight, severe pneumonia, and PICU admission are independent risk factors of recurrent wheezing in the pediatric population.

Keywords: Asthma; PICU; Recurrent wheezing; Risk factor; Wheezing.

Conflict of interest statement

None of the other authors have conflicts of interest to disclose regarding the content of this article.

- 22 references
- 3 figures

SUPPLEMENTARY INFO

Grant supportexpand
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10
Respir Res
.
. 2023 Mar 16;24(1):82.
doi: 10.1186/s12931-023-02383-9.

Dietary patterns, lung function and asthma in childhood: a longitudinal study

Mohammad Talaei[1], Pauline M Emmett[2], Raquel Granell[3], Hossein Tabatabaeian[4], Kate Northstone[5], Anna Bergström[6][7], Seif O Shaheen[8]
Affiliations expand

- PMID: 36927379
- PMCID: PMC10022039
- DOI: 10.1186/s12931-023-02383-9

Abstract

Background: Longitudinal epidemiological data are scarce examining the relationship between dietary patterns and respiratory outcomes in childhood. We investigated whether three distinct dietary patterns in mid-childhood were associated with lung function and incident asthma in adolescence.

Methods: In the Avon Longitudinal Study of Parents and Children, 'processed', 'traditional', and 'health-conscious' dietary patterns were identified using principal components analysis from food frequency questionnaires at 7 years of age. Post-bronchodilator forced expiratory volume in 1 s (FEV_1), forced vital capacity (FVC), and forced expiratory flow at 25-75% of FVC (FEF_{25-75}) were measured at 15.5 years and were transformed to z-scores based on the Global Lung Function Initiative curves. Incident asthma was defined by new cases of doctor-diagnosed asthma at age 11 or 14 years.

Results: In multivariable-adjusted models, the 'health-conscious' pattern was positively associated with FEV_1 (regression coefficient comparing top versus bottom quartile of pattern score 0.16, 95% CI 0.01 to 0.31, P for trend 0.04) and FVC (0.18, 95% CI 0.04 to 0.33, P for trend 0.02), while the 'processed' pattern was negatively associated with FVC (- 0.17, 95% CI - 0.33 to - 0.01, P for trend 0.03). Associations between the 'health-conscious' and 'processed' patterns and lung function were modified by SCGB1A1 and GPX4 gene polymorphisms. We found no evidence of an association between the 'traditional' pattern and lung function, nor between any pattern and FEF_{25-75} or incident asthma.

Conclusions: A 'health-conscious' diet in mid-childhood was associated with higher subsequent lung function, while a diet high in processed food was associated with lower lung function.

Keywords: ALSPAC; Asthma; Childhood; Diet; Dietary pattern; Lung function.

Conflict of interest statement

The authors declare that they have no competing interests.

- 55 references

SUPPLEMENTARY INFO

Grant supportexpand
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11
J Asthma
.
. 2023 Mar 16;1-15.
doi: 10.1080/02770903.2023.2191715. Online ahead of print.

Outcomes of Children with Life-Threatening Status Asthmaticus Requiring Isoflurane Therapy and Extracorporeal Life Support

Sneha Kolli[1,2], Cydney Opolka[2], Adrianna Westbrook[1,3], Scott Gillespie[1,3], Carrie Mason[1], Brittany Truitt[1,2], Pradip Kamat[1,2], Anne Fitzpatrick[1,2], Jocelyn R Grunwell[1,2]
Affiliations expand

- PMID: 36927245

- DOI: 10.1080/02770903.2023.2191715

Abstract

Background: Severe, refractory asthma is a life-threatening emergency that may be treated with isoflurane and extracorporeal life support. The objective of this study was to describe the clinical response to isoflurane and outcomes after discharge of children who received isoflurane and/or extracorporeal life-support for near-fatal asthma.

Methods: This was a retrospective descriptive study using electronic medical record data from two pediatric intensive care units within a single healthcare system in Atlanta, GA.

Results: Forty-five children received isoflurane, and 14 children received extracorporeal life support, 9 without a trial of isoflurane. Hypercarbia and acidosis improved within four hours of starting isoflurane. Four children died during the index admission for asthma. Twenty-seven percent had a change in Functional Status Score of three or more points from baseline to PICU discharge. Patients had median percent predicted FEV1 and FEV1/FVC ratios pre- and post-bronchodilator values below normal pediatric values.

Conclusion: Children who received isoflurane and/or ECLS had a high frequency of previous PICU admission and intubation. Improvement in ventilation and acidosis occurred within the first four hours of starting isoflurane. Children who required isoflurane or ECLS may develop long-lasting deficits in their functional status. Children with near-fatal asthma are a high-risk group and require improved follow-up in the year following PICU discharge.

Keywords: extracorporeal life-support; functional status score; isoflurane; pediatric intensive care unit; pulmonary function tests; status asthmaticus.

Ann Allergy Asthma Immunol

. 2023 Mar 14;S1081-1206(23)00174-6.
doi: 10.1016/j.anai.2023.03.008. Online ahead of print.

Sublingual immunotherapy (SLIT) for house dust mite – when to take a break?

An unusual reaction to SLIT post-vaccinations

A Gallagher[1], J Trujillo[2]
Affiliations expand

- PMID: 36924938

- DOI: 10.1016/j.anai.2023.03.008

No abstract available

Keywords: Vaccination; allergen immunotherapy; allergic rhinitis; house dust mite allergy; sublingual immunotherapy.

Ann Allergy Asthma Immunol

. 2023 Mar 14;S1081-1206(23)00171-0.
doi: 10.1016/j.anai.2023.03.006. Online ahead of print.

House Dust Mite Sublingual Immunotherapy Tablet Safety in Adolescents with Allergic Rhinoconjunctivitis: Clinical Trial Results

Andreas Horn[1], David I Bernstein[2], Kimihiro Okubo[3], Terrie Dalgaard[4], Ole Hels[4], Helle Frobøse Sørensen[4], Marianne Henriksen[4], Ryuji Azuma[5], Jan Mikler[6], Hendrik Nolte[7]
Affiliations expand

- PMID: 36924936

- DOI: 10.1016/j.anai.2023.03.006

Abstract

Background: The HDM sublingual immunotherapy (SLIT)-tablet is a treatment option for allergic rhinitis with/without conjunctivitis (AR/C) approved in adults worldwide and in adolescents in some countries.

Objective: The MT-18 trial was conducted in adolescents to supplement existing adolescent HDM SLIT-tablet safety data.

Methods: MT-18 (EUDRACT: :2020-000446-34) was a phase 3, open-label, single-arm, 28-day safety trial of daily HDM SLIT-tablet (12 SQ-HDM dose) in European adolescents (12-17 y) with HDM AR/C, with or without asthma. The primary endpoint was at least 1 treatment-emergent adverse event (TEAE). MT-18 results were compared with 12 SQ-HDM adolescent subpopulation data from previously described 1-year phase 3 trials conducted in North America (P001; clinicaltrials.gov:NCT01700192) or Japan (TO-203-3-2; JapicCTI:121848).

Results: No treatment-related anaphylaxis, epinephrine administrations, severe local swellings, severe mouth or throat edema, or eosinophilic esophagitis occurred in the trials. For MT-18 (N=253), P001 (Nadolescents=189), and TO-203-3-2 (Nadolescents=206), the percentage of adolescents treated with 12 SQ-HDM reporting any TEAE was 88%, 95%, and 93%, respectively, and the percentage reporting any treatment-related AE (TRAE) was 86%, 93%, and 66%, respectively. The most common TRAEs were local application site reactions. Most TRAEs were mild in intensity and were typically experienced the first 1-2 days of treatment. There were no asthma-related TEAEs with the HDM SLIT-tablet. The safety profile appears similar between adolescents with or without asthma at baseline.

Conclusion: The HDM SLIT-tablet was well tolerated in European, North American, and Japanese adolescents with HDM AR/C, indicating safety of the HDM SLIT-tablet is insensitive to age or geographic region.

Keywords: Europe; Japan; North America; adolescents; allergic rhinoconjunctivitis; house dust mite; sublingual immunotherapy.

SUPPLEMENTARY INFO

Associated dataexpand

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14

Respir Med

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. 2023 Mar 14;107211.
doi: 10.1016/j.rmed.2023.107211. Online ahead of print.

Is asthma's heterogeneity too vast to use traditional phenotyping for modern biologic therapies?

Nicole van der Burg[1], Ellen Tufvesson[2]
Affiliations expand

- PMID: 36924848

- DOI: 10.1016/j.rmed.2023.107211

No abstract available

Keywords: Asthma; Biologics; Bioprofile; Cluster analysis; Phenotype.

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.

Clin Respir J

. 2023 Mar 16.
doi: 10.1111/crj.13600. Online ahead of print.

Cytomegalovirus serology in young to mid-adult life and decline of lung function

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Affiliations expand

- PMID: 36924061

- DOI: 10.1111/crj.13600

Abstract

Introduction: Cytomegalovirus (CMV) seropositivity has been recently linked to severity and progression of asthma, cystic fibrosis, and chronic obstructive pulmonary disease (COPD). To date, no longitudinal study has addressed the relation of CMV serology to levels and decline of lung function in the general adult population.

Methods: We evaluated 403 participants from the Tucson Epidemiological Study of Airway Obstructive Disease (TESAOD) who at enrollment were aged 28-55 years and completed lung function tests. During follow-up, the 403 participants completed on average 7.2 lung function tests per subject for a total of 2908 observations over a mean period of 14.7 years. We tested CMV serology in serum samples from enrollment and categorized participants into low, medium, and high CMV serology based on tertiles. The relation of CMV serology

at enrollment to lung function levels and decline during follow-up was tested in multivariate random coefficients models.

Results: After full adjustment, participants in the highest CMV serology tertile had faster declines of forced expiratory volume in 1 s (FEV_1) and FEV_1/forced vital capacity (FVC) compared with subjects in the lowest tertile (by -7.9 ml/year 95% confidence interval [-13.9 ml/year, -1.93 ml/year], and by -0.13%/year [-0.23%/year, -0.026%/year], respectively). These CMV effects were additive with those of cigarette smoking. No associations were found between CMV serology and FVC, indicating specific effects of CMV seropositivity on airflow limitation.

Conclusion: High CMV serology in young to mid-adult life may be linked to increased COPD risk through an accelerated decline of lung function.

Keywords: CMV; COPD; airflow limitation; epidemiology; lung function.

- 11 references

SUPPLEMENTARY INFO

Grant supportexpand

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WILEY Full Text Article

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BJGP Open

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. 2023 Mar 15;BJGPO.2023.0020.

doi: 10.3399/BJGPO.2023.0020. Online ahead of print.

Characteristics of asthma patients overprescribed short-acting beta-agonist (SABA) reliever inhalers

stratified by blood eosinophil count in North East London – a cross-sectional observational study

Paul Pfeffer[1], Hajar Hajmohammadi[2], Jim Cole[2], Chris Griffiths[2], Sally Hull[2], Anna De Simoni[2]
Affiliations expand

- PMID: 36921995

- DOI: 10.3399/BJGPO.2023.0020

Free article

Abstract

Background: Over-prescription of short-acting beta-agonist (SABA) inhalers and blood eosinophil count have strong associations with exacerbation risk in asthma. However, in our recent publication only a minority of SABA-overprescribed patients (≥6 inhalers in 12 months) were eosinophilic (≥0.3x10^9 cells/L).

Aim: To compare the characteristics of eosinophilic and non-eosinophilic SABA over-prescribed patients, and identify latent classes using clinical variables available in primary care.

Design & setting: Cross-sectional analysis of asthmatic patients in North East London using primary care electronic health record data.

Method: Unadjusted and adjusted multi-variate regression models and latent class analysis.

Results: Eosinophilia was significantly less likely in female patients, those with multiple mental health comorbidities and those with SABA on repeat prescription. Latent class analysis identified 3 classes of SABA over-prescribed patients representing those with classical Uncontrolled Asthma (oral-steroid requiring exacerbations, step 2-3 asthma medications, high probability of being eosinophilic), Mild Asthma (low exacerbation frequency, low asthma medication step, low probability of being eosinophilic), and Difficult Asthma (high exacerbation frequency despite high-strength preventer inhalers, low probability of being eosinophilic). The Mild Asthma class was the largest.

Conclusion: Many patients being over-prescribed SABA are non-eosinophilic with a low exacerbation frequency suggesting disproportionately high SABA prescription compared to other asthma control markers. Potential reasons for high SABA prescription in these patients include repeat prescription (being dispensed but not taken) and use of SABA for non-asthma breathlessness (eg, breathing pattern disorders with anxiety). Further research is needed into management of SABA overuse in patients without other markers of uncontrolled asthma.

Keywords: Asthma; short-acting beta-agonist.

Chest

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. 2023 Mar 13;S0012-3692(23)00354-9.
doi: 10.1016/j.chest.2023.03.012. Online ahead of print.

Redefining the role of bronchoscopy in the work-up of severe uncontrolled asthma in the era of biologics: a prospective study

Borja G Cosío[1], Hanaa Shafiek[2], Mar Mosteiro[3], Amanda Iglesias[4], Cristina Gómez[5], Nuria Toledo-Pons[6], Rocio Martinez[6], Meritxell Lopez[7], Inés Escribano Gimeno[8], Luis Pérez de Llano[9]

Affiliations expand

- PMID: 36921895

- DOI: 10.1016/j.chest.2023.03.012

Abstract

Background: Severe uncontrolled asthma (SUA) is frequently treated with biologic therapy if a T2 phenotype is found. Bronchoscopy is not routinely recommended in these patients unless a specific indication to rule out comorbidities is present.

Research question: Is routine bronchoscopy safe and useful in phenotyping and endotyping SUA patients prior to the indication of a biologic therapy?.

Study design and methods: Prospective study of consecutive SUA patients who were referred to a specialized asthma clinic to assess the indication of a biologic therapy. Patients were clinically phenotyped as T2-allergic, T2-eosinophilic and non-T2. All patients underwent bronchoscopy and systematic data collection of endoscopic findings, microbiology of bronchial aspirate (BAS) and presence of eosinophils in bronchial biopsy were recorded and compared between asthma phenotypes. Cluster analysis was performed accordingly.

Results: One-hundred patients were recruited and classified as T2-allergic (28%), T2-eosinophilic (64%) and non-T2 (8%). On bronchoscopy, signs of gastroesophageal reflux disease were detected in 21%, vocal cord dysfunction in 5% and tracheal abnormalities in 3%. BAS culture isolated bacteria in 27% of patients, and fungi in 14%. Three clusters were identified: non-specific, upper airway, and infection being the latter less frequently associated to submucosal eosinophilia. Eosinophils were detected in 91% of bronchial biopsies. Despite a correlation to blood eosinophils, five patients with T2-phenotypes showed no eosinophils in bronchial biopsy, and 3 patients with non-T2 showed eosinophils in bronchial biopsy. Only one patient had a moderate bleeding.

Interpretation: Routine bronchoscopy in SUA eligible for biologic therapy is a safe procedure that can help to better phenotype and personalize asthma management.

Keywords: T2 phenotype; bronchial biopsy; comorbidities; infection.

J Allergy Clin Immunol Pract

. 2023 Mar 13;S2213-2198(23)00286-6.
doi: 10.1016/j.jaip.2023.03.004. Online ahead of print.

Association between Social Needs and Asthma Control among Children Evaluated at a Single-Center High-Risk Asthma Clinic

Rachel H F Margolis[1], Shilpa J Patel[2], Julie Krueger[3], Taylor Brewer[4], Andrea Williams[5], Shayla Stringfield[5], Stephen J Teach[2], Kavita Parikh[6]
Affiliations expand

- PMID: 36921799

- DOI: 10.1016/j.jaip.2023.03.004

No abstract available

Keywords: pediatric asthma; social needs; under-resourced populations.

Ann Am Thorac Soc

. 2023 Mar 15.
doi: 10.1513/AnnalsATS.202207-578OC. Online ahead of print.

Vaping and Health Service Utilization: A Canadian Health Survey and Health Administrative Data Study

Teresa To[1,2], Cornelia M Borkhoff[3,4], Chung-Wai Chow[4,5], Theo J Moraes[6], Robert Schwartz[7], Nick Vozoris[8], Anne Van Dam[9], Chris Langlois[10], Kimball Zhang[3], Emilie Terebessy[3], Jingqin Zhu[3]
Affiliations expand

- PMID: 36920751

- DOI: 10.1513/AnnalsATS.202207-578OC

Abstract

Rationale: Emerging research suggests that e-cigarette (EC) use may have detrimental health effects, increasing the burden on healthcare systems.

Objectives: This study aims to determine whether young EC users had increased asthma, asthma attacks, and health services use (HSU).

Methods: This cohort study used the linked Canadian Community Health Survey (CCHS, cycles 2015-16 and 2017-18) and health administrative data (January 2015-March 2018). A propensity score method matched self-reported EC users to up to five controls. Matched multivariable logistic and negative binomial regressions were used to calculate odds ratios (OR), rate ratios (RR), and 95% confidence intervals (CI) with EC use as the exposure and asthma, asthma attacks, all-cause HSU as the outcomes, respectively.

Results: Analyses included 2,700 matched CCHS participants (15-30 years), 505 (2.4% of 20,725 participants) EC users matched to 2,195 non-users. After adjusting for confounders, EC users with asthma had over two-fold higher odds of having an asthma attack in the last 12 months (OR=2.30; 95%CI:1.29-4.12). Dual EC and conventional tobacco users had a two-fold increased all-cause HSU rate compared to non-users who never smoked tobacco (RR=2.13; 95%CI:1.53-2.98). This rate was greater than EC users who never smoked tobacco (RR=1.73; 95% CI: 1.00-3.00) and non-EC users who regularly smoke tobacco (RR= 1.72; 95% CI: 1.29-2.29). Compared to male non-users, female EC users had the highest increased all-cause HSU (RR=1.94; 95% CI: 1.39-2.69) over male EC users and female non-users (RR=1.13; 95% CI: 0.86-1.48, RR= 1.41; 95% CI: 1.16-1.71, respectively).

Conclusion: Current EC use is associated with significantly increased odds of having had an asthma attack. Furthermore, concurrent EC use and conventional cigarette smoking are associated with a higher rate of all-cause HSU. The odds of asthma attack and all-cause HSU were highest among women. Thus, EC use may be an epidemiological biomarker for youth and young adults with increased health morbidity.

Allergy

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. 2023 Mar 15.
doi: 10.1111/all.15710. Online ahead of print.

Prescribing patterns of budesonide/formoterol maintenance and reliever therapy in patients with asthma in Sweden

Christer Janson[1], Erik Melén[2], Sofie de Fine Licht[3], Gunilla Telg[3], Ekaterina Maslova[4], Trung N Tran[5], Filip Surmont[4], Fredrik Wiklund[6], Urban Olsson[6], Bright I Nwaru[7,8], Magnus Ekström[9]

Affiliations expand

- PMID: 36919650

- DOI: 10.1111/all.15710

No abstract available

Keywords: Symbicort® Maintenance and Reliever Therapy; asthma; population-based registers; prescription patterns; text-mining programme.

J Allergy Clin Immunol
. 2023 Mar 12;S0091-6749(23)00292-0.
doi: 10.1016/j.jaci.2023.02.031. Online ahead of print.

Airway Transcriptome Networks Identify Susceptibility to Frequent Asthma Exacerbations in Children

Kieran J Phelan[1], Kimberly A Dill-McFarland[2], Arjun Kothari[3], R Max Segnitz[2], Jeff Burkle[3], Brittany Grashel[3], Seth Jenkins[3], Daniel Spagna[3], Lisa J Martin[4], David B Haslam[5], Jocelyn M Biagini[6], Maninder Kalra[7], Karen S McCoy[8], Kristie R Ross[9], Daniel J Jackson[10], Tesfaye Mersha[11], Matthew C Altman[12], Gurjit K Khurana Hershey[13]
Affiliations expand

- PMID: 36918038

- DOI: 10.1016/j.jaci.2023.02.031

Abstract

Background: Frequent asthma exacerbators, defined as those experiencing >1 hospitalization in a year for an asthma exacerbation, represent an important subgroup of individuals with asthma. However, this group remains poorly defined and understudied in children.

Objective: To determine the molecular mechanisms underlying asthma pathogenesis and exacerbation frequency.

Methods: We performed RNA-sequencing of upper airway cells from both frequent and non-frequent exacerbators enrolled in the Ohio Pediatric Asthma Repository.

Results: Through molecular network analysis, we found non-frequent exacerbators display an increase in modules enriched for immune system processes, including type 2 inflammation and response to infection. In contrast, frequent exacerbators showed expression of modules enriched for nervous system processes, such as synaptic formation and axonal outgrowth.

Conclusion: These data suggest that the upper airway of frequent exacerbators undergoes peripheral nervous system remodeling, representing a novel mechanism underlying pediatric asthma exacerbation.

Keywords: Asthma; exacerbation; frequent exacerbator; neuronal; pediatric; transcriptomics.

Eur J Pediatr

. 2023 Mar 14;1-11.

doi: 10.1007/s00431-023-04873-w. Online ahead of print.

Trends in hospital admissions among children with asthma in Spain (2011-2020)

Natalia Gutierrez-Albaladejo[1], Rodrigo Jimenez-Garcia[2], Romana Albaladejo-Vicente[3], Rosa Villanueva-Orbaiz[3], Javier de-Miguel-Diez[4], Concepción Noriega[5], Ana Lopez-de-Andres[3]

Affiliations expand

- PMID: 36917291

- PMCID: PMC10011755

- DOI: 10.1007/s00431-023-04873-w

Free PMC article

Abstract

The purpose of this study is to describe and assess changes in incidence, clinical conditions, use of mechanical ventilation, length of hospital stay (LOHS), and in-hospital mortality (IHM) among children hospitalized with asthma in Spain from 2011 to 2020. We analyzed children aged 0 to 15 years hospitalized with an ICD code for asthma included in the Spanish National Hospital Discharge Database (SNHDD). The analysis was conducted for asthma as the primary diagnosis and with asthma in any diagnosis position. Joinpoint regression was used to assess time trends in incidence. We included a total of 85,664 children hospitalized with asthma; of these, 46,727 (54.55%) had asthma coded as the primary diagnosis. The number of boys was higher than the number of girls, irrespective of age group or diagnostic position. The frequency of asthma as primary diagnosis decreased from 55.7% in 2011 to 43.96% in 2020 ($p < 0.001$). The incidence of hospitalizations because of asthma decreased significantly from 2011 to 2020, with a faster decrease from 2018 onwards. Over time, the proportion of older children increased. In the year 2020, only 55 children had codes for asthma and COVID-19 in their discharge report, and this infection had no effect on hospitalizations this year. A significant increase in the use of non-invasive ventilation (NIV) was observed over time. Irrespective of the diagnostic position, LOHS and IHM remained stable over time, with the IHM under 0.1%. Conclusion: Our results show a decrease in the incidence of hospital admissions with asthma either as the primary diagnosis or in any position. The age of children hospitalized seems to be increasing as the use of NIV. Better management of the disease from primary care and the emergency department as is the use of NIV could explain the reduction in incidence. What is Known: • Asthma is the most common chronic respiratory in childhood in high income countries. • The incidence of hospital admissions with asthma and associated factors is one of the best sources of information on morbidity trends and prognosis. What is New: • The incidence of hospital admissions for asthma in Spain decreased in children between 2011 and 2020 with a more frequent use of non-invasive mechanical ventilation and low mortality rates. • COVID-19 did not cause an increase in admissions with asthma in the year 2020.

Keywords: Asthma; COVID-19; Exacerbations; Hospitalization; Incidence; Mortality; Pediatric.

Conflict of interest statement

The authors declare no competing interests.

- 40 references
- 2 figures

SUPPLEMENTARY INFO

Grant supportexpand

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Curr Opin Pediatr

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. 2023 Mar 15.
doi: 10.1097/MOP.0000000000001237. Online ahead of print.

Climate change, air pollution, pollen allergy and extreme atmospheric events

Gennaro D'Amato[1], Maria D'Amato[2]
Affiliations expand

- PMID: 36917187

- DOI: 10.1097/MOP.0000000000001237

Abstract

Purpose of review: Respiratory allergy correlates strictly with air pollution and climate change. Due to climate change, the atmospheric content of trigger factors such as pollens and moulds increase and induce rhinitis and asthma in sensitized patients with IgE-mediated allergic reactions.Pollen allergy is frequently used to evaluate the relationship between air pollution and allergic respiratory diseases. Pollen allergens trigger the release of immunomodulatory and pro-inflammatory mediators and accelerate the onset of sensitization to respiratory allergens in predisposed children and adults. Lightning storms during pollen seasons can exacerbate respiratory allergy and asthma not only in adults but also in children with pollinosis. In this study, we have focalized the trigger (chemical and biologic) factors of outdoor air pollution.

Recent findings: Environmental pollution and climate change have harmful effects on human health, particularly on respiratory system, with frequent impact on social systems.Climate change is characterized by physic meteorological events inducing increase of production and emission of anthropogenic carbon dioxide (CO2) into the atmosphere. Allergenic plants produce more pollen as a response to high atmospheric levels of CO2. Climate change also affects extreme atmospheric events such as heat waves, droughts, thunderstorms, floods, cyclones and hurricanes. These climate events, in particular thunderstorms during pollen seasons, can increase the intensity of asthma attacks in pollinosis patients.

Summary: Climate change has important effects on the start and pathogenetic aspects of hypersensitivity of pollen allergy. Climate change causes an increase in the production of pollen and a change in the aspects increasing their allergenic properties. Through the effects of climate change, plant growth can be altered so that the new pollen produced are modified affecting more the human health. The need for public education and adoption of governmental measures to prevent environmental pollution and climate change are urgent. Efforts to reduce greenhouse gases, chemical and biologic contributors to air pollution are of critical importance. Extreme weather phenomena such as thunderstorms can trigger exacerbations of asthma attacks and need to be prevented with a correct information and therapy.

- 42 references

NPJ Prim Care Respir Med
.
2023 Mar 13;33(1):10.
doi: 10.1038/s41533-023-00332-z.

Predictive and prognostic value of leptin status in asthma

Juan Wang[#1], Ruochen Zhu[#2], Wenjing Shi[1], Song Mao[3]
Affiliations expand

- PMID: 36914629
- PMCID: PMC10011586
- DOI: 10.1038/s41533-023-00332-z

Free PMC article

Abstract

Asthma is closely associated with inflammation. We evaluated the predictive and prognostic value of leptin status in asthma. We searched the electronic databases for articles that determined the leptin level in asthma cases through May 2020. We compared the differences of leptin level between asthma and non-asthma controls, as well as between severe and mild asthma cases. We also investigated the impact of age and gender on these differences by using meta-regression analysis. 59 studies were included in our pooled analysis. Asthma cases demonstrated significantly higher leptin level than that in non-asthma controls among overall populations (SMD:1.061, 95% CI: 0.784-1.338, $p < 10^{-4}$), Caucasians (SMD:0.287, 95% CI: 0.125-0.448, p = 0.001), Asians (SMD:1.500, 95% CI: 1.064-1.936, $p < 10^{-4}$) and Africans (SMD: 8.386, 95% CI: 6.519-10.253, $p < 10^{-4}$). Severe asthma cases showed markedly higher leptin level than that in mild asthma cases among overall populations (SMD:1.638, 95% CI: 0.952-2.323, $p < 10^{-4}$) and Asians (SMD:2.600, 95% CI: 1.854-3.345, $p < 10^{-4}$). No significant difference of leptin level between severe and mild asthma was observed in Caucasians (SMD:-0.819, 95% CI: -1.998-0.360, p = 0.173).

Cumulative analyses yielded similar results regarding the difference of leptin status between asthma and non-asthma controls, as well as between severe and mild asthma cases among overall populations. Age and male/ female ratio were not associated with the difference of leptin status between asthma and non-asthma controls (coefficient:-0.031, 95% CI: -0.123-0.061, p = 0.495; coefficient:0.172, 95% CI: -2.445-2.789, p = 0.895), as well as between severe and mild asthma cases among overall populations (coefficient:-0.072, 95% CI: -0.208-0.063, p = 0.279; coefficient: 2.373, 95% CI: -0.414-5.161, p = 0.090). Asthma demonstrated significantly higher level of leptin than that in non-asthma controls among overall populations, Caucasians, Asians and Africans. Severe asthma cases showed markedly higher leptin level than that in mild cases among overall populations and Asians. Leptin may be a risk predictor and prognostic marker of asthma. Early monitoring and intervention of leptin may be needed for asthma.

Conflict of interest statement

The authors declare no competing interests.

- 79 references
- 5 figures

SUPPLEMENTARY INFO

MeSH terms, Substancesexpand

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Respirology

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. 2023 Mar 13.
doi: 10.1111/resp.14491. Online ahead of print.

Sputum periostin is a biomarker of type 2 inflammation but not airway dysfunction in asthma

Taha Al-Shaikhly[1,2], Ryan C Murphy[2,3], Ying Lai[2,3], Charles W Frevert[2,4], Jason S Debley[5,6], Steven F Ziegler[7], Kit Wong[8], Guiquan Jia[8], Cecile T J Holweg[8], Michael C Peters[9], Teal S Hallstrand[2,3]
Affiliations expand

- PMID: 36914406

- DOI: 10.1111/resp.14491

Free article

Abstract

Sputum periostin is a biomarker of type 2 inflammation but not airway dysfunction in asthma.

Keywords: IL-13; IL-4; IL-5; airway hyperresponsiveness; asthma; periostin; type-2.

SUPPLEMENTARY INFO

Publication types, Grant supportexpand

FULL TEXT LINKS

Review

Immunol Rev

-

. 2023 Mar 13.
doi: 10.1111/imr.13196. Online ahead of print.

The leukotriene B_4 receptors BLT1 and BLT2 as potential therapeutic targets

Takehiko Yokomizo[1], Takao Shimizu[2,3]
Affiliations expand

- PMID: 36908237

- DOI: 10.1111/imr.13196

Abstract

Leukotriene B_4 (LTB_4) was recognized as an arachidonate-derived chemotactic factor for inflammatory cells and an important drug target even before the molecular identification of its receptors. We cloned the high- and low-affinity LTB_4 receptors, BLT1 and BLT2, respectively, and examined their functions by generating and studying gene-targeted mice. BLT1 is involved in the pathogenesis of various inflammatory and immune diseases, including asthma, psoriasis, contact dermatitis, allergic conjunctivitis, age-related macular degeneration, and immune complex-mediated glomerulonephritis. Meanwhile, BLT2 is a high-affinity receptor for 12-hydroxyheptadecatrienoic acid, which is involved in the maintenance of dermal and intestinal barrier function, and the acceleration of skin and corneal wound healing. Thus, BLT1 antagonists and BLT2 agonists are promising candidates in the treatment of inflammatory diseases.

Keywords: GPCR; chemotaxis; immune response; inflammation; lipid mediators; wound healing.

- 129 references

SUPPLEMENTARY INFO

Publication types, Grant supportexpand

FULL TEXT LINKS

Am J Ind Med
.
. 2023 Mar 12.
doi: 10.1002/ajim.23472. Online ahead of print.

Work-related asthma consequences on socioeconomic, asthma control, quality of life, and psychological status compared with non-work-related asthma: A cross-sectional study in an upper-middle-income country

Lavinia Clara Del Roio[1], Rafael Stelmach[1], Rafael F Mizutani[1], Mario Terra-Filho[1], Ubiratan D P Santos[1]
Affiliations expand

- PMID: 36906884

- DOI: 10.1002/ajim.23472

Abstract

Background: Work-related asthma (WRA) is the most prevalent occupational respiratory disease, and it has negative effects on socioeconomic standing, asthma control, quality of life, and mental health status. Most of the studies on WRA consequences are from high-income countries; there is a lack of information on these effects in Latin America and in middle-income countries.

Methods: This study compared socioeconomic, asthma control, quality of life, and psychological outcomes among individuals diagnosed with WRA and non-work-related asthma (NWRA) in a middle-income country. Patients with asthma, related and not related to work, were interviewed using a structured questionnaire to assess their occupational history and socioeconomic conditions, and with questionnaires to assess asthma control (Asthma Control Test and Asthma Control Questionnaire-6), quality of life (Juniper's Asthma Quality of Life Questionnaire), and presence of anxiety and depression symptoms (Hospital Anxiety and Depression Scale). Each patient's medical record was reviewed for exams and use of medication, and comparisons were made between individuals with WRA and NWRA.

Results: The study included 132 patients with WRA and 130 with NWRA. Individuals with WRA had worse socioeconomic outcomes, worse asthma control, more quality-of-life impairment, and a higher prevalence of anxiety and depression than individuals with NWRA. Among individuals with WRA, those who had been removed from occupational exposure had a worse socioeconomic impact.

Conclusions: Consequences on socioeconomic, asthma control, quality of life, and psychological status are worse for WRA individuals when compared with NWRA.

Keywords: occupational asthma; quality of life; socioeconomic; work-exacerbated asthma; work-related asthma.

- 42 references

SUPPLEMENTARY INFO

Grant supportexpand

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28

J Asthma

. 2023 Mar 16;1-6.
doi: 10.1080/02770903.2023.2185894. Online ahead of print.

Small airway disease and asthma control

Seda Beyhan Sagmen[1], Berrin Zinnet Eraslan[1], Ersin Demirer[1], Nesrin Kiral[1], Sevda Comert[1]
Affiliations expand

- PMID: 36847658

- DOI: 10.1080/02770903.2023.2185894

Abstract

Aim: Maximum mid-expiratory flow (MMEF) is one of the pulmonary function tests that report small airway disease. Our study aimed to investigate the role of MMEF values in asthma control, the prevalence of small airway disease, and their effect on asthma control in patients with asthma with normal forced expiratory volume in one second (FEV_1) values.

Material and method: Patients who presented to the Chest Diseases outpatient clinic of our hospital between 2018 and 2019 and were diagnosed as having asthma were included in the study. The characteristics of the patients, pulmonary function tests, their asthma treatment, and asthma control test (ACT) scores were recorded. Patients with FEV_1 <80 in the pulmonary function test, those with additional lung disease, those who had an attack in the last 4 weeks, and patients who smoked were excluded from the study. MMEF <65 was defined as small airway disease.

Results: The MMEF% and MMEF (L/s) values of the group with uncontrolled asthma were found to be statistically significantly lower than those of the controlled asthma group (p = 0.016 and p = 0.003, respectively). MMEF% and MMEF (L/s) values in those with wheezing were found to be significantly lower compared with those without wheezing (p = 0.025 and p = 0.049, respectively). The MMEF% and MMEF (L/s) values of the patients with nocturnal symptoms were found to be statistically significantly lower than in patients without nocturnal symptoms (p = 0.023 and p = 0.041, respectively). ACT values of patients with MMEF <65 were found to be statistically lower than those of patients with MMEF >65 (0.047).

Conclusion: Considering small airway disease in patients with asthma may be beneficial in clinical practice.

Keywords: Asthma control; MMEF; allergic rhinitis; nocturnal symptoms; small airway disease.

Review

Eur J Med Chem

. 2023 Mar 15;250:115195.
doi: 10.1016/j.ejmech.2023.115195. Epub 2023 Feb 9.

Advances in the development of phosphodiesterase-4 inhibitors

Gang Li[1], Dengqin He[2], Xiaojia Cai[2], Wen Guan[1], Yali Zhang[1], Jia-Qiang Wu[2], Hongliang Yao[3]
Affiliations expand

- PMID: 36809706

- DOI: 10.1016/j.ejmech.2023.115195

Abstract

Phosphodiesterase 4 (PDE4) hydrolyzes cyclic adenosine monophosphate (cAMP) and plays a vital roles in many biological processes. PDE4 inhibitors have been widely studied as therapeutics for the treatment of various diseases, including asthma, chronic obstructive pulmonary disease (COPD) and psoriasis. Many PDE4 inhibitors have progressed to clinical trials and some have been approved as therapeutic drugs. Although many PDE4 inhibitors have been approved to enter clinical trials, however, the development of PDE4 inhibitors for the treatment of COPD or psoriasis has been hampered by their side effects of emesis. Herein, this review summarizes advances in the development of PDE4 inhibitors over the last ten years, focusing on PDE4 sub-family selectivity, dual target drugs, and therapeutic

potential. Hopefully, this review will contribute to the development of novel PDE4 inhibitors as potential drugs.

Keywords: Asthma; COPD; PDE4; Psoriasis; cAMP.

Conflict of interest statement

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

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

FULL TEXT LINKS

Review

Eur J Med Chem
. 2023 Mar 15;250:115194.
doi: 10.1016/j.ejmech.2023.115194. Epub 2023 Feb 9.

Advances in the development of phosphodiesterase 7 inhibitors

Jia-Xi Huang[1], Bo-Lin Zhu[1], Jiang-Ping Xu[1], Zhong-Zhen Zhou[2]
Affiliations expand

- PMID: 36796299

- DOI: 10.1016/j.ejmech.2023.115194

Abstract

Phosphodiesterase 7 (PDE7) specifically hydrolyzes cyclic adenosine monophosphate (cAMP), a second messenger that plays essential roles in cell signaling and physiological processes. Many PDE7 inhibitors used to investigate the role of PDE7 have displayed efficacy in the treatment of a wide range of diseases, such as asthma and central nervous system (CNS) disorders. Although PDE7 inhibitors are developed more slowly than PDE4 inhibitors, there is increasing recognition of PDE7 inhibitors as potential therapeutics for no nausea and vomiting secondary. Herein, we summarized the advances in PDE7 inhibitors over the past decade, focusing on their crystal structures, key pharmacophores, subfamily selectivity, and therapeutic potential. Hopefully, this summary will lead to a better understanding of PDE7 inhibitors and provide strategies for developing novel therapies targeting PDE7.

Keywords: Key pharmacophores; Phosphodiesterase 7 inhibitors; Subfamily selectivity; Therapeutic potential.

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 Mar 15;250:115175.
doi: 10.1016/j.ejmech.2023.115175. Epub 2023 Feb 7.

Expanding role of CXCR2 and therapeutic potential of CXCR2 antagonists in inflammatory diseases and cancers

Yishi Xie[1], Wenbin Kuang[1], Dawei Wang[1], Kai Yuan[1], Peng Yang[2]
Affiliations expand

- PMID: 36780833

- DOI: 10.1016/j.ejmech.2023.115175

Abstract

C-X-C motif chemokine receptor 2 (CXCR2) is G protein-coupled receptor (GPCR) and plays important roles in various inflammatory diseases and cancers, including chronic obstructive pulmonary disease (COPD), atherosclerosis, asthma, and pancreatic cancer. Upregulation of CXCR2 is closely associated with the migration of neutrophils and monocytes. To date, many small-molecule CXCR2 antagonists have entered clinical trials, showing favorable safety and therapeutic effects. Hence, we provide an overview containing the discovery history, protein structure, signaling pathways, biological functions, structure-activity relationships and clinical significance of CXCR2 antagonists in inflammatory diseases and cancers. According to the latest development and recent clinical progress of CXCR2 small molecule antagonists, we speculated that CXCR2 can be used as a biomarker and a new target for diabetes and that CXCR2 antagonists may also attenuate lung injury in coronavirus disease 2019 (COVID-19).

Keywords: CXCR2; CXCR2 antagonist; Cancer; Chronic obstructive pulmonary disease (COPD); Coronavirus disease 2019 (COVID-19); Inflammatory disease.

Conflict of interest statement

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

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

FULL TEXT LINKS

ELSEVIER FULL-TEXT ARTICLE

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32

Eur Respir J

. 2023 Mar 16;61(3):2201335.
doi: 10.1183/13993003.01335-2022. Print 2023 Mar.

Dupilumab increases aspirin tolerance in NSAID-exacerbated respiratory disease

Sven Schneider[1], Katharina Poglitsch[2], Christina Morgenstern[3], Tamara Quint[2], Katharina Gangl[1], Christoph Sinz[2], Tina Bartosik[1], Nicholas James Campion[1], David Tianxiang Liu[1], Lukas David Landegger[1], Aldine Tu[1], Victoria Stanek[1], Marianne Rocha-Hasler[1], Christine Bangert[4], Julia Eckl-Dorna[1]
Affiliations expand

- PMID: 36549708
- PMCID: PMC10017890
- DOI: 10.1183/13993003.01335-2022

Abstract

Background: Nonsteroidal anti-inflammatory drug (NSAID)-exacerbated respiratory disease (N-ERD) comprises the triad of chronic rhinosinusitis with nasal polyps, asthma and intolerance to NSAIDs. Dupilumab treatment, targeting the interleukin-4 (IL-4) receptor α, significantly reduces polyp burden as well as asthma symptoms. Here we aimed to investigate the effect of dupilumab on aspirin intolerance, burden of disease and nasal cytokine profiles in patients with N-ERD.

Methods: In this open-label trial, adult patients with confirmed N-ERD were treated with dupilumab for 6 months. Clinical parameters (*e.g.* total polyp scores, quality of life questionnaires, smell test, spirometry), oral aspirin provocation testing and blood, nasal and urine sampling were monitored at regular intervals for up to 6 months after starting dupilumab therapy.

Results: Of the 31 patients included in the study, 30 completed both aspirin provocation tests. After 6 months of treatment with dupilumab, 23% of patients (n=7 of 30) developed complete aspirin tolerance and an additional 33% of patients (n=10 of 30) tolerated higher doses. Polyp burden was significantly reduced (total polyp score: -2.68±1.84, $p<0.001$), while pulmonary symptoms (asthma control test: +2.34±3.67, $p<0.001$) and olfactory performance improved (University of Pennsylvania Smell Identification Test: +11.16±9.54, $p<0.001$) in all patients after therapy. Patients with increased aspirin tolerance showed a significant decrease in urinary leukotriene E4 levels and their improvement in clinical parameters was associated with a reduction of eotaxin-1, C-C motif chemokine ligand 17, IL-5, IL-17A and IL-6.

Conclusion: In this study, 57% of N-ERD patients tolerated higher doses of aspirin under dupilumab therapy.

Conflict of interest statement

Conflict of interest: S. Schneider served as a speaker and/or consultant and/or advisory board member for Sanofi and Novartis; and is an investigator for Novartis and AstraZeneca (grants paid to his institution). T. Bartosik received personal fees from Sanofi. L.D. Landegger served as an independent consultant for Conclave Capital and Gerson Lehrman Group, is an investigator for Decibel Therapeutics and Amgen (grants paid to his institution), and acts as Chair of the Membership Committee for Association for Research in Otolaryngology (ARO). M. Rocha-Hasler reports grants from AstraZeneca. C. Bangert has received personal fees from Mylan, LEO Pharma, Pfizer, Sanofi Genzyme, Eli Lilly, Novartis, AstraZeneca and AbbVie, and is an investigator for Novartis, Sanofi, AbbVie, Elli Lilly, LEO Pharma and Galderma (grants paid to her institution). J. Eckl-Dorna served as a speaker

and/or consultant and/or advisory board member for Sanofi, Allergopharma, AstraZeneca, GSK, Bencard and Novartis, and is an investigator for Novartis and AstraZeneca (grants paid to her institution). All other authors declare no conflict of interest.

Comment in

- NSAID-exacerbated respiratory disease, dupilumab and aspirin tolerance.
  Cockcroft DW.Eur Respir J. 2023 Mar 16;61(3):2202467. doi: 10.1183/13993003.02467-2022. Print 2023 Mar.PMID: 36927861 No abstract available.

- 39 references
- 6 figures

33
Sci Total Environ
. 2023 Mar 15;864:160879.
doi: 10.1016/j.scitotenv.2022.160879. Epub 2022 Dec 12.

Prediction of airborne pollen and sub-pollen particles for thunderstorm asthma outbreaks assessment

Slobodan Nickovic[1], Slavko Petković[2], Luka Ilić[3], Goran Pejanović[2], Zoran Mijić[3], Alfredo Huete[4], Guy Marks[5]
Affiliations expand

- PMID: 36521601

- DOI: 10.1016/j.scitotenv.2022.160879

Abstract

When exposed to convective thunderstorm conditions, pollen grains can rupture and release large numbers of allergenic sub-pollen particles (SPPs). These sub-pollen particles easily enter deep into human lungs, causing an asthmatic response named thunderstorm asthma (TA). Up to now, efforts to numerically predict the airborne SPP process and to forecast the occurrence of TAs are unsatisfactory. To overcome this problem, we have developed a physically-based pollen model (DREAM-POLL) with parameterized formation of airborne SPPs caused by convective atmospheric conditions. We ran the model over the Southern Australian grass fields for 2010 and 2016 pollen seasons when four largest decadal TA epidemics happened in Melbourne. One of these TA events (in November 2016) was the worldwide most extreme one which resulted to nine deaths and hundreds of hospital patient presentations. By executing the model on a day-by-day basis in a hindcast real-time mode we predicted SPP peaks exclusively only when the four major TA outbreaks happened, thus achieving a high forecasting success rate. The proposed modelling system can be easily implemented for other geographical domains and for different pollen types.

Keywords: Asthma epidemics; Extreme pollen episodes; Particle rupturing; Pollen numerical model.

Conflict of interest statement

Declaration of competing interest The authors declare no competing interests.

Am J Respir Crit Care Med

. 2023 Mar 15;207(6):790-792.

doi: 10.1164/rccm.202209-1654LE.

Elevated Childhood Insulin-related Asthma Is a Risk Factor for Reduced Lung Function

Tara F Carr[1], Debra A Stern[1], Wayne Morgan[1], Stefano Guerra[1], Fernando D Martinez[1]
Affiliations expand

- PMID: 36521027

- DOI: 10.1164/rccm.202209-1654LE

No abstract available

SUPPLEMENTARY INFO

Publication types, Grant supportexpand

FULL TEXT LINKS

Ann Work Expo Health

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-
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. 2023 Mar 15;67(3):297-302.
doi: 10.1093/annweh/wxac079.

Main Causal Agents of Occupational Asthma in France, Reported to the National Network for Occupational

Disease Vigilance and Prevention (RNV3P) 2001-2018

D Lucas[1,2], C Robin[1], N Vongmany[3], J D Dewitte[1,4], B Loddé[1,2], R Pougnet[1,4], L Larabi[3]; RNV3P members
Affiliations expand

- PMID: 36477519

- DOI: 10.1093/annweh/wxac079

Abstract

Objectives: The definition of work-related Asthma (WRA) has changed in recent years and new etiologies and agents have been identified. The aim of this study is to describe the main causal agents of WRA in France in the period 2001-2018 in the main work sectors.

Methods: Data were collected from the French national network of occupational health surveillance and prevention [Réseau National de Vigilance et de Prévention des Pathologies Professionnelles (RNV3P)], Data between 2001 and 2018 with at least a probable or certain association with one occupational agent, were included.

Results: Work sectors with more cases OF WRA included personal service activities (10.6%), food industry (10.2%) and healthcare activities (7.6%). WRA cases were most frequently related to flour (10%), quaternary ammoniums compounds (5.3%), isocyanates (5.1%) and cleaning products (4.8%).

Conclusion: Occupational exposure to specific agents capable of causing WRA is still present, and four agents represent more than 25% of the cases. Actions to prevent respiratory exposure are still relevant.

Keywords: causal agents; national network; occupational asthma.

Occup Med (Lond)
.
. 2023 Mar 15;73(2):109-111.
doi: 10.1093/occmed/kqac093.

The antioxidant, tert-butylhydroquinone: a new cause of asthma

D L Sherson[1,2], I B Jacobsen[1], G F Thomsen[3]
Affiliations expand

- PMID: 36097691

- DOI: 10.1093/occmed/kqac093

Abstract

The antioxidant, tert-butylhydroquinone (TBHQ), a common additive in food and cosmetics can cause allergic contact dermatitis. A 49-year-old non-atopic male factory worker developed asthma in connection with cleaning mixing drums containing TBHQ. Due to the suspicion that TBHQ might be the cause of asthma, a specific inhalation challenge was carried out. Lactose was used as a control agent. The following day he developed asthma symptoms with a 41% drop in FEV1 after 30-min exposure to small amounts of TBHQ and water. Methacholine reactivity increased 5-fold after TBHQ exposure compared to pre-exposure reactivity. This suggests that TBHQ may be the cause of asthma in this case. Due to this case respirators were introduced in the factory to reduce TBHQ exposure. TBHQ has not previously been shown to cause asthma.

RHINITIS

CHRONIC COUGH

1
Review

Respir Med

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. 2023 Mar 15;107217.
doi: 10.1016/j.rmed.2023.107217. Online ahead of print.

Towards development of evidence to inform recommendations for the evaluation and management of bronchiectasis

Patrick A Flume[1], Ashwin Basavaraj[2], Bryan Garcia[3], Kevin Winthrop[4], Emily Di Mango[5], Charles L Daley[6], Julie V Philley[7], Emily Henkle[8], Anne E O'Donnell[9], Mark Metersky[10]
Affiliations expand

- PMID: 36931575

- DOI: 10.1016/j.rmed.2023.107217

Abstract

Bronchiectasis (BE) is a chronic condition characterized by airway dilation as a consequence of a variety of pathogenic processes. It is often associated with persistent airway infection and an inflammatory response resulting in cough productive of purulent sputum, which has an adverse impact on quality of life. The prevalence of BE is increasing worldwide. Treatment guidelines exist for managing BE, but they are generally informed by a paucity of high-quality evidence. This review presents the findings of a scientific advisory board of

experts held in the United States in November 2020. The main focus of the meeting was to identify unmet needs in BE and propose ways to identify research priorities for the management of BE, with a view to developing evidence-based treatment recommendations. Key issues identified include diagnosis, patient evaluation, promoting airway clearance and appropriate use of antimicrobials. Unmet needs include effective pharmacological agents to promote airway clearance and reduce inflammation, control of chronic infection, clinical endpoints to be used in the design of BE clinical trials, and more accurate classification of patients using phenotypes and endotypes to better guide treatment decisions and improve outcomes.

Keywords: Antimicrobials; Bronchiectasis; Clinical trials; Evidence-based treatment; Health-related quality of life; Unmet needs.

Conflict of interest statement

Declaration of competing interest Patrick A. Flume has received grant support from Abbvie, Armata, AstraZeneca, Corbus Pharmaceuticals, Cystic Fibrosis Foundation Therapeutics, Insmed, Janssen, Merck, National Institutes of Health, Novartis, Novoteris, Novovax, Proteostasis Therapeutics, Savara, Sound Pharmaceuticals, Inc. and Vertex Pharmaceuticals, Inc., and consultancy fees from Arrevus, Chiesi, Corbus Pharmaceuticals, Eloxx Pharmaceuticals, Hill-Rom, Insmed, Ionis Pharmaceuticals, Janssen Research and Development, McKesson, Merck, Novartis, Polyphor, Proteostasis Therapeutics, Santhera, Savara and Vertex Pharmaceuticals, Inc. Ashwin Basavaraj has acted as a consultant and advisory board participant for Insmed, Hill-Rom, Dymedso, Physioassist and Zambon, is a principal investigator in a clinical trial with Hill-Rom, and has received grant support from Insmed. Bryan Garcia has received grant support from the Cystic Fibrosis Foundation, CHEST Foundation, and consulting honoraria from Zambon, Insmed, Synspira and Resbiotic. Kevin Winthrop has received grant support from Pfizer, BMS, Insmed and the Cystic Fibrosis Foundation, and consulting honoraria from Novartis, Zambon, Insmed, Janssen, Redhills Biopharma, Paratek and Bayer. Emily Di Mango reports receiving advisory board fees from Zambon in 2019 and from Contrafect Pharmaceuticals in 2021. Charles L. Daley has received grant support from the Cystic Fibrosis Foundation, Insmed, Spero, Paratek and BugWorks, and consulted with AstraZeneca, Genentech, Pfizer, Insmed, Spero, Paratek, Beyond Air, AN2, Matinas and Zambon. Julie V. Philley has received grant support from Insmed, AN2, Paratek, Redhill, Electromed, Zambon and Hill Rom, and has been a consultant for Insmed, Paratek, AN2 and Electromed. Emily Henkle has been an advisory board participant for Zambon. Anne E. O'Donnell has received grant support from Insmed, Paratek, Redhill, Zambon, Janssen, and Astra Zeneca and has received consulting honoraria from Insmed, Paratek, Zambon, Boehringer Ingelheim, Astra Zeneca and Electromed. Mark Metersky has been a consultant for Savara, Insmed, International Biophysics, Zambon and Boehringer Ingelheim, and received clinical trial funding from Insmed.

SUPPLEMENTARY INFO

PLoS One
.
. 2023 Mar 17;18(3):e0283352.
doi: 10.1371/journal.pone.0283352. eCollection 2023.

Clinical phenotypes of chronic cough categorised by cluster analysis

Jiyeon Kang[1], Woo Jung Seo[1], Jieun Kang[1], So Hee Park[1], Hyung Koo Kang[1], Hye Kyeong Park[1], Sung-Soon Lee[1], Ji-Yong Moon[2], Deog Kyeom Kim[3], Seung Hun Jang[4], Jin Woo Kim[5], Minseok Seo[6], Hyeon-Kyoung Koo[1]
Affiliations expand

- PMID: 36930618
- PMCID: PMC10022767
- DOI: 10.1371/journal.pone.0283352

Abstract

Background: Chronic cough is a heterogeneous disease with various aetiologies that are difficult to determine. Our study aimed to categorise the phenotypes of chronic cough.

Methods: Adult patients with chronic cough were assessed based on the characteristics and severity of their cough using the COugh Assessment Test (COAT) and the Korean version of the Leicester Cough Questionnaire. A cluster analysis was performed using the K-prototype, and the variables to be included were determined using a correlation network.

Results: In total, 255 participants were included in the analysis. Based on the correlation network, age, score for each item, and total COAT score were selected for the cluster analysis. Four clusters were identified and characterised as follows: 1) elderly with mild cough, 2) middle-aged with less severe cough, 3) relatively male-predominant youth with severe cough, and 4) female-predominant elderly with severe cough. All clusters had distinct demographic and symptomatic characteristics and underlying causes.

Conclusions: Cluster analysis of age, score for each item, and total COAT score identified 4 distinct phenotypes of chronic cough with significant differences in the aetiologies. Subgrouping patients with chronic cough into homogenous phenotypes could provide a stratified medical approach for individualising diagnostic and therapeutic strategies.

Conflict of interest statement

The authors have declared that no competing interests exist.

- 23 references
- 5 figures

SUPPLEMENTARY INFO

Grant supportexpand
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Review

Neuropharmacology
.
. 2023 Mar 13;109503.
doi: 10.1016/j.neuropharm.2023.109503. Online ahead of print.

New paradigms in purinergic receptor ligand discovery

Kenneth A Jacobson [1], Balaram Pradhan [2], Zhiwei Wen [3], Asmita Pramanik [4]
Affiliations expand

- PMID: 36921890

- DOI: 10.1016/j.neuropharm.2023.109503

Abstract

The discovery and clinical implementation of modulators of adenosine, P2Y and P2X receptors have progressed dramatically in ~50 years since Burnstock's definition of purinergic signaling. Although most clinical trials of selective ligands (agonists and antagonists) of these nineteen receptors failed, there is a renewed impetus to redirect efforts to new disease conditions and the discovery of more selective or targeted compounds with potentially reduced side effects, such as biased GPCR agonists. The elucidation of new receptor and enzyme structures is steering rational design of potent and selective agonists, antagonists, allosteric modulators and inhibitors. A_{2A} adenosine receptor (AR) antagonists are being applied to neurodegenerative conditions and cancer immunotherapy. A_3AR agonists have potential for treating chronic inflammation (e.g. psoriasis), stroke and pain, as well as cancer. P2YR modulators are being considered for treating inflammation, metabolic disorders, acute kidney injury, cancer, pain and other conditions, often with an immune mechanism. ADP-activated $P2Y_{12}$R antagonists are widely used as antithrombotic drugs, while their repurposing toward neuroinflammation is considered. P2X3 antagonists have been in clinical trials for chronic cough. P2X7 antagonists have been in clinical trials for inflammatory diseases and depression (compounds that penetrate the blood-brain barrier). Thus, purinergic signaling is now recognized as an immense regulatory system in the body for rebalancing tissues and organs under stress, which can be adjusted by drug intervention for therapeutic purposes. The lack of success of many previous clinical trials can be overcome given more advanced pharmacokinetic and pharmacodynamic approaches, including structure-based drug design, prodrugs and biased signaling.

Keywords: Adenosine receptor; Drug discovery; GPCR ion Channel; P2X receptor; P2Y receptor.

Conflict of interest statement

Declaration of competing interest The authors (KAJ, BP, ZW, and AP) 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 Public Health
. 2023 Mar 13;23(1):485.
doi: 10.1186/s12889-023-15368-6.

"Honestly, this problem has affected me a lot": a qualitative exploration of the lived experiences of people with chronic respiratory disease in Sudan and Tanzania

Uzochukwu Egere[1], Elizabeth H Shayo[2,3], Martha Chinouya[4], Miriam Taegtmeyer[2,5], Jane Ardrey[2], Stellah Mpagama[6,7], Nyanda Elias Ntinginya[8], Rana Ahmed[9], El Hafiz Hussein[9], Asma El Sony[9], Tom Wingfield[2,5,10,11], Angela Obasi[2,12], Rachel Tolhurst[2], IMPALA Consortium
Collaborators, Affiliations expand

- PMID: 36915117
- PMCID: PMC10010645
- DOI: 10.1186/s12889-023-15368-6

Abstract

Background: Over 500 million people live with chronic respiratory diseases globally and approximately 4 million of these, mostly from the low- and middle-income countries including sub-Saharan Africa, die prematurely every year. Despite high CRD morbidity and mortality, only very few studies describe CRDs and little is known about the economic, social and psychological dimensions of living with CRDs in sub-Saharan Africa. We aimed to gain an in-depth understanding of the social, livelihood and psychological dimensions of living with CRD to inform management of CRDs in Sudan and Tanzania.

Method: We conducted 12 in-depth interviews in 2019 with people with known or suspected CRD and 14 focus group discussions with community members in Gezira state, Sudan and Dodoma region, Tanzania, to share their understanding and experience with CRD. The data was analysed using thematic framework analysis.

Results: People with CRD in both contexts reported experiences under two broad themes: impact on economic wellbeing and impact on social and psychological wellbeing. Capacity to do hard physical work was significantly diminished, resulting in direct and indirect economic impacts for them and their families. Direct costs were incurred while seeking healthcare, including expenditures on transportation to health facility and procurement of diagnostic tests and treatments, whilst loss of working hours and jobs resulted in substantial indirect costs. Enacted and internalised stigma leading to withdrawal and social exclusion was described by participants and resulted partly from association of chronic cough with tuberculosis and HIV/AIDS. In Sudan, asthma was described as having negative impact on marital prospects for young women and non-disclosure related to stigma was a particular issue for young people. Impaired community participation and restrictions on social activity led to psychological stress for both people with CRD and their families.

Conclusion: Chronic respiratory diseases have substantial social and economic impacts among people with CRD and their families in Sudan and Tanzania. Stigma is particularly strong and appears to be driven partly by association of chronic cough with infectiousness. Context-appropriate measures to address economic impacts and chronic cough stigma are urgently needed as part of interventions for chronic respiratory diseases in these sub-Saharan African contexts.

Keywords: Chronic respiratory disease; Healthcare seeking; Psychosocial; Socioeconomic; Stigma.

Conflict of interest statement

The authors declare no competing interests.

- 52 references

SUPPLEMENTARY INFO

Publication types, MeSH terms, Grant supportexpand

FULL TEXT LINKS

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BRONCHIECTASIS

1
Review

Respir Med
.
. 2023 Mar 15;107217.
doi: 10.1016/j.rmed.2023.107217. Online ahead of print.

Towards development of evidence to inform recommendations for the evaluation and management of bronchiectasis

Patrick A Flume[1], Ashwin Basavaraj[2], Bryan Garcia[3], Kevin Winthrop[4], Emily Di Mango[5], Charles L Daley[6], Julie V Philley[7], Emily Henkle[8], Anne E O'Donnell[9], Mark Metersky[10]
Affiliations expand

- PMID: 36931575

- DOI: 10.1016/j.rmed.2023.107217

Abstract

Bronchiectasis (BE) is a chronic condition characterized by airway dilation as a consequence of a variety of pathogenic processes. It is often associated with persistent airway infection and an inflammatory response resulting in cough productive of purulent sputum, which has an adverse impact on quality of life. The prevalence of BE is increasing worldwide. Treatment guidelines exist for managing BE, but they are generally informed by a paucity of high-quality evidence. This review presents the findings of a scientific advisory board of experts held in the United States in November 2020. The main focus of the meeting was to identify unmet needs in BE and propose ways to identify research priorities for the management of BE, with a view to developing evidence-based treatment recommendations. Key issues identified include diagnosis, patient evaluation, promoting airway clearance and appropriate use of antimicrobials. Unmet needs include effective pharmacological agents to promote airway clearance and reduce inflammation, control of chronic infection, clinical endpoints to be used in the design of BE clinical trials, and more accurate classification of patients using phenotypes and endotypes to better guide treatment decisions and improve outcomes.

Keywords: Antimicrobials; Bronchiectasis; Clinical trials; Evidence-based treatment; Health-related quality of life; Unmet needs.

Conflict of interest statement

Declaration of competing interest Patrick A. Flume has received grant support from Abbvie, Armata, AstraZeneca, Corbus Pharmaceuticals, Cystic Fibrosis Foundation Therapeutics, Insmed, Janssen, Merck, National Institutes of Health, Novartis, Novoteris, Novovax, Proteostasis Therapeutics, Savara, Sound Pharmaceuticals, Inc. and Vertex Pharmaceuticals, Inc., and consultancy fees from Arrevus, Chiesi, Corbus Pharmaceuticals, Eloxx Pharmaceuticals, Hill-Rom, Insmed, Ionis Pharmaceuticals, Janssen Research and Development, McKesson, Merck, Novartis, Polyphor, Proteostasis Therapeutics, Santhera, Savara and Vertex Pharmaceuticals, Inc. Ashwin Basavaraj has acted as a consultant and advisory board participant for Insmed, Hill-Rom, Dymedso, Physioassist and Zambon, is a principal investigator in a clinical trial with Hill-Rom, and has received grant support from Insmed. Bryan Garcia has received grant support from the Cystic Fibrosis Foundation, CHEST Foundation, and consulting honoraria from Zambon, Insmed, Synspira and Resbiotic. Kevin Winthrop has received grant support from Pfizer, BMS, Insmed and the Cystic Fibrosis Foundation, and consulting honoraria from Novartis, Zambon, Insmed, Janssen, Redhills Biopharma, Paratek and Bayer. Emily Di Mango reports receiving advisory board fees from Zambon in 2019 and from Contrafect Pharmaceuticals in 2021. Charles L. Daley has received grant support from the Cystic Fibrosis Foundation, Insmed, Spero, Paratek and BugWorks, and consulted with AstraZeneca, Genentech, Pfizer, Insmed, Spero, Paratek, Beyond Air, AN2, Matinas and Zambon. Julie V. Philley has received grant support

from Insmed, AN2, Paratek, Redhill, Electromed, Zambon and Hill Rom, and has been a consultant for Insmed, Paratek, AN2 and Electromed. Emily Henkle has been an advisory board participant for Zambon. Anne E. O'Donnell has received grant support from Insmed, Paratek, Redhill, Zambon, Janssen, and Astra Zeneca and has received consulting honoraria from Insmed, Paratek, Zambon, Boehringer Ingelheim, Astra Zeneca and Electromed. Mark Metersky has been a consultant for Savara, Insmed, International Biophysics, Zambon and Boehringer Ingelheim, and received clinical trial funding from Insmed.

SUPPLEMENTARY INFO

Publication typesexpand

Clin Respir J

. 2023 Mar 16.
doi: 10.1111/crj.13605. Online ahead of print.

Down-expression of Foxj1 on airway epithelium with impaired cilia architecture in non-cystic fibrosis bronchiectasis implies disease severity

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Affiliations expand

- PMID: 36929635

- DOI: 10.1111/crj.13605

Abstract

Introduction: The pathogenesis of non-cystic fibrosis bronchiectasis has not been clearly clarified. This study aimed to investigate the expression of ciliary regulating protein

forkhead box protein j1 (Foxj1) on airway epithelium in non-cystic fibrosis bronchiectasis and its association with airway cilia structure disorder and disease severity.

Methods: Lung tissue sections excised from 47 patients with non-cystic fibrosis bronchiectasis were included between January 2018 and June 2021. Specimens from 26 subjects who underwent a lobectomy due to lung nodule were chosen as controls. Clinical information was collected, and pathologic analysis was performed to assess the epithelial structure and expression of ciliary regulating Foxj1.

Results: Of the 47 patients with non-cystic fibrosis bronchiectasis, 25 were considered as mild, 12 were moderate whereas the remaining 10 cases were severe according to the bronchiectasis severity index score evaluation. Epithelial hyperplasia, hyperplasia of goblet cells and inflammatory cell infiltration were observed in non-cystic fibrosis bronchiectasis, compared with control subjects. Cilia length in non-cystic fibrosis bronchiectasis patients were shorter than that in the control group, (5.34 ± 0.89) μm versus (7.34 ± 0.71) μm, respectively ($P = 0.002$). The expression of Foxj1 was (2.69 ± 1.09) × 10^6 in non-cystic fibrosis bronchiectasis, compared with (6.67 ± 1.15) × 10^6 in the control group ($P = 0.001$). Moreover, patients with lower expression of Foxj1 showed shorter airway cilia and worse in disease severity.

Conclusion: Foxj1 declined in the airway epithelium of patients with non-cystic fibrosis bronchiectasis, positively correlated to cilia length and might imply worse disease severity.

Keywords: airway epithelium; cilia disorder; forkhead box protein j1; non-cystic fibrosis bronchiectasis; pathogenesis.

- 29 references

PLoS One

. 2023 Mar 16;18(3):e0282393.
doi: 10.1371/journal.pone.0282393. eCollection 2023.

Evaluation of outcome reporting in clinical trials of physiotherapy in bronchiectasis: The first stage of core outcome set development

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Affiliations expand

- PMID: 36928192
- PMCID: PMC10019700
- DOI: 10.1371/journal.pone.0282393

Abstract

Introduction: The aim of this study is to explore outcomes currently reported in physiotherapy trials for bronchiectasis and investigate the level of consistency in outcome reporting. This mapping of outcomes will be used to inform the development of a core outcome set (COS) for physiotherapy research in bronchiectasis. Outcomes reported in randomised clinical trials (RCTs) and RCT protocols were reviewed and evaluated. We included trials with physiotherapy as the main intervention, including pulmonary rehabilitation, exercise prescription, airway clearance, positive expiratory pressure devices, breathing training, self-management plans, and home exercise program. Medline, CINAHL, Scopus, Cochrane Central Register of Controlled Trials (CENTRAL), and the physiotherapy evidence database (PEDro) were searched from inception using a prespecified search strategy. Records including adult patients with bronchiectasis were included. Outcomes were listed verbatim and categorised into domains based on a pre-specified system, frequency of reporting and sources of variation were inspected.

Results: Of 2158 abstracts screened, 37 trials (1202 participants) and 17 trial protocols were identified. Eighteen different physiotherapy techniques were investigated. A total of 331 outcomes were reported. No single outcome was reported by all trials. The most reported outcomes were lung function (27 trials, 50%), health related quality of life (26 trials, 48.1%), and dyspnoea (18 trials, 33.3%). A list of 104 unique outcomes covering 23 domains was created. Trials focus on physiological outcomes, mainly those related to

respiratory system functions. Outcomes related to functioning and life impact are often neglected.

Conclusion: Outcome reporting in physiotherapy research for bronchiectasis was found to be inconsistent in terms of choosing and defining outcomes. Developing a core outcome set in this area of research is needed to facilitate aggregation of future trial results in systematic reviews that will in turn inform the strength of evidence for the effectiveness of physiotherapy. Outcome choice should include all stakeholders, including patients.

Trial registration: This study is registered in the PROSPERO registry under the number CRD42021266247.

Conflict of interest statement

The authors have declared that no competing interests exist.

- 90 references
- 3 figures

SUPPLEMENTARY INFO

Grant supportexpand
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4

Am J Med Sci
.
. 2023 Mar 14;S0002-9629(23)01069-8.
doi: 10.1016/j.amjms.2023.03.009. Online ahead of print.

Clinical relevance of bronchiectasis in patients with community-acquired pneumonia

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- PMID: 36925064

- DOI: 10.1016/j.amjms.2023.03.009

Abstract

Background: Data regarding the clinical characteristics and treatment outcomes of patients with community-acquired pneumonia (CAP) and bronchiectasis (BE) are rare. This study aims to elucidate the clinical relevance of BE in patients with CAP.

Methods: Patients hospitalized with CAP in a single center were retrospectively analyzed and divided into significant BE (BE with ≥ 3 lobes or cystic BE on computed tomography) and control groups. Clinical and microbiological characteristics were compared between the two groups.

Results: In the final analysis, 2112 patients were included, and 104 (4.9%) had significant BE. The significant BE group exhibited a higher prevalence of sputum production, dyspnea, and complicated parapneumonic effusion or empyema than the control group. Pseudomonas aeruginosa was more frequently isolated in the significant BE group than in the control group, whereas Mycoplasma pneumoniae was less commonly identified. Length of hospital stay (LOS) was significantly longer in the significant BE group than the control group (12 [8-17] days vs. 9 [6-13] days, $p < 0.001$). In contrast, 30-day and in-hospital mortality rates did not significantly differ between the two groups. Furthermore, significant BE was an independent predictor of prolonged hospitalization in two models based on CURB-65 and pneumonia severity index.

Conclusions: Significant BE occurred in approximately 5% of patients with CAP and was more likely to be associated with sputum, dyspnea, complicated parapneumonic effusion or empyema, and isolation of P. aeruginosa. Significant BE was an independent predictor of LOS in patients with CAP.

Keywords: bronchiectasis; community-acquired infections; length of stay; pneumonia.

Conflict of interest statement

Declaration of Competing Interest The authors have no potential conflicts of interest relevant to this study.

Review

Respirology
.
. 2023 Mar 15.
doi: 10.1111/resp.14489. Online ahead of print.

Contemporary Concise Review 2022: Chronic obstructive pulmonary disease

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Affiliations expand

- PMID: 36922031

- DOI: 10.1111/resp.14489

Abstract

International respiratory organizations now recommend using lower limit of normal and standardized residuals to diagnose airflow obstruction and COPD though using a fixed ratio <0.7 is simpler and robustly predicts important clinical outcomes. The most common COPD comorbidities are coronary artery calcification, emphysema and bronchiectasis. COPD patients with psychological (high anxiety and depression) and cachectic (underweight and osteoporotic) comorbidity have higher mortality and exacerbate more. Serum eosinophil count remains an important COPD biomarker and we have greater clarity about normal eosinophil levels in COPD and the wider population. Criteria for entry into COPD clinical trials continue to exclude many patients, in particular those at greater risk of

exacerbation and death. The effect of hyperinflation on cardiac function impacts COPD mortality and is an important target for successful lung volume reduction procedures.

Keywords: COPD comorbidity; COPD diagnosis; COPD exacerbation; COPD treatment; chronic obstructive pulmonary disease.

- 62 references

SUPPLEMENTARY INFO

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FULL TEXT LINKS

WILEY Full Text Article

Proceed to details

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6

Pediatr Res

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. 2023 Mar 13.
doi: 10.1038/s41390-023-02532-2. Online ahead of print.

Isolated abnormal FEF75% detects unsuspected bronchiolar obstruction in CF children

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- PMID: 36914809

- DOI: 10.1038/s41390-023-02532-2

Abstract

Background: Physiologic detection of bronchiolar obstruction in children with cystic fibrosis (CF) may be clinically unsuspected because of normal routine spirometry despite bronchiectasis on lung CT.

Methods: Children from two accredited CF facilities had spirometry obtained every 3 months when clinically stable. Pre-bronchodilator maximum expiratory flow volume curves were retrospectively analyzed over 16 years to detect an isolated abnormal FEF75%, despite normal routine spirometry.

Results: At Miller Children's and Women's Hospital (MCWH), an abnormal FEF75% was initially detected in 26 CF children at age 7.5 ± 4 (SD) years despite normal routine spirometry initially. FEF75% remained an isolated abnormality for 2.5 ± 1.5 years after it was initially detected in these 26 CF children. At Cohen Children's Medical Center (CCMC), despite normal routine spirometry initially, abnormal FEF75% occurred in 13 children at age 11.7 ± 4.5 years, and abnormal FEF25-75% in 10 children at age 11.8 ± 5.3 years.

Conclusions: FEF75% was most sensitive spirometric test for diagnosing both early and isolated progressive bronchiolar obstruction. Data from CCMC in older children demonstrated the simultaneous detection of abnormal FEF75% and FEF25-75% values consistent with greater bronchiolar obstruction when serial spirometry was initiated at an older age.

Impact: There is very little published spirometric data regarding diagnosis of isolated small airways obstruction in CF children. FEF75% can easily detect unsuspected small airways obstruction in CF children with normal routine spirometry and bronchiectasis on lung CT and optimize targeted modulatory therapies.

- 35 references

FULL TEXT LINKS