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3-10-DEC 2023

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Considerato il crescente interesse sull'argomento, abbiamo aggiunto una sezione su (premature birth) AND (pulmonary obstructive disease), ed in questo numero abbiamo incluso tutti gli articoli risultati dalla ricerca, dal prossimo verranno inseriti solo i settimanali

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

1
Editorial

Addiction

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. 2023 Dec 8.

doi: 10.1111/add.16407. Online ahead of print.

Chronic obstructive pulmonary disease in heroin users: An underappreciated issue with clinical ramifications

Shane Darke[1], Michael Farrell[1], Johan Duflou[1,2], Julia Lappin[1,3]

Affiliations expand

- PMID: 38069491

- DOI: 10.1111/add.16407

No abstract available

Keywords: COPD; heroin; morbidity; mortality; overdose; treatment.

- 19 references

SUPPLEMENTARY INFO

Publication types, Grants and fundingexpand

FULL TEXT LINKS

UNIMORE

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Altern Ther Health Med

. 2023 Dec 8:AT8813.

Online ahead of print.

Clinical Effects of Exercise Combined with Respiratory Training in the Rehabilitation Treatment of Patients with Chronic Obstructive Pulmonary Disease

Ling Wang, Xinyu Wu

- PMID: 38064596

Abstract

Objective: This study aimed to evaluate the impact of exercise and respiratory training for chronic obstructive pulmonary disease (COPD) patients on specific COPD-related outcomes, such as lung function, exercise capacity, and patient prognosis.

Methods: This work had a retrospective design. The subjects of this study were 90 patients with COPD who were treated in our hospital from May 2020 to May 2021. The patients were divided into two groups according to whether they performed exercise combined with respiratory training based on conventional treatment. After two weeks of intervention, the difference in rehabilitation outcomes between the two groups was detected at the first and third months after discharge.

Results: The rehabilitation compliance of the observation group was significantly higher than that of the control group (95.56% vs. 77.78%, P < .05). The forced expiratory volume in one second (FEV1) (2.66±0.71 vs. 2.28±0.48, P = .004), forced vital capacity (FVC) (3.30±0.70 vs. 3.00±0.63, P = .035), FEV1/FVC (80.61±8.01% vs. 76.77±7.34%, P = .020), maximal ventilation volume per minute (MVV) (96.14±3.50 vs. 91.20±4.97, P < .001), partial pressure of blood oxygen (PaO2) (89.52±6.87 vs. 82.65±6.54, P < .001), and oxygen saturation of blood (SaO2) (98.05±1.27 vs. 95.90±1.42, P < .001) in the observation group were significantly higher than those in the control group. In contrast, arterial partial pressure of carbon dioxide (PaCO2) (39.52±1.66 vs. 43.21±2.01, P < .001) was significantly lower than that in the control group. The observation group's 6-minute walking distance (6MWD) (401.05±65.66 vs. 360.25±54.94, P = .002) after treatment was significantly longer than those of the control group. The acute exacerbation rate (6.67% vs. 20.00%, P = .036), rehospitalization rate (4.44% vs. 17.78%, P = .044), and mortality rate (0.00% vs. 8.89%, P = .041) of the observation group were lower than those of the control group.

Conclusion: The application of exercise training combined with respiratory training in the rehabilitation treatment of COPD patients can more effectively promote the improvement of lung function, blood gas indexes, exercise endurance, and respiratory function and can improve the symptoms of dyspnea, with a good prognosis. This study confirmed the additional health benefits of exercise/respiratory training for COPD patients and provides evidence for the application of exercise/respiratory training in clinical practice. Therefore, it is recommended that in clinical practice, the necessity of exercise/respiratory training in COPD patients needs to be considered. However, the duration of intervention and follow-up period in this study were short, and longer intervention and follow-up are still needed to further confirm the results of this study.

3

Am J Respir Crit Care Med

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. 2023 Dec 8.

doi: 10.1164/rccm.202303-0507OC. Online ahead of print.

Spatial Transcriptomics Resolve an Emphysema-specific Lymphoid Follicle B Cell Signature in COPD

Joselyn Rojas-Quintero[1], Scott A Ochsner[2], Felicia New[3], Prajan Divakar[4], Chen Xi Yang[5], Tianshi David Wu[6], Jerid Robinson[4], Darshan Shimoga Chandrashekar[7], Nicholas E Banovich[8], Ivan O Rosas[9], Maor Sauler[10], Farrah Kheradmand[11], Amit Gaggar[12], Camilla Margaroli[13,14], Raul San Jose Estepar[15], Neil J McKenna[2], Francesca Polverino[16,17]

Affiliations expand

- PMID: 38064378

- DOI: 10.1164/rccm.202303-0507OC

Abstract

Rationale: Within chronic obstructive pulmonary disease (COPD), emphysema is characterized by a significant yet partially understood B cell immune component.

Objective: To characterize the transcriptomic signatures from lymphoid follicles (LFs) in ever-smokers without COPD and COPD patients with varying degrees of emphysema.

Methods: Lung sections from 40 COPD patients and ever-smokers were used for LF proteomic and transcriptomic spatial profiling. Formalin and OCT-fixed lung samples obtained from biopsies or lung explants, were assessed for LF presence. Emphysema measurements were obtained from clinical chest CT scans. High confidence transcriptional

(HCT) target intersection analyses were conducted to resolve emphysema-induced transcriptional networks.

Measurements and main results: Overall, 115 LFs from ever-smokers and GOLD 1-2 and GOLD 3-4 patients were analyzed. No LFs were found in never-smokers. Differential gene expression analysis revealed significantly increased expression of LF assembly and B cell markers genes in subjects with severe emphysema. HCT analysis revealed activation of abnormal B cell activity signature in LFs (q-value: 2.56E-111). LFs from GOLD 1-2 COPD patients with emphysema showed significantly increased expression of genes associated with antigen presentation, inflammation, and B cell activation and proliferation. LFs from GOLD 1-2 COPD patients without emphysema showed an anti-inflammatory profile. The extent of centrilobular emphysema was significantly associated with genes involved in B cell maturation and antibody production. Protein-RNA network analysis showed that LFs in emphysema have a unique signature skewed towards chronic B cell activation.

Conclusions: An off-targeted B cell activation within LFs is associated with autoimmune-mediated emphysema pathogenesis.

Keywords: Autoimmunity; B cells; COPD; Emphysema; imaging.

4

Hormones (Athens)

. 2023 Dec 8.

doi: 10.1007/s42000-023-00506-x. Online ahead of print.

Association of serum testosterone with chronic obstructive pulmonary disease (COPD) in a nationally representative

sample of White, Black, and Hispanic men

Samuel V David[1], Derrick Gibson[2], Alejandro Villasante-Tezanos[2], Laith Alzweri[3], Jesus Gibran Hernández-Pérez[4], Luisa Elvira Torres-Sánchez[4], Jacques Baillargeon[2], David S Lopez[5]

Affiliations expand

- PMID: 38064143

- DOI: 10.1007/s42000-023-00506-x

Abstract

Background: The association between total testosterone (T) and chronic obstructive pulmonary disease (COPD), remains poorly understood. We aim to investigate this association and how it varies by smoking status, body fatness, and race/ethnicity in a nationally representative sample of American men.

Methods: Data included a full sample (NHANES 1988-1991, 1999-2004, 2011-2012) and subset sample (excluding 2011-2012, no estradiol and SHBG levels available) of 2748 and 906 men (≥20 years), respectively. COPD was measured by self-report or spirometry test. Total T (ng/mL) was measured among men who participated in a morning examination session. Weighted multivariable-adjusted logistic regression models were conducted.

Results: Low T was positively associated with self-reported COPD in the full sample (OR = 2.10, 95% CI = 1.18-3.74, P_{trend} = 0.010), and when stratified by current smokers and body fatness. When examined across race and ethnicity strata, this association persisted among White men (OR = 2.50, 95% CI = 1.30-4.79, P_{trend} = 0.002) but not among Hispanic or Black men. In the subset sample, low T was positively associated with self-reported COPD (OR = 1.42, 95% CI, 0.57,3.55, P_{trend} = 0.04), including among smokers and White men, but not body fatness. No significant associations were observed with COPD defined with spirometry plus self-report.

Conclusion: Low levels of T were associated with an increased prevalence of self-reported COPD in the full and subset samples. Similar associations were observed after stratifying by smoking status, body fatness, and race/ethnicity in the full sample and subset sample. Prospective studies are warranted to confirm these significant associations among understudied and underserved populations.

Keywords: COPD; Ethnicity; Race; Serum testosterone; Smoking.

- 42 references

FULL TEXT LINKS

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Eur J Med Res

. 2023 Dec 8;28(1):572.

doi: 10.1186/s40001-023-01551-3.

Association between statin use on delirium and 30-day mortality in patients with chronic obstructive pulmonary disease in the intensive care unit

Jiangling Xia[1], Chunhuan Hu[2], Leilei Wang[3], Yuzhu Zhang[4]

Affiliations expand

- PMID: 38062497

- PMCID: PMC10704755

- DOI: 10.1186/s40001-023-01551-3

Abstract

Background: Delirium occurs frequently in patients with chronic obstructive pulmonary disease in the intensive care unit. Effective prevention and treatment strategies for delirium remain limited. We aimed to assess delirium and 30-day mortality in patients with chronic obstructive pulmonary disease who were statin and non-statin users.

Methods: In this retrospective study, patients with chronic obstructive pulmonary disease were identified from the Medical Information Mart for Intensive Care database (MIMIC-IV). The primary exposure variable was the use of statins 3 days after entering the intensive care unit and the primary outcome measure was the presence of delirium. The secondary outcome measure was 30-day mortality. Since the cohort study was retrospective, we used an inverse probability weighting derived from the propensity score matching to balance different variables.

Results: Among a cohort of 2725 patients, 1484 (54.5%) were statin users. Before propensity score matching, the prevalence of delirium was 16% and the 30-day mortality was 18% in patients with chronic obstructive pulmonary disease. Statin use was significantly negatively correlated with delirium, with an odds ratio of 0.69 (95% CI 0.56-0.85, $p < 0.001$) in the inverse probability weighted cohort and 30-day mortality of 0.7 (95% CI 0.57-0.85, $p < 0.001$).

Conclusions: Statin use is associated with a lower incidence of delirium and 30-day mortality in patients with chronic obstructive pulmonary disease in the intensive care unit.

Keywords: Chronic obstructive pulmonary disease; Delirium; Mortality; Propensity analysis; Statin.

Conflict of interest statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential competing interests.

- 30 references
- 3 figures

6

Eur J Trauma Emerg Surg

. 2023 Dec 8.

doi: 10.1007/s00068-023-02399-2. Online ahead of print.

The impact of chronic obstructive pulmonary disease on surgical outcomes after surgery for an acute abdominal diagnosis

Woubet Tefera Kassahun[1], Jonas Babel[2], Matthias Mehdorn[2]

Affiliations expand

- PMID: 38062271

- DOI: 10.1007/s00068-023-02399-2

Abstract

Purpose: The current study was undertaken to describe the independent contribution of chronic obstructive pulmonary disease (COPD) to the risk of postoperative morbidity and in-hospital mortality among patients undergoing surgery for an acute abdominal diagnosis.

Methods: Patients who underwent emergency abdominal procedures were identified from the electronic database of the Department of Visceral, Transplantation, Thoracic and Vascular Surgery of our institution. To evaluate differences in surgical risk associated with COPD, patients with COPD were matched for age, sex, and type of surgery with an equal number of controls who did not have COPD. Logistic regression was performed to evaluate

the univariate and multivariate associations between the independent variables, including COPD and outcome variables.

Results: Between January 2012 and December 2022, 3519 patients undergoing abdominal emergency surgery were identified in our abdominal surgical department. After removing ineligible cases, 201 COPD cases with an equal number of matched controls remained for analysis. The prevalence of COPD after the exclusion of ineligible cases was 5.7%. There were statistically significant differences in the rate of postoperative pulmonary complications (PPCs [57.7% vs. 35.8%; P < 0.001]), ventilator dependence (VD [63.2% vs. 46.3%; P < 0.001]), thromboembolic events (TEEs [22.9% vs. 12.9%; P = 0.009]), and in-hospital mortality (41.3% vs. 30.8%; P = 029) for patients with and without COPD. Independent of other covariates, the presence of COPD was not associated with a significantly increased risk of in-hospital mortality (OR, 1.16; 95% CI 0.70-1.97; P = 0.591) but was associated with an increased risk of PPCs (OR, 2.49; 95% CI 1.41-4.14; P = 0.002) and VD (OR, 2.26; 95% CI 1.22-4.17; P = 0.009).

Conclusions: Preexisting COPD may alter a patient's risk of PPCs and VD. However, it was not associated with an increased risk of in-hospital mortality.

Keywords: Acute abdominal diagnosis; COPD; Emergency surgery; In-hospital mortality; Morbidity; Postoperative pulmonary complications.

- 36 references

7

Eur Respir J

. 2023 Dec 7:2301720.

doi: 10.1183/13993003.01720-2023. Online ahead of print.

Associations of combined phenotypic aging and genetic risk with incidence of chronic respiratory diseases in the UK biobank: a prospective cohort study

Ting Wang[1,2,3], Weiwei Duan[4,3,5], Xinying Jia[2], Xinmei Huang[6], Yi Liu[2,5], Fanqing Meng[1,5], Chunhui Ni[7,5]

Affiliations expand

- PMID: 38061785

- DOI: 10.1183/13993003.01720-2023

Abstract

Accelerated biological aging has been associated with an increased risk of several chronic respiratory diseases. However, the associations between Phenotypic Age, a new biological age indicator based on clinical chemistry biomarkers, and common chronic respiratory diseases have not been evaluated.We analyzed data from 308 592 participants at baseline in the UK Biobank. The Phenotypic Age was calculated from chronological age and 9 clinical chemistry biomarkers, including albumin, alkaline phosphatase, creatinine, glucose, C-reactive protein, lymphocyte percent, mean cell volume, red cell distribution width, and white blood cell count. Furthermore, Phenotypic Age Acceleration (PhenoAgeAccel) was calculated by regressing Phenotypic Age on chronological age. The associations of PhenoAgeAccel with incident common chronic respiratory diseases and cross-sectional lung function were investigated. Moreover, we constructed polygenic risk scores and evaluated whether PhenoAgeAccel modified the effect of genetic susceptibility on chronic respiratory diseases and lung function.The results showed significant associations of PhenoAgeAccel with increased risk of idiopathic pulmonary fibrosis (IPF) (HR=1.52, 95%CI: 1.45-1.59), chronic obstructive pulmonary disease (COPD) (HR=1.54, 95%CI: 1.51-1.57), and asthma (HR=1.18, 95%CI: 1.15-1.20) per 5-year increase and decreased lung function. There was an additive interaction between PhenoAgeAccel and the genetic risk for IPF and COPD. Participants with high genetic risk and biologically older had the highest risk of incident IPF (HR=5.24, 95%CI: 3.91-7.02), COPD (HR=2.99, 95%CI: 2.66-3.36), and asthma (HR= 2.07, 95%CI: 1.86-2.31). Mediation analysis indicated that PhenoAgeAccel could mediate 10~20% of the associations between smoking and chronic respiratory diseases, while ~10% of the associations between $PM_{2.5}$ and the disorders were mediated by PhenoAgeAccel.PhenoAgeAccel was significantly associated with incident risk of common

chronic respiratory diseases and decreased lung function and could serve as a novel clinical biomarker.

8

Lancet Respir Med

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. 2023 Dec 4:S2213-2600(23)00461-7.

doi: 10.1016/S2213-2600(23)00461-7. Online ahead of print.

GOLD COPD report: 2024 update

Priya Venkatesan

- PMID: 38061380

- DOI: 10.1016/S2213-2600(23)00461-7

No abstract available

Am J Respir Cell Mol Biol

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. 2023 Dec 7.

doi: 10.1165/rcmb.2023-0387ED. Online ahead of print.

Disinherit your Descendants by Rewriting the COPD Epigenetic *Script*

Rocío Fuentes-Mateos[1], Reinoud Gosens[2]

Affiliations expand

- PMID: 38060824

- DOI: 10.1165/rcmb.2023-0387ED

No abstract available

Keywords: COPD; airway epithelium; cadherin; epigenetics.

Eur Radiol

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. 2023 Dec 7.

doi: 10.1007/s00330-023-10474-w. Online ahead of print.

Willingness to participate in combination screening for lung cancer, chronic obstructive pulmonary disease and cardiovascular disease in four European countries

Carina Behr[1], Hendrik Koffijberg[1], Maarten IJzerman[1 2 3], Hans-Ulrich Kauczor[4 5], Marie-Pierre Revel[6 7], Mario Silva[8], Oyunbileg von Stackelberg[4 5], Janine van Til[1], Rozemarijn Vliegenthart[9]

Affiliations expand

- PMID: 38060003

- DOI: 10.1007/s00330-023-10474-w

Abstract

Objectives: Lung cancer screening (LCS), using low-dose computed tomography (LDCT), can be more efficient by simultaneously screening for chronic obstructive pulmonary disease (COPD) and cardiovascular disease (CVD), the Big-3 diseases. This study aimed to determine the willingness to participate in (combinations of) Big-3 screening in four European countries and the relative importance of amendable participation barriers.

Methods: An online cross-sectional survey aimed at (former) smokers aged 50-75 years elicited the willingness of individuals to participate in Big-3 screening and used analytical hierarchy processing (AHP) to determine the importance of participation barriers.

Results: Respondents were from France (n = 391), Germany (n = 338), Italy (n = 399), and the Netherlands (n = 342), and consisted of 51.2% men. The willingness to participate in screening was marginally influenced by the diseases screened for (maximum difference of 3.1%, for Big-3 screening (73.4%) vs. lung cancer and COPD screening (70.3%)) and by country (maximum difference of 3.7%, between France (68.5%) and the Netherlands (72.3%)). The largest effect on willingness to participate was personal perceived risk of lung cancer. The most important barriers were the missed cases during screening (weight 0.19)

and frequency of screening (weight 0.14), while diseases screened for (weight 0.11) ranked low.

Conclusions: The difference in willingness to participate in LCS showed marginal increase with inclusion of more diseases and limited variation between countries. A marginal increase in participation might result in a marginal additional benefit of Big-3 screening. The amendable participation barriers are similar to previous studies, and the new criterion, diseases screened for, is relatively unimportant.

Clinical relevance statement: Adding diseases to combination screening modestly improves participation, driven by personal perceived risk. These findings guide program design and campaigns for lung cancer and Big-3 screening. Benefits of Big-3 screening lie in long-term health and economic impact, not participation increase.

Key points: • It is unknown whether or how combination screening might affect participation. • The addition of chronic obstructive pulmonary disease and cardiovascular disease to lung cancer screening resulted in a marginal increase in willingness to participate. • The primary determinant influencing individuals' engagement in such programs is their personal perceived risk of the disease.

Keywords: Cardiovascular diseases; Lung neoplasms; Mass screening; Patient preference; Pulmonary Disease (Chronic Obstructive).

- 47 references

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

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Review

Int J Chron Obstruct Pulmon Dis

. 2023 Dec 4:18:2887-2893.

doi: 10.2147/COPD.S431829. eCollection 2023.

Inhaler Adherence in COPD: A Crucial Step Towards the Correct Treatment

Miguel Turégano-Yedro[1], Eva Trillo-Calvo[2], Fernando Navarro I Ros[3,4], José David Maya-Viejo[5], Cruz González Villaescusa[6,7], Jose Maria Echave Sustaeta[8], Esperanza Doña[9], Bernardino Alcázar Navarrete[10,11]

Affiliations expand

- PMID: 38059011

- PMCID: PMC10697822

- DOI: 10.2147/COPD.S431829

Free PMC article

Abstract

COPD is a typical example of chronic disease. As such, treatment adherence tends to be as low as between 30% and 50%, with specific issues in COPD due to the use of inhaled therapies. Decreased adherence in COPD is associated with worse outcomes, with increased risk for exacerbations and long-term mortality. Factors that impact adherence are multiple, some related to patient, some related to clinicians and finally some related to healthcare system. Among clinician factors, prescription of simplified treatment regimens delivered by an inhaler adapted to the patient's characteristics is crucial. Although it has been observed a huge improvement in the design and usability of inhaler devices for COPD in the last two centuries, there is still a clear gap in this field. Smart inhalers as well as simplified treatment regimens could improve adherence and therefore improve long-term outcomes in COPD.

Keywords: COPD; adherence; inhaled therapies; persistence; posology.

Conflict of interest statement

Dr. Turégano-Yedro reports personal fees from GSK, Almirall, Astellas, Astra Zeneca, Bayer, Boehringer-Ingelheim, Bristol-Myers Squibb, Daiichi-Sankyo, Esteve, FAES, Ferrer, Janssen, Lilly, MSD, Novartis, Novo Nordisk, Sanofi and Viatris. Dra. Trillo-Calvo reports personal fees from GSK, Boehringer Ingelheim, Menarini, AstraZeneca, Esteve, Lundbeck, Servier, Viatris and FAES. Dr. Maya-Viejo reports personal fees from GSK, MSD, Chiesi, AstraZeneca and Amgen. Dr. Navarro reports personal fees from GSK, personal fees from Chiesi, AstraZeneca, Novartis, Boehringer Ingelheim, Pfizer, Viatris, MSD, Ferrer, Novex, Organon, Lilly outside the submitted work. Dra. González reports personal fees from GSK, from Boehringer Ingelheim, personal fees and non-financial support from AstraZeneca, personal fees from Chiesi, Laboratorios BIAL and Laboratorios FAES outside the submitted work. Dr. Echave reports personal fees from GSK and non-financial support from Boehringer Ingelheim, outside the submitted work. Dra Doña has received honoraria during the last 3 years for lecturing, scientific advice, participation in clinical studies or writing for publications for (alphabetical order): Aflofarm, AstraZeneca, Bial, Boehringer, Chiesi, Faes, GSK, Novartis, Zambon. Dr. Alcázar-Navarrete reports grants and personal fees from GSK, personal fees and/or non-financial support from Boehringer Ingelheim, Chiesi, Laboratorios Menarini, AstraZeneca, Gilead, MSD, Laboratorios BIAL, Sanofi, Zambon, outside the submitted work.

- 44 references

. 2023 Dec 6;21(1):881.

doi: 10.1186/s12967-023-04735-x.

Endothelial progenitor cells systemic administration alleviates multi-organ senescence by down-regulating USP7/p300 pathway in chronic obstructive pulmonary disease

Wenhua Wang[#1], Huaihuai Peng[#2], Menghao Zeng[1], Jie Liu[1], Guibin Liang[1], Zhihui He[3]

Affiliations expand

- PMID: 38057857

- PMCID: PMC10699081

- DOI: 10.1186/s12967-023-04735-x

Free PMC article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) has impacted approximately 390 million people worldwide and the morbidity is increasing every year. However, due to the poor treatment efficacy of COPD, exploring novel treatment has become the hotpot of study on COPD. Endothelial progenitor cells (EPCs) aging is a possible molecular way for COPD development. We aimed to explore the effector whether intravenous administration of EPCs has therapeutic effects in COPD mice.

Methods: COPD mice model was induced by cigarette smoke exposure and EPCs were injected intravenously to investigate their effects on COPD mice. At day 127, heart, liver, spleen, lung and kidney tissues of mice were harvested. The histological effects of EPCs intervention on multiple organs of COPD mice were detected by morphology assay. Quantitative real-time PCR and Western blotting were used to detect the effect of EPCs intervention on the expression of multi-organ senescence-related indicators. And we

explored the effect of EPCs systematically intervening on senescence-related USP7/p300 pathway.

Results: Compared with COPD group, senescence-associated β-galactosidase activity was decreased, protein and mRNA expression of p16 was down-regulated, while protein and mRNA expression of cyclin D1 and TERT were up-regulated of multiple organs, including lung, heart, liver, spleen and kidney in COPD mice after EPCs system intervention. But the morphological alterations of the tissues described above in COPD mice failed to be reversed. Mechanistically, EPCs systemic administration inhibited the expression of mRNA and protein of USP7 and p300 in multiple organs of COPD mice, exerting therapeutic effects.

Conclusions: EPCs administration significantly inhibited the senescence of multiple organs in COPD mice via down-regulating USP7/p300 pathway, which presents a possibility of EPCs therapy for COPD.

Keywords: COPD; EPCs; Senescence; Systemic administration; USP7; p300.

Conflict of interest statement

The authors declare that they have no competing interest.

- 58 references
- 9 figures

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

. 2023 Dec 6;32(170):230170.

doi: 10.1183/16000617.0170-2023. Print 2023 Dec 31.

Nine controversial questions about augmentation therapy for alpha-1 antitrypsin deficiency: a viewpoint

Marc Miravitlles[1], Antonio Anzueto[2], Miriam Barrecheguren[3]

Affiliations expand

- PMID: 38056890

- PMCID: PMC10698548

- DOI: 10.1183/16000617.0170-2023

Free PMC article

Abstract

Augmentation therapy with intravenous alpha-1 antitrypsin is the only specific treatment for alpha-1 antitrypsin deficiency (AATD)-associated emphysema. This treatment has been available and remained basically unchanged for more than 35 years, but many questions persist regarding its indications, regimen of administration and efficacy. Because AATD is a rare disease, it has not been possible to conduct randomised, placebo-controlled trials that are adequately powered for the usual outcomes analysed in non-AATD-related COPD, such as lung function decline, exacerbations, symptoms or quality of life. New outcomes such as lung densitometry measured by computed tomography are more sensitive for identifying emphysema progression but are not widely accepted by regulatory agencies. In addition, clinical manifestations, severity and the natural history of lung disease associated with AATD are very heterogeneous, which means that individual prediction of prognosis is challenging. Therefore, the indication for augmentation is sometimes a dilemma between initiating treatment in individuals who may not develop significant lung disease or in whom disease will not progress and delaying it in patients who will otherwise rapidly and irreversibly progress.Other areas of debate are the possible indication for augmentation in patients with severe AATD and respiratory diseases other than emphysema, such as

bronchiectasis or asthma, and the use of therapy after lung transplant in AATD patients. All these uncertainties imply that the indication for treatment must be personalised in expert reference centres after in-depth discussion of the pros and cons of augmentation with the patient.

Conflict of interest statement

Conflict of interest: M. Miravitlles has received speaker fees from AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, GlaxoSmithKline, Menarini, Kamada, Takeda, Zambon, CSL Behring, Specialty Therapeutics, Janssen, Grifols and Novartis; consulting fees from AstraZeneca, Atriva Therapeutics, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, CSL Behring, Inhibrx, Ferrer, Menarini, Mereo Biopharma, Spin Therapeutics, Specialty Therapeutics, ONO Pharma, Palobiofarma SL, Takeda, Novartis, Novo Nordisk, Sanofi, Zambon and Grifols; and research grants from Grifols. A. Anzueto has received consultant fees from AstraZeneca, Boehringer Ingelheim, Grifols, GlaxoSmithKline, Verona Pharma, TEVA and Mylan/Theravance. M. Barrecheguren has received speaker fees from Grifols, Menarini, CSL Behring, GSK and Boehringer Ingelheim; and consulting fees from GSK, Novartis, CSL Behring and Boehringer Ingelheim.

- 85 references

14

Eur Respir Rev

. 2023 Dec 6;32(170):230106.

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Airway ciliated cells in adult lung homeostasis and COPD

Laure M G Petit[1], Randa Belgacemi[2], Julien Ancel[1 3], Lynda Saber Cherif[1], Myriam Polette[1 4], Jeanne-Marie Perotin[1 3], Nathalie Spassky[5], Charles Pilette[6], Denise Al Alam[2], Gaëtan Deslée[1 3], Valérian Dormoy[7]

Affiliations expand

- PMID: 38056888

- PMCID: PMC10698550

- DOI: 10.1183/16000617.0106-2023

Free PMC article

Abstract

Cilia are organelles emanating from the cell surface, consisting of an axoneme of microtubules that extends from a basal body derived from the centrioles. They are either isolated and nonmotile (primary cilia), or grouped and motile (motile cilia). Cilia are at the centre of fundamental sensory processes and are involved in a wide range of human disorders. Pulmonary cilia include motile cilia lining the epithelial cells of the conductive airways to orchestrate mucociliary clearance, and primary cilia found on nondifferentiated epithelial and mesenchymal cells acting as sensors and cell cycle keepers. Whereas cilia are essential along the airways, their regulatory molecular mechanisms remain poorly understood, resulting in a lack of therapeutic strategies targeting their structure or functions. This review summarises the current knowledge on cilia in the context of lung homeostasis and COPD to provide a comprehensive overview of the (patho)biology of cilia in respiratory medicine with a particular emphasis on COPD.

Conflict of interest statement

Conflict of interest: J-M. Perotin reports lecture honoraria from AstraZeneca, and travel support from Novartis, AstraZeneca and Chiesi, outside the submitted work. D. Al Alam reports grants from NIH/NHLBI R01HL141856, NIH/NHLBI and Office of the Director R21HL165411, outside the submitted work. G. Deslée reports support for attending

meetings from Chiesi, and personal fees from Chiesi, Boehringer, GSK and AstraZeneca, outside the submitted work. V. Dormoy reports personal fees from Chiesi, and personal fees from AstraZeneca, outside the submitted work. All other authors have nothing to disclose.

- 77 references
- 3 figures

15

Review

Respir Med

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. 2023 Dec 5:221:107494.

doi: 10.1016/j.rmed.2023.107494. Online ahead of print.

Effects of cannabis smoking on the respiratory system: A state-of-the-art review

Lugain Khoj[1], Vincenzo Zagà[2], Daniel L Amram[3], Karishma Hosein[4], Giovanni Pistone[5], Mario Bisconti[6], Antonella Serafini[7], Liborio M Cammarata[5], Maria Sofia Cattaruzza[8], Marco Mura[4]

Affiliations expand

- PMID: 38056532

- DOI: 10.1016/j.rmed.2023.107494

Abstract

The diminished perception of the health risks associated with the consumption of cannabis (marijuana) lead to a progressive increase in its inhalational use in many countries. Cannabis can be smoked through the use of joints, spliffs and blunts, and it can be vaporised with the use of hookah or e-cigarettes. Delta-9 tetrahydrocannabinol (THC) is the main psychoactive component of cannabis smoke but contains numerous other substances. While the recreational use of cannabis smoking has been legalised in several countries, its health consequences have been underestimated and undervalued. The purpose of this review is to critically review the impact of cannabis smoke on the respiratory system. Cannabis smoke irritates the bronchial tree and is strongly associated with symptoms of chronic bronchitis, with histological signs of airway inflammation and remodelling. Altered fungicidal and antibacterial activity of alveolar macrophages, with greater susceptibility to respiratory infections, is also reported. The association with invasive pulmonary aspergillosis in immunocompromised subjects is particularly concerning. Although cannabis has been shown to produce a rapid bronchodilator effect, its chronic use is associated with poor control of asthma by numerous studies. Cannabis smoking also represents a risk factor for the development of bullous lung disease, spontaneous pneumothorax and hypersensitivity pneumonitis. On the other hand, no association with the development of chronic obstructive pulmonary disease was found. Finally, a growing number of studies report an independent association of cannabis smoking with the development of lung cancer. In conclusion, unequivocal evidence established that cannabis smoking is harmful to the respiratory system. Cannabis smoking has a wide range of negative effects on respiratory symptoms in both healthy subjects and patients with chronic lung disease. Given that the most common and cheapest way of assumption of cannabis is by smoking, healthcare providers should be prepared to provide counselling on cannabis smoking cessation and inform the public and decision-makers.

Keywords: Asthma; Bullous lung disease; Cannabis; Chronic bronchitis; Lung cancer; Marijuana; Pulmonary aspergillosis; Smoking.

Conflict of interest statement

Declaration of competing interest We declare that we do not have any interests, financial or otherwise, that need to be disclosed in relation to the review article that we are submitting.

SUPPLEMENTARY INFO

Publication typesexpand

16

Am J Respir Crit Care Med

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Small Airways Disease in Pre-COPD with Emphysema: A Cross-Sectional Study

Stijn E Verleden[1], Jeroen M H Hendriks[2], Annemiek Snoeckx[3,4], Cindy Mai[3], Yves Mentens[5], Wim Callebaut[6], Bruno De Belie[7], Paul E Van Schil[8], Veronique Verplancke[9], Annelies Janssens[10], Joe Jacob[11,12], Ashkan Pakzad[11], Thomas M Conlon[13], Guney Guvenc[13], Ali Önder Yildirim[14], Patrick Pauwels[15], Senada Koljenovic[15], Johanna M Kwakkel-Van-Erp[16], Therese Lapperre[17]

Affiliations expand

- PMID: 38055196

- DOI: 10.1164/rccm.202301-0132OC

Abstract

Rationale: Small airway disease is an important pathophysiological feature of COPD. Recently, pre-COPD has been put forward as potential precursor stage of COPD, defined by abnormal spirometry or significant emphysema on CT in the absence of airflow obstruction.

Methods: We collected whole lungs/lung lobes from patients with emphysematous pre-COPD (n=10), COPD GOLD I (n=6), GOLD II (n=6), GOLD III/IV (n=7) and controls (n=10) which were analyzed using CT and microCT. The degree of emphysema and the number and morphology of small airways was compared between the different groups and further correlations were investigated with physiologic measures. Airway and parenchymal pathology was also validated with histopathology.

Measurements and main results: The number of transitional bronchioles (TrB)/mL and terminal bronchioles (TB)/mL was significantly lower in pre-COPD, GOLD I, GOLD II and GOLD III/IV compared to controls. In addition, the number of alveolar attachments of the TrB and TB was also lower in pre-COPD and all COPD groups compared to controls. We did not find any differences between the pre-COPD and COPD group in either CT or microCT measures. The % of emphysema on CT showed the strongest correlation with the number of small airways, also in patients without airflow obstruction. Histopathology showed an increase in the mean chord length and a decrease in the alveolar surface density in pre-COPD and all GOLD stages compared to control.

Conclusion: Lungs of patients with emphysematous pre-COPD already show lower small airway number and airway remodeling and in the absence of physiologic airway obstruction.

Keywords: Emphysema; Pre-COPD; Small airway disease.

17

Acta Biomed

. 2023 Dec 5;94(6):e2023248.

doi: 10.23750/abm.v94i6.15162.

Strategies implemented by informal caregivers to facilitate self-care in patients with chronic obstructive pulmonary disease (COPD): a scoping review protocol

Giovanna Casella[1], Beatrice Salemi[2], Cosimo Franco[3], Marta Acampora[4], Serena Barello[5], Massimo Guasconi[6]

Affiliations expand

- PMID: 38054671

- DOI: 10.23750/abm.v94i6.15162

Free article

Abstract

Background and aim: Chronic obstructive pulmonary disease (COPD) is a disease characterized by persistent respiratory symptoms and airflow limitation. COPD is a significant social and economic burden, and hospital admissions contribute to increased costs. Informal caregivers play a crucial role in supporting COPD patients in their self-care efforts. Therefore, understanding informal caregiver interventions to improve self-care may be helpful in reducing hospitalizations. This is the protocol for a scoping review that aims to map the literature on informal caregiver interventions to facilitate self-care in COPD patients.

Research question: What are the strategies implemented by informal caregivers to facilitate self-care for patients with COPD?

Methods: The review will adhere to the methodology outlined by the JBI. A comprehensive search strategy will be executed in PubMed, CINAHL, Embase, Web of Science, Scopus, Cochrane, and PsycINFO. Additionally, grey literature and relevant unpublished documents will be searched to minimize publication bias. Studies describing strategies/actions implemented by informal caregivers to promote self-care in COPD patients from all countries will be included. We will exclude abstracts, editorials, articles on paid caregivers and social and healthcare workers. Two independent reviewers will screen titles, abstracts, and full-text articles based on inclusion criteria. Key data from the selected studies will be

extracted using a predefined data extraction table. The results will be aggregated into themes and described qualitatively, figures and graphs may also be presented. The results will be presented according to the PRISMA-ScR.

Review registration: Open Science Framework https://doi.org/10.17605/OSF.IO/4TWRM.

SUPPLEMENTARY INFO

MeSH termsexpand

FULL TEXT LINKS

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18

Review

Cochrane Database Syst Rev

. 2023 Dec 6;12(12):CD011600.

doi: 10.1002/14651858.CD011600.pub3.

Inhaled corticosteroids with combination inhaled long-acting beta2-agonists and long-acting muscarinic antagonists for chronic obstructive pulmonary disease

Wouter H van Geffen[1], Daniel J Tan[2], Julia Ae Walters[3], E Haydn Walters[4]

Affiliations expand

- PMID: 38054551

- PMCID: PMC10698842 (available on 2024-12-06)

- DOI: 10.1002/14651858.CD011600.pub3

Abstract

Background: Management of chronic obstructive pulmonary disease (COPD) commonly involves a combination of long-acting bronchodilators including beta2-agonists (LABA) and muscarinic antagonists (LAMA). LABA and LAMA bronchodilators are now available in single-combination inhalers. In individuals with persistent symptoms or frequent exacerbations, inhaled corticosteroids (ICS) are also used with combination LABA and LAMA inhalers. However, the benefits and risks of adding ICS to combination LABA/LAMA inhalers as a triple therapy remain unclear.

Objectives: To assess the effects of adding an ICS to combination LABA/LAMA inhalers for the treatment of stable COPD.

Search methods: We searched the Cochrane Airways Group Register of Trials, Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, and Embase up to 30 November 2022. We also searched ClinicalTrials.gov and the WHO ICTRP up to 30 November 2022.

Selection criteria: We included parallel-group randomised controlled trials of three weeks' duration or longer that compared the treatment of stable COPD with ICS in addition to combination LABA/LAMA inhalers against combination LABA/LAMA inhalers alone.

Data collection and analysis: We used standard Cochrane methodological procedures. The primary outcomes were acute exacerbations of COPD, respiratory health-related quality of life, pneumonia and other serious adverse events. The secondary outcomes were symptom scores, lung function, physical capacity, and mortality. We used GRADE to assess certainty of evidence for studies that contributed data to our prespecified outcomes.

Main results: Four studies with a total of 15,412 participants met the inclusion criteria. The mean age of study participants ranged from 64.4 to 65.3 years; the proportion of female participants ranged from 28% to 40%. Most participants had symptomatic COPD (COPD Assessment Test Score ≥ 10) with severe to very severe airflow limitation (forced expiratory volume in one second (FEV1) < 50% predicted) and one or more moderate-to-severe COPD exacerbations in the last 12 months. Trial medications differed amongst studies. The duration of follow-up was 52 weeks in three studies and 24 weeks in one study. We

assessed the risk of selection, performance, and detection bias to be low in the included studies; one study was at high risk of attrition bias, and one study was at high risk of reporting bias. Triple therapy may reduce rates of moderate-to-severe COPD exacerbations compared to combination LABA/LAMA inhalers (rate ratio (RR) 0.74, 95% confidence interval (CI) 0.67 to 0.81; n = 15,397; low-certainty evidence). Subgroup analysis stratifying by blood eosinophil counts showed there may be a greater reduction in rate of moderate-to-severe COPD exacerbations with triple therapy in participants with high-eosinophils (RR 0.67, 95% CI 0.60 to 0.75) compared to low-eosinophils (RR 0.87, 95% CI 0.81 to 0.93) (test for subgroup differences: P < 0.01) (high/low cut-offs: 150 eosinophils/µL in three studies; 200 eosinophils/µL in one study). However, moderate-to-substantial heterogeneity was observed in both high- and low-eosinophil subgroups. These subgroup analyses are observational by nature and thus results should be interpreted with caution. Triple therapy may be associated with reduced rates of severe COPD exacerbations (RR 0.75, 95% CI 0.67 to 0.84; n = 14,131; low-certainty evidence). Triple therapy improved health-related quality of life assessed using the St George's Respiratory Questionnaire (SGRQ) by the minimal clinically important difference (MCID) threshold (4-point decrease) (35.3% versus 42.4%, odds ratio (OR) 1.35, 95% CI 1.26 to 1.45; n = 14,070; high-certainty evidence). Triple therapy may result in fewer symptoms measured using the Transition Dyspnoea Index (TDI) (OR 1.33, 95% CI 1.13 to 1.57; n = 3044; moderate-certainty evidence) and improved lung function as measured by change in trough FEV1 (mean difference 38.68 mL, 95% CI 22.58 to 54.77; n = 11,352; low-certainty evidence). However, these benefits fell below MCID thresholds for TDI (1-unit decrease) and trough FEV1 (100 mL), respectively. Triple therapy is probably associated with a higher risk of pneumonia as a serious adverse event compared to combination LABA/LAMA inhalers (3.3% versus 1.9%, OR 1.74, 95% CI 1.39 to 2.18; n = 15,412; moderate-certainty evidence). In contrast, all-cause serious adverse events may be similar between groups (19.7% versus 19.7%, OR 0.95, 95% CI 0.87 to 1.03; n = 15,412; low-certainty evidence). All-cause mortality may be lower with triple therapy (2.0% versus 1.4%, OR 0.70, 95% CI 0.54 to 0.90; n = 15,397; low-certainty evidence).

Authors' conclusions: The available evidence suggests that triple therapy may reduce rates of COPD exacerbations (low-certainty evidence) and results in an improvement in health-related quality of life (high-certainty evidence) compared to combination LABA/LAMA inhalers, but probably confers an increased pneumonia risk as a serious adverse event (moderate-certainty evidence). Triple therapy probably improves respiratory symptoms and may improve lung function (moderate- and low-certainty evidence, respectively); however, these benefits do not appear to be clinically significant. Triple therapy may reduce the risk of all-cause mortality compared to combination LABA/LAMA inhalers (low-certainty evidence). The certainty of the evidence was downgraded most frequently for inconsistency or indirectness. Across the four included studies, there were important differences in inclusion criteria, trial medications, and duration of follow-up. Investigation of heterogeneity was limited due to the small number of included studies. We found limited data on the effects of triple therapy compared to combination LABA/LAMA inhalers in patients with mild-moderate COPD and those without a recent exacerbation history.

Conflict of interest statement

Wouter H van Geffen: Fiduciary Officer, Long Range Planning Committee ERS Assembly 11 – Thoracic Oncology, European Respiratory Society (ERS); Board Member, Dutch Society of Respiratory Physicians (NVALT); Consultant Respiratory Physician, Medical Centre Leeuwarden; affiliated to ERS and NVALT; member, Editorial Board of Cochrane Airways (closed in March 2023) but was not involved in the editorial decision-making of this Cochrane Review update.
Daniel J Tan: no relevant interests; General Medicine Registrar at the Royal Melbourne Hospital, Melbourne, Victoria, Australia.
Julia AE Walters: none known.
E Haydn Walters: no relevant interests; Acute Physician, Alfred Hospital Melbourne.

Update of

- doi: 10.1002/14651858.CD011600.pub2

- 111 references

19

Respiration

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. 2023 Dec 5:1-9.

doi: 10.1159/000535269. Online ahead of print.

Evaluation of Bone Mineral Density in Lung Transplant Recipients by Chest Computed Tomography

Ryobu Mori[1], Tomohiro Handa[1,2], Akihiro Ohsumi[3], Kohei Ikezoe[1], Kiminobu Tanizawa[1], Ryuji Uozumi[4], Naoya Tanabe[1,5], Tsuyoshi Oguma[1], Ryo Sakamoto[6], Masatsugu Hamaji[3], Daisuke Nakajima[3], Yojiro Yutaka[3], Satona Tanaka[3], Yoshito Yamada[3], Yohei Oshima[5], Susumu Sato[1], Motonari Fukui[7], Hiroshi Date[3], Toyohiro Hirai[1]

Affiliations expand

- PMID: 38052185

- DOI: 10.1159/000535269

Abstract

Introduction: Lung transplantation (LT) recipients are at risk of bone mineral density (BMD) loss. Pre- and post-LT BMD loss has been reported in some cross-sectional studies; however, there are limited studies regarding the serial BMD change in LT recipients. The aim of this study was to investigate the serial BMD changes and the clinical characteristics associated with BMD decline.

Methods: This was a single-center, retrospective observational study. BMD was serially measured in thoracic vertebral bodies (Th4, 7, 10) using computed tomography (CT) before and 3 and 12 months after LT. The frequency of osteoporosis and factors associated with pre-LT osteoporosis and post-LT BMD loss were evaluated. The frequency of post-LT compression fracture and its associated factors were also analyzed.

Results: This study included 128 adult LT recipients. LT recipients had decreased BMD (151.8 ± 42.2 mg/mL) before LT compared with age-, sex-, and smoking index-matched controls (176.2 ± 35.7 mg/mL). The diagnosis of COPD was associated with pre-LT osteoporosis. LT recipients experience further BMD decline after transplantation, and the percentage of recipients classified as exhibiting osteoporosis increased from 20% at baseline to 43% at 12 months. Recipients who had been taking no or small doses of glucocorticoids before LT had rapid BMD loss after LT. Early bisphosphonate use (within 3 months) after LT attenuated BMD loss and decreased new-onset compression fracture.

Conclusion: LT recipients are at high risk for BMD loss and compression fracture after LT. Early bisphosphonate use may decrease BMD loss and compression fracture.

Keywords: Bisphosphonate; Bone mineral density; Computed tomography; Lung transplantation; Osteoporosis.

20

Am J Respir Crit Care Med

. 2023 Dec 5.

doi: 10.1164/rccm.202311-2073ED. Online ahead of print.

Are Airway Epithelial p73 Levels a Therapeutic Target to Treat COPD?

Ronald G Crystal[1]

Affiliations expand

- PMID: 38051107

- DOI: 10.1164/rccm.202311-2073ED

No abstract available

21

Respirology

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. 2023 Dec 3.

doi: 10.1111/resp.14642. Online ahead of print.

Effect of experimental modulation of mood on exertional dyspnoea in chronic obstructive pulmonary disease

Pramod Sharma[1,2], Karlijn Scheffer[1,3], Menaka Louis[1], Craig R Aitken[1,2], Lewis Adams[1], Norman R Morris[1,2]

Affiliations expand

- PMID: 38044806

- DOI: 10.1111/resp.14642

Abstract

Background and objective: Dyspnoea is a debilitating symptom in individuals with chronic obstructive pulmonary disease (COPD) and a range of other chronic cardiopulmonary diseases and is often associated with anxiety and depression. The present study examined the effect of visually-induced mood shifts on exertional dyspnoea in individuals with COPD.

Methods: Following familiarization, 20 participants with mild to severe COPD (age 57-79 years) attended three experimental sessions on separate days, performing two 5-min treadmill exercise tests separated by a 30-min interval on each day. During each exercise test, participants viewed either a positive, negative or neutral set of images sourced from the International Affective Picture System (IAPS) and rated dyspnoea or leg fatigue (0-10). Heart rate (HR) and peripheral oxygen saturation (SpO_2) were measured at 1-min intervals

during each test. Mood valence ratings were obtained using Self-Assessment Manikin (SAM) scale (1-9).

Results: Mood valence ratings were significantly higher when viewing positive (end-exercise mean ± SEM = 7.6 ± 0.3) compared to negative IAPS images (2.4 ± 0.3, $p < 0.001$). Dyspnoea intensity (mean ± SEM = 5.8 ± 0.4) and dyspnoea unpleasantness (5.6 ± 0.3) when viewing negative images were significantly higher compared to positive images (4.2 ± 0.4, $p = 0.004$ and 3.4 ± 0.5, $p = 0.003$). Eighty-five percent of participants (n = 17) met the minimal clinically important difference (MCID) criteria for both dyspnoea intensity and unpleasantness. HR, SpO_2 and leg fatigue did not differ significantly between conditions.

Conclusion: These findings indicate that the negative affective state worsens dyspnoea in COPD, thereby suggesting strategies aimed at reducing the likelihood of negative mood or improving the mood may be effective in managing morbidity associated with dyspnoea in COPD.

Keywords: COPD; IAPS; chronic obstructive pulmonary disease; exertional dyspnoea; leg fatigue; mood modulation; treadmill exercise.

- 32 references

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

WILEY Full Text Article UNIMORE

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Clin Auton Res

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. 2023 Dec 3.

doi: 10.1007/s10286-023-01003-2. Online ahead of print.

Sympathetic vascular transduction and baroreflex sensitivity in the context of severe COPD

Gianni Sesa-Ashton[1], Vaughan G Macefield[2]

Affiliations expand

- PMID: 38044409

- DOI: 10.1007/s10286-023-01003-2

No abstract available

Keywords: Asphyxia; Chronic obstructive pulmonary disease; Hypercapnia; Muscle sympathetic nerve activity; Vascular transduction.

- 15 references

SUPPLEMENTARY INFO

Publication types, Grants and fundingexpand

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Sci Total Environ

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. 2023 Dec 10:903:166523.

doi: 10.1016/j.scitotenv.2023.166523. Epub 2023 Aug 23.

Short-term mediating effects of $PM_{2.5}$ on climate-associated COPD severity

Huan Minh Tran[1], Yuan-Chien Lin[2], Feng-Jen Tsai[3], Kang-Yun Lee[4], Jer-Hwa Chang[5], Chi-Li Chung[6], Kian Fan Chung[7], Kai-Jen Chuang[8], Hsiao-Chi Chuang[9]

Affiliations expand

- PMID: 37625725

- DOI: 10.1016/j.scitotenv.2023.166523

Abstract

The impact of short-term exposure to environmental factors such as temperature, relative humidity (RH), and fine particulate matter ($PM_{2.5}$) on chronic obstructive pulmonary disease (COPD) remains unclear. The objective of this study is to investigate $PM_{2.5}$ as a mediator in the relationship between short-term variations in RH and temperature and COPD severity. A cross-sectional study was conducted on 930 COPD patients in Taiwan from 2017 to 2022. Lung function, COPD Assessment Test (CAT) score, and modified Medical Research Council (mMRC) dyspnea scale were assessed. The mean and differences in 1-day, 7-day, and 30-day individual-level exposure to ambient RH, temperature, and $PM_{2.5}$ were estimated. The associations between these factors and clinical outcomes were analyzed using linear regression models and generalized additive mixed models, adjusting for age, sex, smoking, and body mass index. In the total season, increases in RH difference were associated with increases in forced expiratory volume in 1 s (FEV_1) / forced vital capacity (FVC), while increases in temperature difference were associated with decreases in FEV_1 and FEV_1/FVC. Increases in $PM_{2.5}$ mean were associated with declines in FEV_1. In the cold season, increases in temperature mean were associated with decreases in CAT and mMRC scores, while increases in $PM_{2.5}$ mean were associated with declines in FEV_1, FVC, and FEV_1/FVC. In the warm season, increases in temperature difference were associated with decreases in FEV_1 and FEV_1/FVC, while increases in RH difference and $PM_{2.5}$ mean were associated with decreases in CAT score. $PM_{2.5}$ fully mediated the associations of temperature mean with FEV_1/FVC in the cold season. In conclusion, $PM_{2.5}$ mediates the effects of temperature and RH on clinical outcomes. Monitoring patients during low RH, extreme temperature, and high $PM_{2.5}$ levels is crucial. Capsule of findings The significance of this study is that an increase in ambient RH and temperature, as well as $PM_{2.5}$ exposure, were significantly associated with changes in lung function, and clinical symptoms in these patients. The

novelty of this study is that $PM_{2.5}$ plays a mediating role in the association of RH and temperature with COPD clinical outcomes in the short term.

Keywords: COPD; Climate; Clinical outcomes; Lung function; PM(2.5).

Conflict of interest statement

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

24

Sci Total Environ

. 2023 Dec 10:903:166161.

doi: 10.1016/j.scitotenv.2023.166161. Epub 2023 Aug 11.

Health burden associated with tillage-related $PM_{2.5}$ pollution in the United States, and mitigation strategies

Ashish Pokharel[1], David A Hennessy[2], Felicia Wu[3]

Affiliations expand

- PMID: 37574060

- DOI: 10.1016/j.scitotenv.2023.166161

Abstract

Exposure to airborne particulate matter of diameter less than 2.5 μm ($PM_{2.5}$) is associated with cardiovascular diseases (CVD) and chronic obstructive pulmonary disease (COPD). In agriculture, the practice of tilling generates $PM_{2.5}$ emissions that can jeopardize human health. This paper estimates the annual deaths and disability-adjusted life years (DALYs) from CVD and COPD attributable to $PM_{2.5}$ emissions from corn, soybean, cotton, and wheat tillage in the contiguous United States. Primary $PM_{2.5}$ from crop-tillage combination was calculated using values obtained from the Environmental Protection Agency's National Emissions Inventory, 2017, while deaths and DALYs estimates were calculated using data from the Institute of Health Metrics and Evaluation's global burden of risk factors study, the US decennial census, and the US Centers for Disease Control. We also propose and implement a conceptual framework for identifying the optimal subsidy upon accounting for health benefits arising from reducing conventional tillage, and we discuss strategies to achieve conservation tillage. Annual $PM_{2.5}$ emissions from crop tillage is about 0.25 million tons. We estimate that approximately 1000 annual deaths and 22,000 DALYs from CVD, as well as 300 annual deaths and 7400 DALYs from COPD, were attributable to tillage-related $PM_{2.5}$ emissions. Tillage related primary $PM_{2.5}$ emissions contribute about 0.002 % of total CVD and COPD deaths in the United States, and its related health economic value loss is about 12.9 billion USD annually. About 350 annual deaths may be averted upon a shift from conventional to conservation tillage. Conservation tillage is generally adopted when the pecuniary and soil health benefits exceed those from adopting intensive tillage. Agricultural policies and on-farm measures that may help reduce intensive tillage, and the related $PM_{2.5}$ emissions, include subsidies for adopting conservation tillage and carbon capture credits, use of herbicides and herbicide-tolerant crops, protecting herbicide-tolerance traits, planting cover crops, and use of windbreaks.

Keywords: Cardiovascular diseases; Chronic obstructive pulmonary disease; Conservation tillage; Cover crop; Particulate matter.

Conflict of interest statement

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

25

BMJ Support Palliat Care

. 2023 Dec 7;13(e2):e334-e343.

doi: 10.1136/bmjspcare-2020-002853.

Chronic breathlessness in advanced cardiorespiratory disease: patient perceptions of opioid use

Thomas Moran[1], Dominica Zentner[2,3], James Wong[2,3], Jennifer Philip[3,4], Natasha Smallwood[5,6]

Affiliations expand

- PMID: 33837113

- DOI: 10.1136/bmjspcare-2020-002853

Abstract

Objective: Low-dose oral opioids may improve severe chronic breathlessness in advanced cardiorespiratory diseases. Prescription of opioids for breathlessness occurs infrequently however, with little known about patients' attitudes towards their use in this setting. The aim of this qualitative study was to explore patients' perceptions regarding opioids for the management of severe chronic breathlessness in people with advanced cardiorespiratory disease.

Methods: A cross-sectional, qualitative study was undertaken using outpatients with severe chronic breathlessness due to either severe chronic obstructive pulmonary disease (COPD) or chronic heart failure (CHF). Indepth, semistructured interviews were audio-recorded, transcribed verbatim and coded. Thematic analysis was undertaken to extrapolate recurring ideas from the data.

Results: Twenty-four participants were purposively sampled from three different groups: opioid-naïve patients with COPD (n=7), opioid-naïve patients with CHF (n=7) and patients with COPD using opioids currently or previously for severe chronic breathlessness (n=10). Four major themes were shared by both the *opioid-naïve* and *opioid-experienced* cohorts: (1) stigmatised attitudes and beliefs regarding opioids, (2) limited knowledge and information-seeking behaviour regarding opioids, (3) the impact of the relationships with health professionals and continuity of care, and (4) the significance of past experiences with opioids. An additional theme that was unique to the opioid-experienced cohort was (5) the perception of benefit and improved quality of life.

Conclusion: Lack of knowledge regarding the role of opioids in managing severe chronic breathlessness, opioid misinformation and social stigmas are major barriers to opioid therapy that may be overcome by accurate information from trusted health professionals.

Keywords: chronic conditions; chronic obstructive pulmonary disease; dyspnoea; heart failure; quality of life; respiratory conditions.

Conflict of interest statement

Competing interests: None declared.

- Cited by 1 article

1
BMJ Open

. 2023 Dec 9;13(12):e076496.

doi: 10.1136/bmjopen-2023-076496.

Systematic review and meta-analysis of disease clustering in multimorbidity: a study protocol

Jennifer Ferris[1,2], Lean K Fiedeldey[3], Boah Kim[4], Felicity Clemens[2], Mike A Irvine[4,2], Sogol Haji Hosseini[4], Kate Smolina[2,5], Andrew Wister[4]

Affiliations expand

- PMID: 38070917

- DOI: 10.1136/bmjopen-2023-076496

Abstract

Introduction: Multimorbidity is defined as the presence of two or more chronic diseases. Co-occurring diseases can have synergistic negative effects, and are associated with significant impacts on individual health outcomes and healthcare systems. However, the specific effects of diseases in combination will vary between different diseases. Identifying which diseases are most likely to co-occur in multimorbidity is an important step towards population health assessment and development of policies to prevent and manage multimorbidity more effectively and efficiently. The goal of this project is to conduct a systematic review and meta-analysis of studies of disease clustering in multimorbidity, in order to identify multimorbid disease clusters and test their stability.

Methods and analysis: We will review data from studies of multimorbidity that have used data clustering methodologies to reveal patterns of disease co-occurrence. We propose a network-based meta-analytic approach to perform meta-clustering on a select list of chronic diseases that are identified as priorities for multimorbidity research. We will assess the stability of obtained disease clusters across the research literature to date, in order to evaluate the strength of evidence for specific disease patterns in multimorbidity.

Ethics and dissemination: This study does not require ethics approval as the work is based on published research studies. The study findings will be published in a peer-reviewed journal and disseminated through conference presentations and meetings with knowledge users in health systems and public health spheres.

Prospero registration number: CRD42023411249.

Keywords: aging; epidemiology; public health; statistics & research methods; systematic review.

Conflict of interest statement

Competing interests: None declared.

2

Review

Crit Care

. 2023 Dec 8;27(1):485.

doi: 10.1186/s13054-023-04770-6.

Do critical illness survivors with multimorbidity need a different model of care?

Jonathan Stewart[1], Judy Bradley[2], Susan Smith[3], Joanne McPeake[4], Timothy Walsh[5], Kimberley Haines[6], Nina Leggett[6], Nigel Hart[7], Danny McAuley[2]

Affiliations expand

- PMID: 38066562

- DOI: 10.1186/s13054-023-04770-6

Abstract

There is currently a lack of evidence on the optimal strategy to support patient recovery after critical illness. Previous research has largely focussed on rehabilitation interventions which aimed to address physical, psychological, and cognitive functional sequelae, the majority of which have failed to demonstrate benefit for the selected outcomes in clinical trials. It is increasingly recognised that a person's existing health status, and in particular multimorbidity (usually defined as two or more medical conditions) and frailty, are strongly associated with their long-term outcomes after critical illness. Recent evidence indicates the existence of a distinct subgroup of critical illness survivors with multimorbidity and high healthcare utilisation, whose prior health trajectory is a better predictor of long-term outcomes than the severity of their acute illness. This review examines the complex relationships between multimorbidity and patient outcomes after critical illness, which are likely mediated by a range of factors including the number, severity, and modifiability of a person's medical conditions, as well as related factors including treatment burden, functional status, healthcare delivery, and social support. We explore potential strategies to optimise patient recovery after critical illness in the presence of multimorbidity. A comprehensive and individualized approach is likely necessary including close coordination among healthcare providers, medication reconciliation and management, and addressing the physical, psychological, and social aspects of recovery. Providing patient-centred care that proactively identifies critical illness survivors with multimorbidity and accounts for their unique challenges and needs is likely crucial to facilitate recovery and improve outcomes.

Keywords: Critical illness; Multimorbidity; Transitions of care.

3

Review

Inn Med (Heidelb)

.

. 2023 Dec 5.

doi: 10.1007/s00108-023-01631-w. Online ahead of print.

[Polypharmacy in patients with dementia]

[Article in German]

Marlena Schnieder[1], Birte Viehmeister[2]

Affiliations expand

- PMID: 38052993

- DOI: 10.1007/s00108-023-01631-w

Abstract

in English, German

The number of patients with dementia is expected to grow in the coming years due to an aging population and an increasing life-expectancy. At the same time, in an aging society there will be an increase in multimorbidity and therefore polypharmacy. This combination presents numerous challenges particularly for people with dementia, as the correct administration of the drugs can frequently no longer be guaranteed. The drug treatment of neuropsychiatric symptoms of dementia are often treated with antipsychotics with potentially severe side effects and with limited efficacy. Moreover, many drugs have an anticholinergic potential, which may worsen the cognitive function even further in patients with dementia. The use of anticholinergic drugs should be handled with care and when possible be avoided in patients with dementia.

Keywords: Alzheimer disease; Cholinergic antagonists; Cholinesterase inhibitors; Dementia/drug therapy; Therapeutic adherence.

- 29 references

SUPPLEMENTARY INFO

Publication typesexpand

FULL TEXT LINKS

UNIMORE

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Cite

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4

J Aging Phys Act

. 2023 Dec 4:1-12.

doi: 10.1123/japa.2022-0397. Online ahead of print.

The Impact of Multimorbidity Patterns on Changes in Physical Activity and Physical Capacity Among Older Adults Participating in a Year-Long Exercise Intervention

Tiina Savikangas[1], Taija Savolainen[2], Anna Tirkkonen[1], Markku Alén[3], Arto J Hautala[4], Jari A Laukkanen[5,6], Timo Rantalainen[1], Timo Törmäkangas[1], Sarianna Sipilä[4]

Affiliations expand

- PMID: 38048763

- DOI: 10.1123/japa.2022-0397

Abstract

This study investigated the impact of multimorbidity patterns on physical activity and capacity outcomes over the course of a year-long exercise intervention, and on physical activity 1 year later. Participants were 314 physically inactive community-dwelling men and women aged 70-85 years, with no contraindications for exercise at baseline. Physical activity was self-reported. Physical capacity measurements included five-time chair-stand time, 6-minute walking distance, and maximal isometric knee-extension strength. The intervention included supervised and home-based strength, balance, and walking exercises. Multimorbidity patterns comprised physician-diagnosed chronic disease conditions as a predictor cluster and body mass index as a measure of obesity. Multimorbidity patterns explained 0%-12% of baseline variance and 0%-3% of the change in outcomes. The magnitude and direction of the impact of unique conditions varied by outcome, time point, and sex. Multimorbid older adults with no contraindications for exercise may benefit from multimodal physical training.

Keywords: chronic conditions; community-dwelling; physical functioning; physical performance; physical training.

Effectiveness of geriatric assessment and management in older cancer patients: a systematic review and meta-analysis

Mohammed Rashidul Anwar[1], Shant Torkom Yeretzian[2], Ana Patricia Ayala[3], Emma Matosyan[4], Henriette Breunis[5], Kathyrin Bote[6], Martine Puts[6], Mohammed Hassan Habib[7], Qixuan Li[8], Yeva Sahakyan[9], Shabbir M H Alibhai[1,7,10], Lusine Abrahamyan[1,9,11]

Affiliations expand

- PMID: 37738290

- DOI: 10.1093/jnci/djad200

Abstract

Background: Frailty and multimorbidity among older cancer patients affect treatment tolerance and efficacy. Comprehensive geriatric assessment and management is recommended to optimize cancer treatment, but its effect on various outcomes remains uncertain.

Objective: Our objective was to conduct a systematic review and meta-analysis of randomized controlled trials (RCTs) and cost-effectiveness studies comparing comprehensive geriatric assessment (with or without implementation of recommendations) to usual care in older cancer patients.

Methods: We searched MEDLINE, EMBASE, CINAHL, and Cochrane trials from inception to January 27, 2023, for RCTs and cost-effectiveness studies. Pooled estimates for outcomes were calculated using random-effects models.

Results: A total of 19 full-text articles representing 17 RCTs were included. Average participant age was 72-80 years, and 31%-62% were female. Comprehensive geriatric assessment type, mode of delivery, and evaluated outcomes varied across studies. Meta-analysis revealed no difference in risk of mortality (risk ratio [RR] = 1.08. 95% confidence interval [CI] = 0.91 to 1.29), hospitalization (RR = 0.92, 95% CI = 0.77 to 1.10), early treatment discontinuation (RR = 0.89, 95% CI = 0.67 to 1.19), initial dose reduction (RR = 0.99, 95% CI = 0.99 to 1.26), and subsequent dose reduction (RR = 0.87, 95% CI = 0.70 to 1.09). However, the risk of treatment toxicity was statistically significantly lower in the

comprehensive geriatric assessment group (RR = 0.78, 95% CI = 0.70 to 0.86). No cost-effectiveness studies were identified.

Conclusion: Compared with usual care, comprehensive geriatric assessment was not associated with a difference in risk of mortality, hospitalization, treatment discontinuation, and dose reduction but was associated with a lower risk of treatment toxicity indicating its potential to optimize cancer treatment in this population. Further research is needed to evaluate cost-effectiveness.

Comment in

- Geriatric assessment and management: is decreasing treatment toxicity good enough?
  Loh KP, Mohile SG.J Natl Cancer Inst. 2023 Dec 6;115(12):1445-1447. doi: 10.1093/jnci/djad207.PMID: 37949100 No abstract available.

6

Review

Sci Total Environ

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. 2023 Dec 10:903:166010.

doi: 10.1016/j.scitotenv.2023.166010. Epub 2023 Aug 3.

Associations of long-term particulate matter exposure with cardiometabolic diseases: A systematic review and meta-analysis

Mengqi Sun[1], Tianyu Li[1], Qinglin Sun[1], Xiaoke Ren[1], Zhiwei Sun[1], Junchao Duan[2]

Affiliations expand

- PMID: 37541522

- DOI: 10.1016/j.scitotenv.2023.166010

Abstract

Background: This review aimed to establish a holistic perspective of long-term PM exposure and cardiometabolic diseases, identify long-term PM-related cardiovascular and metabolic risk factors, and provide practical significance to preventative measures.

Method: A combination of computer and manual retrieval was used to search for keywords in PubMed (2903 records), Embase (2791 records), Web of Science (5488 records) and Cochrane Library (163 records). Finally, a total of 82 articles were considered in this meta-analysis. Stata 13.0 was accustomed to inspecting the studies' heterogeneity and calculating the combined effect value (RR) by selecting the matching models. The subgroup analysis, sensitivity analysis and publication bias tests were also performed.

Results: Meta-analysis figured an association between PM and cardiometabolic diseases. $PM_{2.5}$ (per 10 μg/m^3 increase) boosted the risk of hypertension (RR = 1.14, 95 % CI: 1.09-1.19), coronary heart disease (CHD) (RR = 1.21, 95 % CI: 1.08-1.35), diabetes (RR = 1.16, 95 % CI: 1.11-1.21) and stroke (including ischemic stroke and hemorrhagic stroke). PM_{10} (per 10 μg/m^3 increase) elevated the incidence of hypertension (RR = 1.11, 95 % CI: 1.07-1.16) and diabetes (RR = 1.26, 95 % CI: 1.08-1.47). PM_1 (per 10 μg/m^3 increase) exposure increased the risk of total dyslipidemia, yielding the RR of 1.10 (95 % CI: 1.01-1.18). Furthermore, the elderly, overweight and higher background pollutant level were potentially susceptible to related diseases.

Conclusion: There was a virtual connection between long-term exposure to PM and cardiometabolic diseases. $PM_{2.5}$ or PM_{10} (per 10 μg/m^3) increased the risk of hypertension, CHD, diabetes, stroke and dyslipidemia, causing cardiovascular "multimorbidity" in high-risk populations.

Keywords: Air pollution; Cardiometabolic diseases; Meta-analysis; Particulate matter.

Conflict of interest statement

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

SUPPLEMENTARY INFO

Publication typesexpand

FULL TEXT LINKS

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

1
BMC Pulm Med

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. 2023 Dec 9;23(1):496.

doi: 10.1186/s12890-023-02806-9.

Anticipating undiagnosed asthma in symptomatic adults with normal pre- and post-bronchodilator spirometry: a decision tool for bronchial challenge testing

Sheojung Shin[1], George Alex Whitmore[2], Louis-Philippe Boulet[3], Marie-Ève Boulay[3], Andréanne Côté[3], Céline Bergeron[4], Catherine Lemière[5], M Diane Lougheed[6], Katherine L Vandemheen[1], Gonzalo G Alvarez[1], Sunita Mulpuru[1], Shawn D Aaron[7]

Affiliations expand

- PMID: 38071285

- DOI: 10.1186/s12890-023-02806-9

Abstract

Background: Some patients with asthma demonstrate normal spirometry and remain undiagnosed without further testing.

Objective: To determine clinical predictors of asthma in symptomatic adults with normal spirometry, and to generate a tool to help clinicians decide who should undergo bronchial challenge testing (BCT).

Methods: Using random-digit dialling and population-based case-finding, we recruited adults from the community with respiratory symptoms and no previous history of diagnosed lung disease. Participants with normal pre- and post-bronchodilator spirometry subsequently underwent BCT. Asthma was diagnosed in those with symptoms and a methacholine provocative concentration (PC_{20}) of < 8 mg/ml. Sputum and blood eosinophils, and exhaled nitric oxide were measured. Univariate analyses identified potentially predictive variables, which were then used to construct a multivariable logistic regression model to predict asthma. Model sensitivity, specificity, and area under the receiver operating curve (AUC) were calculated.

Results: Of 132 symptomatic individuals with normal spirometry, 34 (26%) had asthma. Of those ultimately diagnosed with asthma, 33 (97%) answered 'yes' to a question asking whether they experienced cough, chest tightness or wheezing provoked by exercise or cold air. Other univariate predictors of asthma included female sex, pre-bronchodilator FEV1 percentage predicted, and percent positive change in FEV1 post bronchodilator. A multivariable model containing these predictive variables yielded an AUC of 0.82 (95% CI: 0.72-0.91), a sensitivity of 82%, and a specificity of 66%. The model was used to construct a nomogram to advise clinicians which patients should be prioritized for BCT.

Conclusions: Four readily available patient characteristics demonstrated a high sensitivity and AUC for predicting undiagnosed asthma in symptomatic adults with normal pre- and post-bronchodilator spirometry. These characteristics can potentially help clinicians to decide which individuals with normal spirometry should be investigated with bronchial challenge testing. However, further prospective validation of our decision tool is required.

Keywords: Airway hyperresponsiveness; Asthma; Bronchial challenge testing; Respiratory symptoms; Spirometry.

- 52 references

FULL TEXT LINKS

Proceed to details

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J Allergy Clin Immunol Pract

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. 2023 Dec 7:S2213-2198(23)01351-X.

doi: 10.1016/j.jaip.2023.11.045. Online ahead of print.

Influence of Baseline Bronchodilator Reversibility and Blood Eosinophils on Lung Function in Patients with Asthma Following Omalizumab

Thomas B Casale[1], Bradley E Chipps[2], Ahmar Iqbal[3], Bongin Yoo[4], Lauren A Millette[5], Nicola A Hanania[6]

Affiliations expand

- PMID: 38070771

- DOI: 10.1016/j.jaip.2023.11.045

No abstract available

Keywords: Airway reversibility; Allergic asthma; Eosinophils; Lung function; Omalizumab.

FULL TEXT LINKS

3

Acad Pediatr

. 2023 Dec 6:S1876-2859(23)00422-9.

doi: 10.1016/j.acap.2023.11.018. Online ahead of print.

Post-Discharge Remote Patient Monitoring for Children Hospitalized with Acute Asthma Exacerbations

Jessica Walters[1], Kylee Denker[2], Sarah Curry[3], Mary Carol Burkhardt[4]

Affiliations expand

- PMID: 38065283

- DOI: 10.1016/j.acap.2023.11.018

No abstract available

Keywords: asthma; hospital discharge; pediatric; remote patient monitoring; telemedicine.

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.

4

J Pediatr

. 2023 Dec 6:113867.

doi: 10.1016/j.jpeds.2023.113867. Online ahead of print.

Effect of the Telemedicine Enhanced Asthma Management through the Emergency Department (TEAM-ED) Program on Asthma Morbidity: A Randomized Controlled Trial

Jill S Halterman[1], Maria Fagnano[2], Paul Tremblay[2], Arlene Butz[3], Tamara T Perry[4], Hongyue Wang[2]

Affiliations expand

- PMID: 38065280

- DOI: 10.1016/j.jpeds.2023.113867

Abstract

Objective: To test the effectiveness of a telemedicine-based program in reducing asthma morbidity among children who present to the emergency department (ED) for asthma, by facilitating primary care follow-up and promoting delivery of guideline-based care.

Study design: We included children (3-12 years) with persistent asthma who presented to the ED for asthma, were then randomly assigned to Telemedicine Enhanced Asthma

Management through the Emergency Department (TEAM-ED) or enhanced Usual Care (eUC). TEAM-ED included: 1) school-based telemedicine follow-ups, completed by a primary care provider, 2) "point-of-care" prompting to promote guideline-based care, and 3) an opportunity for two additional telemedicine follow-ups. The primary outcome was the mean number of symptom-free days (SFDs) over 2 weeks at 3, 6, 9, and 12 months.

Results: We included 373 children from 2016 through 2021 (participation rate 68%; 54% Black, 32% Hispanic, 77% public insurance, mean age: 6.4 years). Demographic characteristics and asthma severity were similar between groups at baseline. Most (91%) TEAM-ED children had ≥1 telemedicine visit; 41% completed 3 visits. At 3 months, caregivers of children in TEAM-ED reported more follow-up visits (66%vs.48%, aOR:2.07 [1.28-3.33]), preventive asthma medication actions (90%vs.79%, aOR:3.28 [1.56-6.89]), and use of a preventive medication (82%vs.69%, aOR:2.716 [1.45-5.08]), compared with eUC. There was no difference between groups in medication adherence or asthma morbidity. When only pre-pandemic data were included, there was greater improvement in SFDs over time for children in TEAM-ED versus eUC.

Conclusions: TEAM-ED significantly improved follow-up and preventive care after an ED visit for asthma. We also saw improved SFDs with pre-pandemic data. The lack of overall improvement in morbidity and adherence indicates the need for additional ongoing management support.

Conflict of interest statement

Declaration of interests: We declare no competing interests.

5

Health Place

. 2023 Dec 7:85:103150.

doi: 10.1016/j.healthplace.2023.103150. Online ahead of print.

"I have to stay inside ...": Experiences of air pollution for people with asthma

Amy McCarron[1], Sean Semple[2], Vivien Swanson[3], Christine F Braban[4], Colin Gillespie[5], Heather D Price[6]

Affiliations expand

- PMID: 38064920

- DOI: 10.1016/j.healthplace.2023.103150

Abstract

Asthma, characterized by airway inflammation, sensitization and constriction, and leading to symptoms including cough and dyspnoea, affects millions of people globally. Air pollution is a known asthma trigger, yet how it is experienced is understudied and how individuals with asthma interact with air quality information and manage exacerbation risks is unclear. This study aimed to explore how people living with asthma in Scotland, UK, experienced and managed their asthma in relation to air pollution. We explored these issues with 36 participants using semi-structured interviews. We found that self-protection measures were influenced by place and sense of control (with the home being a "safe space"), and that the perception of clean(er) air had a liberating effect on outdoor activities. We discuss how these insights could shape air quality-related health advice in future.

Keywords: Air pollution; Asthma; Lived experience; Qualitative methods.

Conflict of interest statement

Declaration of competing interest None.

Cite

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Am J Respir Crit Care Med

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. 2023 Dec 8.

doi: 10.1164/rccm.202311-2103ED. Online ahead of print.

Do Comorbidities Influence the Response to Biologics in Severe Asthma?

Corrado Pelaia[1], Girolamo Pelaia[2], William Busse[3]

Affiliations expand

- PMID: 38064716

- DOI: 10.1164/rccm.202311-2103ED

No abstract available

Keywords: allergic rhinitis; biologics; chronic rhinosinusitis; nasal polyposis; severe asthma.

J Asthma

. 2023 Dec 8:1-9.

doi: 10.1080/02770903.2023.2293057. Online ahead of print.

Progressive clinical effects of the combination omalizumab and HDM – allergen immunotherapy in asthma

Andrzej Bozek[1], Barbara Rogala[2], Martyna Miodonska[1], Giorgio Walter Canonica[3]

Affiliations expand

- PMID: 38064236

- DOI: 10.1080/02770903.2023.2293057

Abstract

Objective: The combination of allergen immunotherapy (AIT) and omalizumab is used to treat patients at risk of anaphylaxis. There is currently a very little evidence that this combination increases the effectiveness of AIT in patients with inhalant allergies. The study aimed to evaluate the effectiveness of HDM-SCIT therapy (injection immunotherapy for house dust mites) in combination with omalizumab in treating HDM-induced asthma.

Methods: This study was a placebo-controlled, randomized, multicenter trial including 82 patients with HDM-driven mild to moderate asthma. Omalizumab alone (A), HDM SCIT + omalizumab (B), SCIT alone (C), or placebo (D) for 24 months were applied. All patients received asthma treatment in accordance with GINA recommendations. The treatment efficacy was defined by a reduction in the daily dose of inhaled steroids (ICS) and a reduction in the number of asthma exacerbations (AX).

Results: After 24 months of therapy, a statistically significant reduction in the daily doses of ICS in groups A and B was observed ($p = 0.021$ and $p = 0.008$). Daily ICS reduction was considerably more significant in group B ($p = 0.01$). During 24 months of observation, the AX was significantly reduced in all study groups, with the greatest significant difference observed between groups A and B and groups C and D (placebo) as follows: 0.42 patient/per year vs. 0.39 vs. 0.84 vs. 0.91 ($p = 0.023$).

Conclusion: The combination of HDM SCIT and omalizumab is significantly and progressively reducing ICS use and AX in a 24-month study. The combination is significantly more effective than the single treatments or placebo.

Keywords: IgE allergen immunotherapy; asthma; omalizumab.

Case Reports

J Diabetes Investig

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. 2023 Dec 8.

doi: 10.1111/jdi.14127. Online ahead of print.

A case of type 2 diabetes mellitus with weight gain and worsening of glycemic management after tezepelumab administration for severe bronchial asthma

Kotaro Umamoto[1], Ryotaro Bouchi[1,2], Noriko Ihana-Sugiyama[1,2], Noriko Kodani[1], Mitsuru Ohsugi[1,2], Masayuki Hojo[3], Kohjiro Ueki[1,4], Hiroshi Kajio[1]

Affiliations expand

- PMID: 38064175

- DOI: 10.1111/jdi.14127

Abstract

Some cases of bronchial asthma are refractory to conventional therapies. As the pathogenesis of bronchial asthma has been clarified, new treatments, such as bronchial thermoplasty and biological drugs, have been developed. Tezepelumab, an anti-thymic stromal lymphopoietin antibody, has been reported to inhibit the exacerbation of severe asthma; however, its adverse effects on glucose metabolism have not yet been reported. We encountered a case of weight gain and worsening glycemic management in a patient with type 2 diabetes and refractory bronchial asthma after the initiation of tezepelumab treatment. It has been reported that the overexpression of thymic stromal lymphopoietin in mice resulted in an enhanced release of free fatty acids from adipose tissues and the liver; thus, the administration of anti-thymic stromal lymphopoietin antibodies in the present case might have caused obesity, fatty liver and lower glucose tolerance.

Keywords: Asthma; Obesity; Tezepelumab.

- 9 references

SUPPLEMENTARY INFO

Publication typesexpand

FULL TEXT LINKS

UNIMORE

Proceed to details

Cite

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9

Pulm Ther

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. 2023 Dec 8.

doi: 10.1007/s41030-023-00245-9. Online ahead of print.

Effect of Tezepelumab on the Humoral Immune Response to Seasonal Quadrivalent Influenza Vaccination in Patients with Moderate to Severe Asthma: The Phase 3b VECTOR Study

Jeremy Cole[1], Iwona Cąpała-Szczurko[2], Stephanie Roseti[3], Claudia Chen[4], Scott Caveney[5], Anastasia A Aksyuk[6], Katie Streicher[6], Sandhia Ponnarambil[7,8], Gene Colice[3]

Affiliations expand

- PMID: 38064153

- DOI: 10.1007/s41030-023-00245-9

Abstract

Introduction: Annual influenza vaccinations are recommended for adolescents and adults with moderate to severe asthma. This study investigated the effect of tezepelumab, a human monoclonal antibody that blocks the activity of thymic stromal lymphopoietin, on the humoral immune response to the quadrivalent seasonal influenza vaccine in patients with moderate to severe asthma.

Methods: VECTOR was a phase 3b, randomized, multicenter, double-blind, parallel-group, placebo-controlled study. Adolescents (aged 12-17 years) and young adults (aged 18-21 years) with moderate to severe asthma were enrolled across 15 centers in the USA. Patients received tezepelumab 210 mg or placebo subcutaneously at weeks 0, 4, 8, and 12, and a single dose of inactivated quadrivalent seasonal influenza vaccine at week 12 before receiving study treatment. Immediately before vaccination and at 4 weeks postvaccination (week 16), strain-specific antibody responses were assessed for four influenza antigens by hemagglutination inhibition (HAI) and microneutralization (MN) assays. Safety was assessed.

Results: Seventy patients were randomized to tezepelumab (n = 35) or placebo (n = 35). There were no meaningful differences in HAI or MN antibody responses between treatment groups at week 16. HAI assay geometric mean fold rises (GMFRs) for influenza

strains were 1.76-7.34 for tezepelumab and 1.46-4.75 for placebo. MN assay GMFRs were 4.00-14.56 for tezepelumab and 3.56-10.62 for placebo. In the HAI assay, a fourfold or larger rise in antibody titer from weeks 12 to 16 occurred in 15.2-78.8% and 15.2-51.5% of tezepelumab and placebo recipients, respectively, and 97.0-100% of patients in both treatment groups achieved an antibody titer of at least 40 at week 16. No unexpected safety findings occurred.

Conclusion: There was no observed suppression of the humoral immune response after influenza vaccination in adolescents and young adults with moderate to severe asthma treated with tezepelumab. Therefore, the influenza vaccine can be administered to this patient population during tezepelumab treatment.

Gov identifier: NCT05062759.

Keywords: Airway obstruction; Hemagglutinin; Inflammatory disorders; Microneutralization; Thymic stromal lymphopoietin.

- 37 references

SUPPLEMENTARY INFO

Associated dataexpand

FULL TEXT LINKS

Proceed to details

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10

Respir Res

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. 2023 Dec 7;24(1):308.

doi: 10.1186/s12931-023-02617-w.

An epithelial gene signature of trans-IL-6 signaling defines a subgroup of type 2-low asthma

Zaid W El-Husseini[1,2,3], Dmitry Khalenkow[1,2], Andy Lan[2,3], Thys van der Molen[2], Chris Brightling[4], Alberto Papi[5], Klaus F Rabe[6], Salman Siddiqui[7], Dave Singh[8], Monica Kraft[9], Bianca Beghe[10], Maarten van den Berge[2,11], Djoke van Gosliga[1,2,12], Martijn C Nawijn[2,12], Stefan Rose-John[13], Gerard H Koppelman[1,2], Reinoud Gosens[14,15]

Affiliations expand

- PMID: 38062491
- PMCID: PMC10704725
- DOI: 10.1186/s12931-023-02617-w

Abstract

Background: Asthma is stratified into type 2-high and type 2-low inflammatory phenotypes. Limited success has been achieved in developing drugs that target type 2-low inflammation. Previous studies have linked IL-6 signaling to severe asthma. IL-6 cooperates with soluble-IL-6Rα to activate cell signaling in airway epithelium.

Objective: We sought to study the role of sIL-6Rα amplified IL-6 signaling in airway epithelium and to develop an IL-6+ sIL-6Rα gene signature that may be used to select asthma patients who potentially respond to anti-IL-6 therapy.

Methods: Human airway epithelial cells were stimulated with combinations of IL-6, sIL-6Rα, and inhibitors, sgp130 (Olamkicept), and anti-IL-6R (Tocilizumab), to assess effects on pathway activation, epithelial barrier integrity, and gene expression. A gene signature was generated to identify IL-6 high patients using bronchial biopsies and nasal brushes.

Results: Soluble-IL-6Rα amplified the activation of the IL-6 pathway, shown by the increase of STAT3 phosphorylation and stronger gene induction in airway epithelial cells compared to IL-6 alone. Olamkicept and Tocilizumab inhibited the effect of IL-6 + sIL-6Rα on gene expression. We developed an IL-6 + sIL-6Rα gene signature and observed enrichment of this signature in bronchial biopsies but not nasal brushes from asthma patients compared to healthy controls. An IL-6 + sIL-6Rα gene signature score was associated with lower levels of sputum eosinophils in asthma.

Conclusion: sIL-6Rα amplifies IL-6 signaling in bronchial epithelial cells. Higher local airway IL-6 + sIL-6Rα signaling is observed in asthma patients with low sputum eosinophils.

Conflict of interest statement

Mr. Elhusseini has nothing to disclose. Dr. Gosens and Dr. Koppelman reports grants from Marie Sklodowska-Curie reports grants from Marie Sklodowska-Curie during the conduct of the study; grants from TEVA the Netherlands, GSK, Lung Foundation of the Netherlands, VERTEX, UBBO EMMIUS foundation, TETRI Foundation, and ZON-MW outside the submitted work; and GHK participated in advisory board meetings for GSK, Astra Zeneca and PURE-IMS (money to institution). Dr. Rose-John has acted as a consultant and speaker for AbbVie, Chugai, Genentech Roche, Regeneron, Pfizer, and Sanofi. He also declares that he is an inventor on patents owned by CONARIS Research Institute, which develops the sgp130Fc protein Olamkicept together with Ferring Pharmaceuticals and I-Mab Biopharma S.R.-J. has stock ownership in CONARIS. Dr. Kraft has received consultant and speaking fees for Sanofi-Regeneron, AstraZeneca, Chiesi and GSK. Dr. Nawijn, Dr. Khalenkow, Mr. Lan, Ms. Gosliga, Dr. van der Molen, Dr. Brightling, Dr. Beghé, Dr. Papi, Dr. Rabe, Dr. Siddiqui, and Dr. Singh have nothing to disclose.

- 58 references
- 4 figures

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

. 2023 Dec 7:1-21.

doi: 10.1080/02770903.2023.2293062. Online ahead of print.

Characteristics of asthma in an older adult population according to sex and control level: Why are asthma symptoms in older women not well-controlled?

Dilek Karadoğan[1], Elif Yılmazel Uçar[2], Yasemin Yavuz[3], Ayse Baccioglu[4], Ayşe Bilge Öztürk[5], Nurgül Bozkurt[6], Murat Kavas[7], Selen Karaoğlanoğlu[8]; TAAR Study Group; Gülfem Çelik[9]

Collaborators, Affiliations expand

- PMID: 38060588

- DOI: 10.1080/02770903.2023.2293062

Abstract

Objective: The older adult population in Türkiye has increased by 22.6% in the last 5 years, and the characteristics of such patients with asthma remain uninvestigated. Therefore, we aimed to evaluate the characteristics of older adults with asthma according to sex and asthma control status to provide an in-depth overview of asthma in this population in Türkiye.

Methods: The data of older adults (age 65 years and over) with asthma were obtained from a multicenter, cross-sectional asthma database registry (Turkish Adult Asthma Registry, TAAR) funded by the Turkish Thoracic Society. Comparisons were made based on sex and asthma control levels using the GINA Asthma Symptom Control Questionnaire.

Results: Of the 2053 (11.5%) patients registered with the TAAR, 227 were older adults (median age, 69 (8), women, 75.8% [n = 172]). Of these, 46.5% (n = 101) had obesity to some degree. Compared with men, women had lower education, income levels, and employment rates. Additionally, women exhibited a higher prevalence of obesity, hypertension, and thyroid gland disease than men. Being female (OR: 2.99; 95% CI: 1.307-6.880), the presence of gastroesophageal reflux disease (OR: 2.855; 95% CI: 1.330-6.130),

and a predicted forced expiratory volume in the first-second value lower than 80% (OR: 2.938; 95% CI: 1.451-5.948) were associated with poorly controlled asthma.

Conclusion: Herein, older adults comprised 11.5% of adult patients with asthma. Being female poses a disadvantage in terms of both asthma prevalence and control in the older adult asthmatic population owing to the prevalence of comorbidities and socioeconomic sex-related distinguishing factors.

Keywords: asthma; asthma control; elderly; sex.

12

PLoS One

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. 2023 Dec 7;18(12):e0295493.

doi: 10.1371/journal.pone.0295493. eCollection 2023.

An examination of factorial invariance of the Asthma Control Questionnaire among adults with severe asthma

Ronald McDowell[1,2], Liam Heaney[1,3], Thomas Brown[4], Brendan Bunting[2], Hassan Burhan[5], Rekha Chaudhuri[6], Paddy Dennison[7], Shoaib Faruqi[8], Robin Gore[9], David J Jackson[10,11], Andrew Menzies-Gow[12], Thomas Pantin[13], Mitesh Patel[14], Paul Pfeffer[15], Salman Siddiqui[16], John Busby[1]; UK Severe Asthma Registry

Affiliations expand

- PMID: 38060586

- PMCID: PMC10703262

- DOI: 10.1371/journal.pone.0295493

Free PMC article

Abstract

Background: The Asthma Control Questionnaire (ACQ) is used to assess asthma symptom control. The relationship between the questionnaire items and symptom control has not been fully studied in severe asthmatic patients, and its validity for making comparisons between subgroups of patients is unknown.

Methods: Data was obtained from patients in the United Kingdom Severe Asthma Registry whose symptom control was assessed using the five-item ACQ (ACQ5) (n = 2,951). Confirmatory factor analysis determined whether a latent factor for asthma symptom control, as measured by the ACQ5, was consistent with the data. Measurement invariance was examined in relation to ethnicity, sex and age; this included testing for approximate measurement invariance using Bayesian Structural Equation Modelling (BSEM). The fitted models were used to estimate the internal consistency reliability of the ACQ5. Invariance of factor means across subgroups was assessed.

Results: A one-factor construct with residual correlations for the ACQ5 was an excellent fit to the data in all subgroups (Root Mean Square Error Approximation 0.03 [90%CI 0.02,0.05], p-close fit 0.93, Comparative Fit Index 1.00, Tucker Lewis Index 1.00}. Expected item responses were consistent for Caucasian and non-Caucasian patients with the same absolute level of symptom control. There was some evidence that females and younger adults reported wakening more frequently during the night than males and older adults respectively with the same absolute level of symptom control ($p<0.001$). However approximate measurement invariance was tenable and any failure to observe strong measurement invariance had minimal impact when comparing mean levels of asthma symptom control between patients of different sexes or ages. Average levels of asthma symptom control were lower for non-Caucasians ($p = 0.001$), females ($p<0.01$)and increased with age ($p<0.01$). Reliability of the instrument was high (over 88%) in all subgroups studied.

Conclusion: The ACQ5 is informative in comparing levels of symptom control between severe asthmatic patients of different ethnicities, sexes and ages. It is important that analyses are replicated in other severe asthma registries to determine whether measurement invariance is observed.

Conflict of interest statement

I have read the journal's policy and the authors of this manuscript have the following competing interests: RMD, JB, BB and MP declare no competing interests. TB reports grants from Asthma UK & Innovate UK, grants, personal fees and non-financial support from Astra Zeneca, grants, personal fees and non-financial support from Glaxo Smith Klein, personal fees and non-financial support from Teva, non-financial support from Napp Pharmaceuticals, personal fees and non-financial support from Novartis, outside the submitted work. RG declares speaking fees in past 12 months for Astra Zeneca and GSK. Speaking fees in past 24 months for Novartis UK. HB reports grants and personal fees from AstraZeneca and Chiesi, personal fees from GSK and grants from NHSE AAC and personal fees from Novartis. RC has received lecture fees from GSK, AZ, Teva, Chiesi, Sanofi and Novartis; honoraria for Advisory Board Meetings from GSK, AZ, Teva, Chiesi, Novartis; sponsorship to attend international scientific meetings from Chiesi, Napp, Sanofi, Boehringer, GSK and AZ and a research grant to her Institute from AZ for a UK multi-centre study. PD reports, personal fees for lecturing and non-financial support from Astra Zeneca, Glaxo Smith Klein, and Teva, consultancy fees from Teva and AstraZeneca, and grants from Novartis, Glaxo Smith Kline and Astrazeneca, all outside of/unrelated to the submitted work. SF grants and personal fees from AstraZeneca and GSK, personal fees from Chiesi and Novartis, outside the submitted work. RG reports personal fees from GSK UK, personal fees from Astra Zeneca UK, personal fees from Novartis UK, outside the submitted work. DJ has received advisory board and speaker fees from AstraZeneca plc, Boehringer Ingelheim, Chiesi Farmaceutici, GlaxoSmithKline plc, Napp Pharmaceuticals Limited, Novartis International. AMG has consultancy agreements with Astra Zeneca and Sanofi, he is participating in research funded by Astra Zeneca, he has received lecture fees from Teva, Astra Zeneca, Novartis and Sanofi attended advisory boards for Novartis, Sanofi, Glaxo SmithKline, Astra Zeneca and Teva and attended international conferences with Teva. RN has received an unrestricted grant of £10,000 from Novartis in 2010 towards development of clinical services at the University Hospital of South Manchester. He has run preceptorship programmes in 2015 and 2016. These programmes have resulted in payment to the University Hospital of South Manchester for amounts not exceeding £10,000. He has also performed lecturing at Pharmaceutically sponsored meetings for the following pharmaceutical companies in the last 3 years: AstraZeneca (<£1,000), Boehringer Ingelheim (<£2,000), Boston scientific (<£5,000), Chiesi (<£1,000), Novartis < £10,000, Napp (<£2,000), Teva (<£2,000). He has sat on advisory boards for the following companies in the last 3 years, (Astra Zeneca, Boehringer Ingelheim, Boston scientific, Chiesi, GSK, Novartis Vectura and Teva), receiving reimbursement not exceeding £5,000 per company. He has received sponsorship support to attend international academic meetings from AstraZeneca, Boehringer ingelheim, Novartis, GSK, Chiesi and TEVA. Dr Niven, (or any members of his family) has no shares or any pecuniary interest in any pharmaceutical industry and has no shareholdings or dividends and is not a paid consultant for any

company. DP has board membership with Amgen, AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Mylan, Mundipharma, Novartis, Regeneron Pharmaceuticals, Sanofi Genzyme, Teva Pharmaceuticals, Thermofisher; consultancy agreements with Amgen, AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Mylan, Mundipharma, Novartis, Pfizer, Teva Pharmaceuticals, Theravance; grants and unrestricted funding for investigator-initiated studies (conducted through Observational and Pragmatic Research Institute Pte Ltd) from AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Mylan, Mundipharma, Novartis, Pfizer, Regeneron Pharmaceuticals, Respiratory Effectiveness Group, Sanofi Genzyme, Teva Pharmaceuticals, Theravance, UK National Health Service; payment for lectures/speaking engagements from AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, GlaxoSmithKline, Kyorin, Mylan, Mundipharma, Novartis, Regeneron Pharmaceuticals, Sanofi Genzyme, Teva Pharmaceuticals; payment for the development of educational materials from Mundipharma, Novartis; payment for travel/accommodation/meeting expenses from AstraZeneca, Boehringer Ingelheim, Mundipharma, Mylan, Novartis, Thermofisher; funding for patient enrolment or completion of research from Novartis; stock/stock options from AKL Research and Development Ltd which produces phytopharmaceuticals; owns 74% of the social enterprise Optimum Patient Care Ltd (Australia and UK) and 74% of Observational and Pragmatic Research Institute Pte Ltd (Singapore); 5% shareholding in Timestamp which develops adherence monitoring technology; is peer reviewer for grant committees of the Efficacy and Mechanism Evaluation programme, and Health Technology Assessment; and was an expert witness for GlaxoSmithKline. TP has received support for meetings and/or travel from Chiesi, Sanofi Genzyme and GSK. PP has participated in advisory boards for GlaxoSmithKline (GSK), AstraZeneca and Sanofi; has been an investigator on clinical trials sponsored by AstraZeneca, GSK, Sanofi and Novartis; and is conducting research funded by GSK for which his institution receives remuneration. SS has received fees from consultancy agreements/other services from Astra Zeneca, GSK, Boehringer Ingelheim, Chiesi, ERT Medical, Owlstone Medical. RS has received presentation fees from AZ. LH is Academic Lead for the Medical Research Council Stratified Medicine UK Consortium in Severe Asthma which involves industrial partnerships with a number of pharmaceutical companies.

- 51 references
- 3 figures

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

13

PLoS One

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. 2023 Dec 7;18(12):e0294587.

doi: 10.1371/journal.pone.0294587. eCollection 2023.

Frequency and characteristics of asthma in smokers attending smoking cessation units in Spain

Juan-Antonio Riesco[1], Carlos Rábade[2], Jaime Signes-Costa[3], Eva Cabrera[4], Carlos-A Jimenez[5]

Affiliations expand

- PMID: 38060490

- PMCID: PMC10703326

- DOI: 10.1371/journal.pone.0294587

Free PMC article

Abstract

Introduction: The interaction between smoking and asthma impairs lung function and increases airflow obstruction severity. The identification of smoking patterns in smokers with and without asthma is crucial to provide the best care strategies. The aims of this study are to estimate asthma frequency, describe asthma features, and characterize smoking in smokers attending smoking cessation units.

Material and methods: We carried out a cross-sectional study in five smoking cessation units with different geographical distribution to estimate asthma frequency in smokers, characterize asthma features in smokers, as well as smoking in asthmatic smokers.

Results: Asthma frequency among smokers was 18.6%. Asthmatic smokers presented high passive exposure, low smoking self-efficacy and will to quit smoking, as well as a high exacerbation frequency, severe symptoms, and frequent use of long-acting beta agonists, inhaled steroids, and short-acting beta agonists.

Discussion: Smokers with asthma constitute a high-risk group with worsened evolution of pulmonary involvement. All smokers should be regularly screened for asthma. Effective smoking cessation strategies should be proposed to smokers with asthma in order to reverse the harmful effects of smoking on the airway, together with a comprehensive and integral approach.

Conflict of interest statement

The authors have declared that no competing interests exist.

- 42 references

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

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14

BMC Pulm Med

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-
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. 2023 Dec 6;23(1):491.

doi: 10.1186/s12890-023-02773-1.

Development of a risk prediction model to predict the risk of hospitalization due to exacerbated asthma among adult asthma patients in a lower middle-income country

Dhanusha Harshinie Punyadasa[1], Vindya Kumarapeli[2], Wijith Senaratne[3]

Affiliations expand

- PMID: 38057750
- PMCID: PMC10698957
- DOI: 10.1186/s12890-023-02773-1

Free PMC article

Abstract

Background: Asthma patients experience higher rates of hospitalizations due to exacerbations leaving a considerable clinical and economic burden on the healthcare system. The use of a simple, risk prediction tool offers a low-cost mechanism to identify these high-risk asthma patients for specialized care. The study aimed to develop and validate a risk prediction model to identify high-risk asthma patients for hospitalization due to exacerbations.

Methods: Hospital-based, case-control study was carried out among 466 asthma patients aged ≥ 20 years recruited from four tertiary care hospitals in a district of Sri Lanka to identify risk factors for asthma-related hospitalizations. Patients (n = 116) hospitalized due to an exacerbation with respiratory rate > 30/min, pulse rate > 120 bpm, O2 saturation (on air) < 90% on admission, selected consecutively from medical wards; controls (n = 350;1:3 ratio) randomly selected from asthma/medical clinics. Data was collected via a pre-tested Interviewer-Administered Questionnaire (IAQ). Logistic Regression (LR) analyses were performed to develop the model with consensus from an expert panel. A second case-control study was carried out to assess the criterion validity of the new model recruiting 158 cases and 101 controls from the same hospitals. Data was collected using an IAQ based on the newly developed risk prediction model.

Results: The developed model consisted of ten predictors with an Area Under the Curve (AUC) of 0.83 (95% CI: 0.78 to 0.88, P < 0.001), sensitivity 69.0%, specificity 86.1%, positive predictive value (PPV) 88.6%, negative predictive value (NPV) 63.9%. Positive and negative likelihood ratios were 4.9 and 0.3, respectively.

Conclusions: The newly developed model was proven valid to identify adult asthma patients who are at risk of hospitalization due to exacerbations. It is recommended as a simple, low-cost tool for identifying and prioritizing high-risk asthma patients for specialized care.

Keywords: Asthma; Exacerbation; Hospitalization; Lower middle-income country; Risk prediction model; Sri Lanka; Validation.

Conflict of interest statement

The authors declare no competing interests.

- 31 references
- 1 figure

15

Pediatr Res

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. 2023 Dec 6.

doi: 10.1038/s41390-023-02940-4. Online ahead of print.

Comorbid asthma is associated with rhinitis severity in children exposed to air pollutants

Sai-Wai Ho[1,2], Ko-Huang Lue[3], Shan-Ming Chen[2], Min-Sho Ku[4,5]

Affiliations expand

- PMID: 38057575

- DOI: 10.1038/s41390-023-02940-4

Abstract

Background: The impact of asthma on the severity of rhinitis when children with allergic rhinitis (AR) are exposed to air pollutants has not been studied.

Methods: Children with AR (65 with asthma, 208 without asthma), aged 6-13 years, were recruited from a hospital in Taichung, Taiwan, between 2007 and 2011. Correlations between Pediatric-Rhinoconjunctivitis-Quality-of-Life score, nasal peak expiratory flow, and air pollutants were compared. With the same age, research time, and form the same city, children with AR (660 with asthma, 3174 without asthma) were selected from a database. Correlations between clinical visit times for AR and air pollutants were compared.

Results: In male children with AR and asthma, both clinical and database studies revealed a correlation between higher rhinitis discomfort (quality-of-life score), higher visit times for AR, and higher PM_{10}, $PM_{2.5}$, NO_2, NMHC concentrations. Correlations between higher nasal inflammation/obstruction (lower expiratory flow) and higher air pollutant concentrations were observed in male children with AR and asthma.

Conclusion: In children with AR, comorbid asthma was associated with increased rhinitis severity when they were exposed to air pollutants, and the association was only noted in males. Increased nasal obstruction/inflammation from exposure to air pollutants may be the mechanisms underlying this association.

Impact statement: The influence of asthma on the severity of rhinitis when children with allergic rhinitis (AR) are exposed to air pollutants has not been studied. In children with AR, the correlation between higher rhinitis discomfort, higher number of clinical visits for AR, and higher PM_{10}, $PM_{2.5}$, NO_2, NMHC concentrations were only noted in those who also had asthma. The correlation was only noted in male. Comorbid asthma was associated with

higher rhinitis severity when children with AR are exposed to air pollutants The association was only noted in male.

- 34 references

16

Review

Eur Arch Otorhinolaryngol

. 2023 Dec 6.

doi: 10.1007/s00405-023-08351-9. Online ahead of print.

Prevalence of asthma and allergic rhinitis in children exposed to pets: a meta-analysis

Yi-Yin Qiu[1], Liang-Qian Tu[2], Ming Chen[3]

Affiliations expand

- PMID: 38057489

- DOI: 10.1007/s00405-023-08351-9

Abstract

Purpose: Pet exposure has always been controversial with childhood asthma and allergic rhinitis. We aimed to understand the prevalence of asthma and allergic rhinitis in children exposed to pets by meta-analysis.

Methods: We searched articles published from Jan 1, 2012 to Dec 31, 2022 in the Embase, PubMed, Cochrane Library, and Web of Science databases. We included a cross-sectional study that reported the prevalence of asthma and allergic rhinitis in children exposed to pets. Furthermore, we performed subgroup analyses according to pet type and age.

Results: In 14 selected studies, the meta-analysis results showed that the pooled prevalence of asthma in children exposed to pets was 19.0% (95% CI 13.3-24.7%), and the pooled prevalence of allergic rhinitis in children exposed to pets was 25.5% (95% CI 12.4-38.5%). The prevalence of asthma in children exposed to cats and dogs was 16.4% (95% CI 9.9-22.8%) and 12.5% (95% CI 8.7-16.2%), respectively. The prevalence of allergic rhinitis was 24.9% (95% CI 2.9-47.0%) and 24.1% (95% CI 2.6-45.6%), respectively. The prevalence of asthma in pet-exposed children was 17.1% (95% CI 12.3-22.0%) in the adolescence group (> 10 years) and 26.3% (95% CI 12.2-40.3%) in the childhood group (0-10 years). The prevalence of allergic rhinitis was 8.6% (95% CI 7.2-10.0%) in the adolescence group and 46.3% (95% CI 44.0-48.6%) in the childhood age group.

Conclusions: The prevalence of asthma and allergic rhinitis in children exposed to pets is different. Exposure to pet cats is more prone to illness, and younger children are more susceptible to disease than older children.

Keywords: Allergic rhinitis; Asthma; Children; Pets; Prevalence.

- 29 references

SUPPLEMENTARY INFO

Publication types, Grants and fundingexpand

FULL TEXT LINKS

SpringerLink FULL-TEXT ARTICLE UNIMORE

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Sci Rep

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. 2023 Dec 7;13(1):21568.

doi: 10.1038/s41598-023-48540-4.

Conception and pilot testing of a self-management health application for patients with pollen-related allergic rhinitis and allergic asthma-the APOLLO app

V Landesberger[1], K Grenzebach[1], F Schreiber[1], D Nowak[2,3], M Gröger[4], E Oppel[5], B Schaub[6,7], L E French[5], S Kutzora[8], C Quartucci[1,2,3], C Herr[1,2,3], S Heinze[1,2,3]

Affiliations expand

- PMID: 38057347

- PMCID: PMC10700582

- DOI: 10.1038/s41598-023-48540-4

Free PMC article

Abstract

It has been shown that pollen information services are an important self-management tool for patients with pollen-related allergic rhinitis (AR) and allergic asthma (AA). This study aimed to design an online application for patients with AR and AA, which supports patients to better manage their disease as well as to evaluate the app and present the first results of the pilot study. The pollen data were obtained from the electronic pollen information network of Bavaria, Germany. Participants were asked to fill in their allergy-related

complaints in the app over a 60-day period. Subsequently, the app was evaluated. Indices and diagrams visualized the participants' individual complaints as well as the daily pollen concentration in the air. In order to motivate participants to complete the app on a daily basis, we used elements of gamification. Two thirds of the participants (N = 46) reported feeling better informed about pollen counts and their allergy when using the app. The app's simple and comprehensible design was rated positively. More than 80% of the participants would recommend the app to their family and friends. The app can be a tool for patients with AR and AA to better understand their disease.

Conflict of interest statement

The authors declare no competing interests.

- 42 references
- 3 figures

18

J Allergy Clin Immunol

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. 2023 Dec 4:S0091-6749(23)02403-X.

doi: 10.1016/j.jaci.2023.10.032. Online ahead of print.

A Novel piRNA Associates with T2-high Asthma Phenotypes

Jiang Li[1], Xiaoning Hong[2], Mingye Jiang[2], Alvin T Kho[3], Anshul Tiwari[4], Alberta L Wang[4], Robert P Chase[4], Juan C Celedón[5], Scott T Weiss[6], Michael J McGeachie[4], Kelan G Tantisira[7]

Affiliations expand

- PMID: 38056635

- DOI: 10.1016/j.jaci.2023.10.032

Abstract

Background: Piwi-interacting RNA (piRNA), the largest non-coding RNA group, regulate transcriptional processes. Whether piRNAs are associated with T2-high asthma is unknown.

Objective: We sought to investigate the association between piRNAs and T2-high asthma in childhood asthma.

Methods: We sequenced plasma samples from 462 subjects in the Childhood Asthma Management Program (CAMP) as the discovery cohort and 1,165 subjects in the Genetics of Asthma in Costa Rica Study (GACRS) as a replication cohort. Sequencing reads were filtered first and piRNA reads were annotated and normalized. Linear regression was used for the association analysis of piRNAs and peripheral blood eosinophil count, total serum IgE level and long-term asthma exacerbation in children with asthma. Mediation analysis was performed to investigate the effect direction. We then ascertained if the circulating piRNAs were present in asthmatic airway epithelial cells in a GEO public dataset.

Results: Fifteen piRNAs were significantly associated with eosinophil count in CAMP ($p \leq 0.05$), and three were successfully replicated in GACRS. Eleven piRNAs were associated with total IgE in CAMP, and one of these was replicated in GACRS. All 22 significant piRNAs were identified in epithelial cells in vitro, and six of these were differentially expressed between subjects with asthma and healthy controls. Fourteen piRNAs were associated with the long-term asthma exacerbation and effect of piRNAs on the long-term asthma exacerbation are mediated through eosinophils count and serum IgE level.

Conclusion: piRNAs are associated with peripheral blood eosinophils and total serum IgE in childhood asthma and may play important roles in T2-high asthma.

Keywords: IgE; T2-high asthma; biomarker; eosinophil; piRNA.

19

Review

Respir Med

. 2023 Dec 5:221:107494.

doi: 10.1016/j.rmed.2023.107494. Online ahead of print.

Effects of cannabis smoking on the respiratory system: A state-of-the-art review

Lugain Khoj[1], Vincenzo Zagà[2], Daniel L Amram[3], Karishma Hosein[4], Giovanni Pistone[5], Mario Bisconti[6], Antonella Serafini[7], Liborio M Cammarata[5], Maria Sofia Cattaruzza[8], Marco Mura[4]

Affiliations expand

- PMID: 38056532

- DOI: 10.1016/j.rmed.2023.107494

Abstract

The diminished perception of the health risks associated with the consumption of cannabis (marijuana) lead to a progressive increase in its inhalational use in many countries. Cannabis can be smoked through the use of joints, spliffs and blunts, and it can be vaporised with the use of hookah or e-cigarettes. Delta-9 tetrahydrocannabinol (THC) is the main psychoactive component of cannabis smoke but contains numerous other substances. While the recreational use of cannabis smoking has been legalised in several countries, its health consequences have been underestimated and undervalued. The purpose of this review is to critically review the impact of cannabis smoke on the respiratory system. Cannabis smoke irritates the bronchial tree and is strongly associated

with symptoms of chronic bronchitis, with histological signs of airway inflammation and remodelling. Altered fungicidal and antibacterial activity of alveolar macrophages, with greater susceptibility to respiratory infections, is also reported. The association with invasive pulmonary aspergillosis in immunocompromised subjects is particularly concerning. Although cannabis has been shown to produce a rapid bronchodilator effect, its chronic use is associated with poor control of asthma by numerous studies. Cannabis smoking also represents a risk factor for the development of bullous lung disease, spontaneous pneumothorax and hypersensitivity pneumonitis. On the other hand, no association with the development of chronic obstructive pulmonary disease was found. Finally, a growing number of studies report an independent association of cannabis smoking with the development of lung cancer. In conclusion, unequivocal evidence established that cannabis smoking is harmful to the respiratory system. Cannabis smoking has a wide range of negative effects on respiratory symptoms in both healthy subjects and patients with chronic lung disease. Given that the most common and cheapest way of assumption of cannabis is by smoking, healthcare providers should be prepared to provide counselling on cannabis smoking cessation and inform the public and decision-makers.

Keywords: Asthma; Bullous lung disease; Cannabis; Chronic bronchitis; Lung cancer; Marijuana; Pulmonary aspergillosis; Smoking.

Conflict of interest statement

Declaration of competing interest We declare that we do not have any interests, financial or otherwise, that need to be disclosed in relation to the review article that we are submitting.

. 2023 Dec 6:1-12.

doi: 10.1080/02770903.2023.2289169. Online ahead of print.

Exacerbations, treatment patterns, utilization, and costs before and after initiating of benralizumab for the treatment of severe eosinophilic asthma

Joseph L Smith[1], Yen Chung[2], John Barron[1], Theodore Barlows[2], Bal Nepal[1], Donna Carstens[2]

Affiliations expand

- PMID: 38054593

- DOI: 10.1080/02770903.2023.2289169

Abstract

Objectives: The purpose of this study was to examine the number of exacerbations, counts of eosinophils, and asthma-related symptoms 1 year before and after initiating benralizumab for the treatment of severe eosinophilic asthma.

Methods: Patients with prior exacerbations and newly initiating benralizumab were identified in the claims-based Healthcare Integrated Research Database. Claims were used to assess benralizumab treatment patterns, exacerbations, healthcare resource utilization, and other asthma medication used. Among a subset of patients, medical records were abstracted for Asthma Control Test (ACT) scores and asthma symptoms.

Results: There were 506 patients meeting inclusion/exclusion criteria for claims-based analyses and 123 for medical-record analyses. The number of patients experiencing exacerbations significantly decreased from baseline to follow-up (40% reduction, McNemar's $\chi^2 = 204.00$, $p < .001$). The mean number of exacerbations also decreased from 3.2 (1.5) to 1.2 (1.4) (paired $t = 24.45$, $p < .001$; Cohen's $D = 1.09$). The effects were larger among patients with eosinophils ≥300 cells/μL. Among patients with an ACT available for

baseline and follow-up (n = 47), there was a significant reduction in the number of patients with scores <19 (72% vs. 45%, p < .01).

Conclusions: Treatment with benralizumab resulted in fewer exacerbations, reduced utilization, and improved ACT scores. This study demonstrates that benralizumab is an effective treatment option for patients with severe eosinophilic asthma.

Keywords: Respiratory; asthma control test; biologics; biomarkers; real-world evidence.

21

Paediatr Perinat Epidemiol

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. 2023 Dec 6.

doi: 10.1111/ppe.13023. Online ahead of print.

Maternal obesity and childhood asthma risk: Exploring mediating pathways

Natalie A Rosenquist[1], Megan Richards[1], Jeannette R Ferber[2], Matthew J Strickland[1], So Young Ryu[1], Heather Burkin[3], Ann M Weber[1], De-Kun Li[2], Lyndsey A Darrow[1]

Affiliations expand

- PMID: 38054336

- DOI: 10.1111/ppe.13023

Abstract

Background: Growing evidence for the effect of maternal obesity on childhood asthma motivates investigation of mediating pathways.

Objective: To investigate if childhood body mass index (BMI), gestational weight gain (GWG) and preterm birth mediate the association of maternal obesity on childhood asthma risk.

Methods: We used electronic medical records from mother-child pairs enrolled in Kaiser Permanente Northern California integrated healthcare system. Children were followed from their birth (2005-2014) until at least age 4 (n = 95,723), age 6 (n = 59,230) or age 8 (n = 25,261). Childhood asthma diagnosis at each age was determined using ICD-9/10 codes and medication dispensings. Prepregnancy BMI (underweight [<18.5], normal [18.5-24.9], overweight [25-29.9], obese [≥30] kg/m^2) were defined using height and weight measurements close to the last menstrual period date. Child's BMI (Centers for Disease Control and Prevention BMI-for-age percentiles: underweight [<5th], normal [5th-85th], overweight [85th-95th], obese [>95th]) were obtained using anthropometric measurements taken the year preceding each follow-up age. GWG (delivery weight-prepregnancy weight) was categorised based on Institutes of Medicine recommendations (inadequate, adequate, excessive). Implementing first causal inference test (CIT) then causal mediator models (to decompose the natural direct and indirect effects), we examined the potential mediating effect of childhood BMI, GWG, and preterm birth on the association between prepregnancy BMI (continuous and categorical) and childhood asthma.

Results: Overall, risk of childhood asthma increased as prepregnancy BMI increased (age 4 risk ratio: 1.07, 95% confidence interval: 1.04, 1.09, per 5 kg/m^2 increase in BMI; similar for age 6 and 8). CIT identified childhood BMI and preterm birth, but not GWG as potential mediators. Causal mediation models confirmed childhood BMI, but not preterm birth, as having a partial mediating effect. Results were similar for age 6 and 8, and when continuous mediators (instead of binary) were assessed.

Conclusions: Childhood overweight/obesity has a modest mediating effect on the association between prepregnancy BMI and childhood asthma.

Keywords: asthma; childhood obesity; maternal obesity; mediation; pregnancy.

- 41 references

SUPPLEMENTARY INFO

Grants and fundingexpand

FULL TEXT LINKS

22

Eur J Med Res

. 2023 Dec 6;28(1):568.

doi: 10.1186/s40001-023-01482-z.

Characteristics and outcomes of patients hospitalized for infection with influenza, SARS-CoV-2 or respiratory syncytial virus in the season 2022/2023 in a large German primary care centre

C Quarg[1], R A Jörres[2], S Engelhardt[1], P Alter[3], S Budweiser[4 5]

Affiliations expand

- PMID: 38053110
- PMCID: PMC10699044
- DOI: 10.1186/s40001-023-01482-z

Free PMC article

Abstract

Background: In 2022/2023, Influenza A and Respiratory Syncytial Virus (RSV) reappeared in hospitalized patients, which was in parallel to ongoing SARS-CoV-2 infections. The aim of our study was to compare the characteristics and outcomes of these infections during the same time.

Methods: We included patients of all ages with a positive polymerase chain reaction (PCR) test for Influenza A/B, RSV, or SARS-CoV-2 virus hospitalized in the neurological, internal or paediatric units of the RoMed Hospital Rosenheim, Germany, between October 1st 2022 and February 28th 2023.

Results: A total of 906 patients were included (45.6% female; median age 68.0 years; 21.9% Influenza A, 48.2% SARS-CoV-2, 28.3% RSV). Influenza B (0.2%) and co-infections (1.5%) played a minor role. In patients aged ≥ 18 years (n = 637, 71%), Influenza A, SARS-CoV-2 and RSV groups differed in age (median 72, 79, 76 years, respectively; $p < 0.001$). Comorbidities, particularly asthma and COPD, were most prevalent for RSV. 103 patients were admitted to the intensive care unit (ICU) (16.3% Influenza A, 15.3% SARS-CoV-2, 19.2% RSV; $p = 0.649$), 56 died (6.8% Influenza A, 9% SARS-CoV-2, 11.1% RSV; $p = 0.496$). RSV showed the highest frequencies of low-flow oxygen supplementation for admission and stay. Differences in the length of stay were minor (median 7 days). Conversely, in patients aged < 18 years (n = 261, 28,8%), 19.5%, 17.6% and 60.2% were in the Influenza A, SARS-CoV-2 and RSV groups, respectively; 0.4% showed Influenza B and 2.3% co-infections. 17 patients were admitted to ICU (3.9% Influenza A, 9.6% RSV, 0% SARS-CoV-2); none died. RSV showed the highest frequencies of high- and low-flow oxygen supplementation, SARS-CoV-2 the lowest.

Conclusion: When comparing infections with Influenza, SARS-CoV-2 and RSV in the winter 2022/2023 in hospitalized adult patients, rates of ICU admission and mortality were similar. RSV showed the highest frequencies of obstructive airway diseases, and of oxygen supplementation. The latter was also true in children/adolescents, in whom RSV dominated. Thus, in the situation of declining importance of SARS-CoV-2, RSV showed a disease burden that was relatively higher than that from Influenza and SARS-CoV-2 across ages, and this might be relevant for the seasons coming.

Keywords: Adults; Children; Covid-19; Hospitalization; ICU admission; Influenza; Mortality; PCR test; RSV; SARS-CoV-2.

Conflict of interest statement

The authors declare that they have no competing interests.

- 26 references
- 3 figures

SUPPLEMENTARY INFO

MeSH termsexpand

FULL TEXT LINKS

23

Observational Study

BMC Pulm Med

. 2023 Dec 5;23(1):487.

doi: 10.1186/s12890-023-02798-6.

Effects of treatment with corticosteroids on human rhinovirus-induced asthma exacerbations in pediatric inpatients: a prospective observational study

Keiko Kan-O[1], Yasuyoshi Washio[2], Takeshi Oki[3], Tsuguto Fujimoto[4], Takahito Ninomiya[3], Makoto Yoshida[5], Masaki Fujita[6], Yoichi Nakanishi[2], Koichiro Matsumoto[2,7]

Affiliations expand

- PMID: 38053068

- PMCID: PMC10696820

- DOI: 10.1186/s12890-023-02798-6

Free PMC article

Abstract

Background: Human rhinoviruses (HRVs) infection is a common cause of exacerbations in pediatric patients with asthma. However, the effects of corticosteroids on HRV-induced exacerbations in pediatric asthma are unknown. We conducted a prospective observational study to determine the viral pathogens in school-age pediatric inpatients with asthma exacerbations. We assessed the effects of maintenance inhaled corticosteroids (ICS) on the detection rates of HRV species and treatment periods of systemic corticosteroids during exacerbations on pulmonary lung function after exacerbations.

Methods: Nasopharyngeal samples and clinical information were collected from 59 patients with asthma exacerbations between April 2018 and March 2020. Pulmonary function tests were carried out 3 months after exacerbations in 18 HRV-positive patients. Changes in forced expiratory volume in 1 second (FEV_1)% predicted from baseline in a stable state were compared according to the treatment periods of systemic corticosteroids.

Results: Fifty-four samples collected from hospitalized patients were analyzed, and viral pathogens were identified in 45 patients (83.3%) using multiplex PCR assay. HRV-A, -B, and -C were detected in 16 (29.6%), one (1.9%), and 16 (29.6%) patients, respectively. The detection rates of HRV-C were lower in the ICS-treated group compared with those in the ICS-untreated group (p = 0.01), whereas maintenance ICS treatment did not affect the detection rate for viral pathogens in total and HRV-A. Changes in FEV_1% predicted in patients treated with systemic corticosteroids for 6-8 days (n = 10; median, 4.90%) were higher than those in patients treated for 3-5 days (n = 8; median, - 10.25%) (p = 0.0085).

Conclusions: Maintenance ICS reduced the detection rates of HRV (mainly HRV-C) in school-age inpatients with asthma exacerbations, and the treatment periods of systemic corticosteroids during exacerbations affected lung function after HRV-induced exacerbations. The protective effects of corticosteroids on virus-induced asthma exacerbations may be dependent upon the types of viral pathogen.

Keywords: Corticosteroids; Exacerbation; Human rhinovirus; Pediatric asthma.

Conflict of interest statement

The authors declare no competing interests.

- 39 references
- 3 figures

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substances, Supplementary conceptsexpand

FULL TEXT LINKS

24

Environ Res

. 2023 Dec 3:243:117831.

doi: 10.1016/j.envres.2023.117831. Online ahead of print.

Changes in industrial air pollution and the onset of childhood asthma in Quebec, Canada

Ying Liu[1], Xiaohui Geng[1], Audrey Smargiassi[2], Michel Fournier[3], Shayamila Mahagammulla Gamage[4], Jad Zalzal[4], Shoma Yamanouchi[4], Sara Torbatian[4], Laura Minet[5], Marianne Hatzopoulou[4], Stephane Buteau[6], Elhadji-Anassour Laouan-Sidi[7], Ling Liu[8]

Affiliations expand

- PMID: 38052354

- DOI: 10.1016/j.envres.2023.117831

Abstract

Ambient air pollution has been associated with asthma onset and exacerbation in children. Whether improvement in air quality due to reduced industrial emissions has resulted in improved health outcomes such as asthma in some localities has usually been assessed indirectly with studies on between-subject comparisons of air pollution from all sources and health outcomes. In this study we directly assessed, within small areas in the province of Quebec (Canada), the influence of changes in local industrial fine particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) concentrations, on changes in annual asthma onset rates in children (≤12 years old) with a longitudinal ecological design. We identified the yearly number of new cases of childhood asthma in 1282 small areas (census tracts or local community service centers) for the years 2002, 2004, 2005, 2006, and 2015. Annual average concentrations of industrial air pollutants for each of the geographic areas, and three sectors (i.e., pulp and paper mills, petroleum refineries, and metal smelters) were estimated by the Polair3D chemical transport model. Fixed-effects negative binomial models adjusted for household income were used to assess associations; additional adjustments for environmental tobacco smoke, background pollutant concentrations, vegetation coverage, and sociodemographic characteristics were conducted in sensitivity analyses. The incidence rate ratios (IRR) for childhood asthma onset for the interquartile increase in total industrial $PM_{2.5}$, NO_2, and SO_2 were 1.016 (95% confidence interval, CI: 1.006-1.026), 1.063 (1.045-1.090), and 1.048 (1.031-1.080), respectively. Positive associations were also found with pollutant concentrations from most individual sectors. Results suggest that changes in industrial pollutant concentrations influence childhood asthma onset rates in small localities.

Keywords: Asthma; Children; Fine particulate matter; Industrial air pollution; Nitrogen dioxide; Sulfur dioxide.

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.

25

Respir Res

. 2023 Dec 4;24(1):303.

doi: 10.1186/s12931-023-02603-2.

Characterization and inhibition of inflammasome responses in severe and non-severe asthma

Jay C Horvat[#1], Richard Y Kim[#2,3], Natasha Weaver[#2], Christopher Augood[2,4], Alexandra C Brown[2], Chantal Donovan[2,3], Pierrick Dupre[2,5], Lakshitha Gunawardhana[2], Jemma R Mayall[2], Nicole G Hansbro[4], Avril A B Robertson[6], Luke A J O'Neill[7], Matthew A Cooper[8], Elizabeth G Holliday[2], Philip M Hansbro[2,4], Peter G Gibson[2]

Affiliations expand

- PMID: 38044426

- PMCID: PMC10694870

- DOI: 10.1186/s12931-023-02603-2

Free PMC article

Abstract

Background: Increased airway NLRP3 inflammasome-mediated IL-1β responses may underpin severe neutrophilic asthma. However, whether increased inflammasome activation is unique to severe asthma, is a common feature of immune cells in all inflammatory types of severe asthma, and whether inflammasome activation can be therapeutically targeted in patients, remains unknown.

Objective: To investigate the activation and inhibition of inflammasome-mediated IL-1β responses in immune cells from patients with asthma.

Methods: Peripheral blood mononuclear cells (PBMCs) were isolated from patients with non-severe (n = 59) and severe (n = 36 stable, n = 17 exacerbating) asthma and healthy subjects (n = 39). PBMCs were stimulated with nigericin or lipopolysaccharide (LPS) alone, or in combination (LPS + nigericin), with or without the NLRP3 inhibitor MCC950, and the effects on IL-1β release were assessed.

Results: PBMCs from patients with non-severe or severe asthma produced more IL-1β in response to nigericin than those from healthy subjects. PBMCs from patients with severe asthma released more IL-1β in response to LPS + nigericin than those from non-severe asthma. Inflammasome-induced IL-1β release from PBMCs from patients with severe asthma was not increased during exacerbation compared to when stable. Inflammasome-induced IL-1β release was not different between male and female, or obese and non-obese patients and correlated with eosinophil and neutrophil numbers in the airways. MCC950 effectively suppressed LPS-, nigericin-, and LPS + nigericin-induced IL-1β release from PBMCs from all groups.

Conclusion: An increased ability for inflammasome priming and/or activation is a common feature of systemic immune cells in both severe and non-severe asthma, highlighting inflammasome inhibition as a universal therapy for different subtypes of disease.

Keywords: Asthma; IL-1β; Inflammasome inhibition; NLRP3 inflammasome; Severe asthma.

Conflict of interest statement

None of the authors have a conflict of interest to disclose.

- 49 references
- 4 figures

26

Curr Opin Allergy Clin Immunol

.
. 2023 Dec 4.

doi: 10.1097/ACI.0000000000000960. Online ahead of print.

Upper and lower airway interactions in children

Fernando M de Benedictis[1]

Affiliations expand

- PMID: 38037885

- DOI: 10.1097/ACI.0000000000000960

Abstract

Purpose of review: The aim of the present review was to highlight the interactions between rhinitis, rhinosinusitis and asthma in children and to discuss the most relevant scientific progresses in the pathophysiology and treatment of these combined conditions.

Recent findings: Advances in understanding the mechanisms underlying the relationship between upper and lower airways have provided valuable insights into the role of eosinophils in the pathophysiology of inflammatory events and have further delineated the concept of united airway disease. Studies addressed to evaluate the burden of sinonasal system on asthma outcomes showed a parallel severity of upper and lower airway diseases. Histopathology of sinonasal tissue in patients with chronic rhinosinusitis is different in adults and children. Targeted administration of biological agents represents an effective treatment in patients with severe uncontrolled asthma, but specific trials are awaited in children with chronic sinonasal disease.

Summary: Allergic rhinitis and rhinosinusitis are important comorbidities in patients with asthma. Improved knowledge of pathogenic mechanisms of inflammation and remodelling in the sinonasal system and the lung has led to new therapeutic approaches in patients with united airway disease and opened interesting perspectives for personalized drug therapies.

- 50 references

27

Eur J Med Chem

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. 2023 Dec 5:261:115864.

doi: 10.1016/j.ejmech.2023.115864. Epub 2023 Oct 7.

Discovery of a novel BLT2 antagonist for the treatment of inflammatory airway diseases

Hyejun Park[1], Dipesh S Harmalkar[2], Jun-Dong Wei[3], Seunghan Sun[1], Jinsun Kwon[1], Chang Hoon Lee[4], Jae Geun Song[4], Jin-Mi Park[5], Jae-Won Lee[5], Kyung-Seop Ahn[5], Hyo-Kyung Han[4], Jae-Hong Kim[1], Kyeong Lee[6], Yongseok Choi[7]

Affiliations expand

- PMID: 37839347

- DOI: 10.1016/j.ejmech.2023.115864

Abstract

Leukotriene B4 (LTB4) is a potent chemoattractant that can recruit and activate immune cells such as neutrophils, eosinophils, and monocytes to sites of inflammation. Excessive

production of LTB4 has been linked to acute and chronic inflammatory diseases, including asthma, rheumatoid arthritis, and psoriasis. Inhibiting the binding of LTB4 to its receptors, BLT1 and BLT2, is a potential strategy for treating these conditions. While several BLT1 antagonists have been developed for clinical trials, most have failed due to efficacy and safety issues. Therefore, discovering selective BLT2 antagonists could improve our understanding of the distinct functions of BLT1 and BLT2 receptors and their pharmacological implications. In this study, we aimed to discover novel BLT2 antagonists by synthesizing a series of biphenyl analogues based on a BLT2 selective agonist, CAY10583. Among the synthesized compounds, 15b was found to selectively inhibit the chemotaxis of CHO-BLT2 cells with an IC_{50} value of 224 nM without inhibiting the chemotaxis of CHO-BLT1 cells. 15b also inhibited the binding of LTB4 and BLT2 with a Ki value of 132 nM. Furthermore, 15b had good metabolic stability in liver microsomes and moderate bioavailability (F = 34%) in in vivo PK studies. 15b also showed in vivo efficacy in a mouse model of asthma, reducing airway hyperresponsiveness by 59% and decreasing Th2 cytokines by up to 46%. Our study provides a promising lead for the development of selective BLT2 antagonists as potential therapeutics for inflammatory airway diseases such as asthma and chronic obstructive pulmonary disease.

Keywords: Asthma; BLT2 antagonist; Chemotaxis; Inflammatory airway disease; Leukotriene B(4) (LTB(4)); Leukotriene B(4) receptor 2 (BLT2); Selectivity.

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

MeSH terms, Substancesexpand

FULL TEXT LINKS

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

1
J Microbiol Immunol Infect

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. 2023 Dec 4:S1684-1182(23)00211-6.

doi: 10.1016/j.jmii.2023.11.005. Online ahead of print.

Intranasal corticosteroids reduced acute rhinosinusitis in children with allergic rhinitis: A nested case-control study

Chia-Ling Lin[1], Kuo-Huang Lee[1], Wan-Ting Huang[2], Ling-Chin Hsieh[1], Chuang-Ming Wang[3]

Affiliations expand

- PMID: 38065768

- DOI: 10.1016/j.jmii.2023.11.005

Abstract

Background: Children with allergic rhinitis (AR) have substantially more acute rhinosinusitis than children without AR. We evaluated whether intranasal corticosteroids (INCS), second-generation antihistamines (SGH), and/or intranasal antihistamines (INH) for AR affect acute rhinosinusitis in children with AR aged 2-18 years.

Methods: By using the National Health Research Institutes Database 2005 of Taiwan, a cohort of patients with AR aged 2-18 years treated with AR medications between 2002 and 2018 was made, within which a nested case-control study was performed. Risk settings for acute rhinosinusitis cases matched controls for age, sex, and comorbidities. Current users of INCS, INH, and/or SGH were compared with remote and recent users of any AR medications and current users of INCS with and without SGH were compared with current users of SGH.

Results: Current users of SGH and/or INCS had a higher risk of acute rhinosinusitis than remote users of AR drugs, and current users of SGH had a higher risk of acute rhinosinusitis than recent users; however, no difference in the risk of acute rhinosinusitis was found between current users of INCS and recent users of AR drugs. Current users of INCS with and without SGH had a lower risk of acute rhinosinusitis than current users of SGH alone.

Conclusions: Treatment of INCS with and without SGH diminished the risk of acute rhinosinusitis compared with treatment using SGH alone. Adequate INCS treatment for patients with AR is important to reduce the incidence of acute rhinosinusitis.

Keywords: Acute rhinosinusitis; Allergic rhinitis; Intranasal corticosteroid; Nested case–control study; Second-generation antihistamines.

2

Am J Respir Crit Care Med

. 2023 Dec 8.

doi: 10.1164/rccm.202311-2103ED. Online ahead of print.

Do Comorbidities Influence the Response to Biologics in Severe Asthma?

Corrado Pelaia[1], Girolamo Pelaia[2], William Busse[3]

Affiliations expand

- PMID: 38064716

- DOI: 10.1164/rccm.202311-2103ED

No abstract available

Keywords: allergic rhinitis; biologics; chronic rhinosinusitis; nasal polyposis; severe asthma.

3

Int Arch Allergy Immunol

. 2023 Dec 7:1-7.

doi: 10.1159/000535310. Online ahead of print.

Exploring the Autoimmune Pathogenesis in Severe Asthma

Liping Liu[1], Fengying Tian[1], Yuemei Sun[1], Guangrun Li[2]

Affiliations expand

- PMID: 38061348

- DOI: 10.1159/000535310

Abstract

Introduction: Severe asthma has a poor response to hormone therapy and a poor level of control, so the discovery of new pathogenetic mechanisms is important for diagnosing and treating severe asthma. IL-35 may play a protective role in autoimmune diseases by directly or indirectly inhibiting the secretion of IL-17, which is an important proinflammatory factor involved in the occurrence and development of autoimmune diseases. The autologous serum skin test (ASST) is a good sensitivity and specificity screening test for autoimmune functional autoantibodies. We compared the levels of IL-35

and IL-17 in serum samples, the positive rate of ASST, the level of exhaled nitric oxide (FeNO), and the atopic constitution in patients with severe asthma to those with mild-to-moderate asthma so as to explore the possible autoimmune pathogenesis of severe asthma.

Methods: Patients with mild-to-moderate and severe asthma were enrolled. Their age, gender, smoking history, family history of asthma, history of allergic rhinitis, positive allergen results, serum total IgE (TIgE), allergen-specific IgE (sIgE), routine blood, ASST results, and FeNO test results were compared and analyzed. The IL-35 and IL-17 levels in serum samples from both groups were measured by enzyme-linked immunosorbent assay for comparison and analysis. The SPSS 22.0 software package was used for statistical analysis.

Results: A total of 50 patients with mild-to-moderate asthma and 31 patients with severe asthma were included in this study. The proportion of patients with a history of smoking and a family history of asthma was significantly higher in the severe asthma group compared to the mild-to-moderate asthma group (all p < 0.05); the number of positive allergen tests was significantly lower in patients with severe asthma compared to those with mild-to-moderate asthma (p < 0.001). The rate of positive ASST was significantly higher in patients with severe asthma than in patients with mild-to-moderate asthma (p < 0.05). Serum IL-17 levels were significantly higher in patients with severe asthma than in patients with mild-to-moderate asthma (p < 0.05), but serum IL-35 level between the two group was not significantly different (p = 0.113). ASST-positive patients had a statistically significant increase in the risk of developing severe asthma, while patients with allergen positive were less likely to develop severe asthma (positive ASST: OR = 5.277, p = 0.024; allergen positivity: OR = 0.123, p = 0.001).

Conclusions: IL-35 has a weaker inhibitory effect on high IL-17 expression in patients with severe asthma, and the rate of positive ASST was significantly higher in patients with severe asthma, which all suggested the possibility of autoimmune pathogenesis in patients with severe asthma.

Keywords: ASST; IL-17; IL-35; Pathogenesis; Severe asthma.

4

Pediatr Res

.
. 2023 Dec 6.

doi: 10.1038/s41390-023-02940-4. Online ahead of print.

Comorbid asthma is associated with rhinitis severity in children exposed to air pollutants

Sai-Wai Ho[1,2], Ko-Huang Lue[3], Shan-Ming Chen[2], Min-Sho Ku[4,5]

Affiliations expand

- PMID: 38057575

- DOI: 10.1038/s41390-023-02940-4

Abstract

Background: The impact of asthma on the severity of rhinitis when children with allergic rhinitis (AR) are exposed to air pollutants has not been studied.

Methods: Children with AR (65 with asthma, 208 without asthma), aged 6-13 years, were recruited from a hospital in Taichung, Taiwan, between 2007 and 2011. Correlations between Pediatric-Rhinoconjunctivitis-Quality-of-Life score, nasal peak expiratory flow, and air pollutants were compared. With the same age, research time, and form the same city, children with AR (660 with asthma, 3174 without asthma) were selected from a database. Correlations between clinical visit times for AR and air pollutants were compared.

Results: In male children with AR and asthma, both clinical and database studies revealed a correlation between higher rhinitis discomfort (quality-of-life score), higher visit times for AR, and higher PM_{10}, $PM_{2.5}$, NO_2, NMHC concentrations. Correlations between higher nasal inflammation/obstruction (lower expiratory flow) and higher air pollutant concentrations were observed in male children with AR and asthma.

Conclusion: In children with AR, comorbid asthma was associated with increased rhinitis severity when they were exposed to air pollutants, and the association was only noted in males. Increased nasal obstruction/inflammation from exposure to air pollutants may be the mechanisms underlying this association.

Impact statement: The influence of asthma on the severity of rhinitis when children with allergic rhinitis (AR) are exposed to air pollutants has not been studied. In children with AR, the correlation between higher rhinitis discomfort, higher number of clinical visits for AR, and higher PM_{10}, $PM_{2.5}$, NO_2, NMHC concentrations were only noted in those who also had asthma. The correlation was only noted in male. Comorbid asthma was associated with higher rhinitis severity when children with AR are exposed to air pollutants The association was only noted in male.

- 34 references

5

Review

Eur Arch Otorhinolaryngol

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. 2023 Dec 6.

doi: 10.1007/s00405-023-08351-9. Online ahead of print.

Prevalence of asthma and allergic rhinitis in children exposed to pets: a meta-analysis

Yi-Yin Qiu[1], Liang-Qian Tu[2], Ming Chen[3]

Affiliations expand

- PMID: 38057489

- DOI: 10.1007/s00405-023-08351-9

Abstract

Purpose: Pet exposure has always been controversial with childhood asthma and allergic rhinitis. We aimed to understand the prevalence of asthma and allergic rhinitis in children exposed to pets by meta-analysis.

Methods: We searched articles published from Jan 1, 2012 to Dec 31, 2022 in the Embase, PubMed, Cochrane Library, and Web of Science databases. We included a cross-sectional study that reported the prevalence of asthma and allergic rhinitis in children exposed to pets. Furthermore, we performed subgroup analyses according to pet type and age.

Results: In 14 selected studies, the meta-analysis results showed that the pooled prevalence of asthma in children exposed to pets was 19.0% (95% CI 13.3-24.7%), and the pooled prevalence of allergic rhinitis in children exposed to pets was 25.5% (95% CI 12.4-38.5%). The prevalence of asthma in children exposed to cats and dogs was 16.4% (95% CI 9.9-22.8%) and 12.5% (95% CI 8.7-16.2%), respectively. The prevalence of allergic rhinitis was 24.9% (95% CI 2.9-47.0%) and 24.1% (95% CI 2.6-45.6%), respectively. The prevalence of asthma in pet-exposed children was 17.1% (95% CI 12.3-22.0%) in the adolescence group (> 10 years) and 26.3% (95% CI 12.2-40.3%) in the childhood group (0-10 years). The prevalence of allergic rhinitis was 8.6% (95% CI 7.2-10.0%) in the adolescence group and 46.3% (95% CI 44.0-48.6%) in the childhood age group.

Conclusions: The prevalence of asthma and allergic rhinitis in children exposed to pets is different. Exposure to pet cats is more prone to illness, and younger children are more susceptible to disease than older children.

Keywords: Allergic rhinitis; Asthma; Children; Pets; Prevalence.

- 29 references

SUPPLEMENTARY INFO

Publication types, Grants and fundingexpand

FULL TEXT LINKS

Proceed to details

Cite

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6

Sci Rep

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. 2023 Dec 7;13(1):21568.

doi: 10.1038/s41598-023-48540-4.

Conception and pilot testing of a self-management health application for patients with pollen-related allergic rhinitis and allergic asthma-the APOLLO app

V Landesberger[1], K Grenzebach[1], F Schreiber[1], D Nowak[2,3], M Gröger[4], E Oppel[5], B Schaub[6,7], L E French[5], S Kutzora[8], C Quartucci[1,2,3], C Herr[1,2,3], S Heinze[1,2,3]

Affiliations expand

- PMID: 38057347

- PMCID: PMC10700582

- DOI: 10.1038/s41598-023-48540-4

Free PMC article

Abstract

It has been shown that pollen information services are an important self-management tool for patients with pollen-related allergic rhinitis (AR) and allergic asthma (AA). This study aimed to design an online application for patients with AR and AA, which supports patients to better manage their disease as well as to evaluate the app and present the first results of the pilot study. The pollen data were obtained from the electronic pollen information network of Bavaria, Germany. Participants were asked to fill in their allergy-related complaints in the app over a 60-day period. Subsequently, the app was evaluated. Indices and diagrams visualized the participants' individual complaints as well as the daily pollen concentration in the air. In order to motivate participants to complete the app on a daily basis, we used elements of gamification. Two thirds of the participants (N = 46) reported feeling better informed about pollen counts and their allergy when using the app. The app's simple and comprehensible design was rated positively. More than 80% of the participants would recommend the app to their family and friends. The app can be a tool for patients with AR and AA to better understand their disease.

Conflict of interest statement

The authors declare no competing interests.

- 42 references
- 3 figures

FULL TEXT LINKS

nature portfolio UNIMORE

Proceed to details

Cite

7

J Korean Med Sci

.
2023 Dec 4;38(47):e400.

doi: 10.3346/jkms.2023.38.e400.

The 24-Hour Cardiac Autonomic Activity in Patients With Allergic Rhinitis

Jun Yeon Won[1], Eui-Cheol Nam[1], Kwang Jin Chun[2], Jeong-Whun Kim[3], Woo Hyun Lee[4]

Affiliations expand

- PMID: 38050912

- PMCID: PMC10695759

- DOI: 10.3346/jkms.2023.38.e400

Free PMC article

Abstract

Background: Definitive knowledge of the 24-hour cardiac autonomic activity in patients with allergic rhinitis (AR) is lacking. Thus, we aimed to evaluate heart rate variability (HRV), which is used to measure cardiac autonomic activity by 24-hour Holter monitoring in patients with AR.

Methods: We enrolled 32 patients who visited our clinic and were diagnosed with AR. The control group was selected four-fold (n = 128) by matching (age, sex, hypertension, and diabetes) in the AR group from a Holter registry in the cardiology department. The HRV results, which were measured using 24-hour Holter monitoring, were compared between the AR and control groups.

Results: All time-domain parameters of HRV revealed no differences between the groups. However, among the frequency domain parameters of HRV, the low-frequency to high-frequency ratio and low-frequency power in normalized units were significantly lower in the AR group. Conversely, high-frequency power in normalized units was significantly higher in the AR group. In the multiple regression analysis, AR was independently associated with sympathetic withdrawal (adjusted odds ratio = 3.393, *P* = 0.020) after adjusting for age, sex, hypertension, diabetes mellitus, and hyperlipidemia.

Conclusions: The present findings suggest differences in cardiac autonomic activity which are related with sympathetic withdrawal in patients with AR compared with that in the normal population over 24 hours.

Keywords: 24-Hour Holter Monitoring; Allergic Rhinitis; Autonomic Nerves System; Heart Rate.

Conflict of interest statement

The authors have no potential conflicts of interest to disclose.

- 32 references

doi: 10.1097/ACI.0000000000000960. Online ahead of print.

Upper and lower airway interactions in children

Fernando M de Benedictis[1]

Affiliations expand

- PMID: 38037885

- DOI: 10.1097/ACI.0000000000000960

Abstract

Purpose of review: The aim of the present review was to highlight the interactions between rhinitis, rhinosinusitis and asthma in children and to discuss the most relevant scientific progresses in the pathophysiology and treatment of these combined conditions.

Recent findings: Advances in understanding the mechanisms underlying the relationship between upper and lower airways have provided valuable insights into the role of eosinophils in the pathophysiology of inflammatory events and have further delineated the concept of united airway disease. Studies addressed to evaluate the burden of sinonasal system on asthma outcomes showed a parallel severity of upper and lower airway diseases. Histopathology of sinonasal tissue in patients with chronic rhinosinusitis is different in adults and children. Targeted administration of biological agents represents an effective treatment in patients with severe uncontrolled asthma, but specific trials are awaited in children with chronic sinonasal disease.

Summary: Allergic rhinitis and rhinosinusitis are important comorbidities in patients with asthma. Improved knowledge of pathogenic mechanisms of inflammation and remodelling in the sinonasal system and the lung has led to new therapeutic approaches in patients with united airway disease and opened interesting perspectives for personalized drug therapies.

- 50 references

Chronic cough

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Patient

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. 2023 Dec 7.

doi: 10.1007/s40271-023-00654-7. Online ahead of print.

Quality of Life in Adults with Chronic Cough: A Mixed Methods Study Informing the Development of a Quantitative Patient Preference Study

Theresa Coles[1], Molly McFatrich[2], Helen Ding[3], Nicole Lucas[2], Erin Daniell[2], Aparna Swaminathan[4 5], Jonathan Schelfhout[3], Reed Johnson[2 4 6]

Affiliations expand

- PMID: 38062222

- DOI: 10.1007/s40271-023-00654-7

Abstract

Objectives: This study aimed to describe quality of life for patients with chronic cough (CC) and identify meaningful attributes that affect patient treatment preferences to inform the design of a quantitative preference study.

Methods: Eligible patients (≥ 18 years) with a CC (> 8 weeks) participated in qualitative interviews with two defined steps. Step one: concept elicitation and bidding games were used to collect descriptions of patient experiences with CC and identify important CC-related attributes. Step two: attributes were confirmed using concept elicitation and bidding games and prioritized using structured card sort activities. Purposive sampling ensured diversity of patient experiences. Qualitative content analysis was used to analyze participant narratives, and descriptive statistics were used to summarize card sort results.

This study follows a fully mixed concurrent dominant status design, with qualitative (dominant) and quantitative components.

Results: A total of 20 participants were interviewed with a mean age of 61.4 years (range 24-79 years). Coughing episodes, described as intense consecutive coughs that made catching breath difficult, were important to most participants (n = 17). Participants emphasized the emotional impact of episodes including feelings of uncertainty, loss of control, self-consciousness, and fear. Severity of CC was most often judged by frequency (n = 11) and intensity (n = 12) of cough. Daily, physical, or social activities were impacted for most participants. Impact on sleep (n = 14) included waking during the night, difficulty falling asleep, and daytime fatigue. Medication-related taste disturbances were an important consideration for what participants were willing to accept in exchange for cough relief.

Conclusions: This study emphasizes the importance of coughing episodes for adults with CC and provides initial evidence that taste alterations are an important component of patient treatment decisions for CC.

- 29 references

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J Voice

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Chronic Refractory Cough: Long-Term Outcomes Following Cough Suppression Therapy

Ethan Simmons [1], Jessica F Kim [2], Daniel DeChance [2], Benjamin J Becerra [3], Brianna Crawley [4], Priya Krishna [5], Thomas Murry [4]

Affiliations expand

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Abstract

Objective: This study aimed to determine the long-term outcomes of patients with chronic refractory cough (CRC) following treatment for cough suppression therapy (CST). Currently, there is a lack of objective data regarding the long-term outcome of behavioral treatment for CRC.

Methods: From the charts of 106 adult patients diagnosed with CRC, 24 patients were identified as having long-term data at least 3 months post-CST in the form of otolaryngologic examination, Voice Handicap Index-10 (VHI-10), and Cough Severity Index (CSI) scores. Patients underwent otolaryngologic evaluation and completed the VHI-10 and CSI assessments during pretreatment, posttreatment, and long-term follow-up visits. Patients were also divided into two groups based on their number of comorbidities.

Results: Twenty of the 24 patients had significant reduction in cough severity after completing CST ($P < 0.001$). A significant difference was also found in CSI scores from pretherapy to the long-term follow-up visits ($P = 0.001$). No significant difference was found in CSI scores from posttherapy to long-term follow-up visits ($P = 0.93$). No significant difference was found in VHI-10 scores over time ($P = 0.83$). No correlation was found between changes in cough and voice severity and number of comorbidities at the tested level.

Conclusions: Findings of no significant change in CRC over the long term compared to posttherapy measures suggest that patients were able to maintain improvement in cough over the long term despite various comorbidities. The current results suggest that CST represents a satisfactory approach to treating CRC and provides patients with an ongoing tool to maintain reduced cough severity. No significant correlations between number of comorbidities and mean CSI or VHI-10 scores were found over the long term.

Keywords: Chronic cough; Chronic refractory cough; Cough severity; Cough suppression therapy; Long-term outcomes.

3

Am J Speech Lang Pathol

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. 2023 Dec 5:1-9.

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Prevalence of Anxiety as a Variable in Treatment Outcomes for Individuals With Chronic Refractory Cough

Miranda L Wright[1,2], Laurie Slovarp[3], Jane Reynolds[3], Nelson Roy[2], Akiko Okifuji[4], Krishna M Sundar[5], Julie M Barkmeier-Kraemer[1,2]

Affiliations expand

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Abstract

Purpose: Anxiety is a mental state characterized by an intense sense of tension, worry, or apprehension relative to something adverse that might happen in the future. Anxiety is a

known comorbidity in cough patients, yet its prevalence among those with chronic refractory cough (CRC) is unknown. Anxiety is not typically assessed during evaluation for CRC, but treatments for CRC such as neuromodulators and behavioral cough suppression therapy (BCST) may potentially attenuate anxiety. This preliminary study investigates the potential prevalence of anxiety in CRC and its possible role in treatment outcomes.

Method: CRC patients seen in a specialty clinic at the University of Utah or the University of Montana completed the Leicester Cough Questionnaire (LCQ) pre- and post-BCST treatment. Participants were dichotomized into positive anxiety screen (PAS) and negative anxiety screen (NAS) groups based on presence or absence of documented anxiety within electronic medical records at the University of Utah and based on a Generalized Anxiety Disorder-7 score > 5 at the University of Montana.

Results: Of the 86 total participants, 37 (43%) were in the PAS group (29 females, M_{age} = 56 ± 13) and 49 (57%) were in the NAS group (36 females, M_{age} = 64 ± 14). Eighty-nine percent of CRC participants with a PAS reported a clinically meaningful improvement in LCQ total score following treatment compared to 65% of NAS participants. Furthermore, mean pre- to posttreatment change scores on the LCQ were significantly greater within the PAS group (p = .002, Cohen's d = 0.7, indicating a moderate to large effect size).

Conclusion: This preliminary study suggests that (a) anxiety may be prevalent among those with CRC and (b) those patients who screen positive for anxiety report greater benefit from BCST.

4

Eur J Drug Metab Pharmacokinet

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Mass Balance and Metabolic Pathways of Eliapixant, a P2X3 Receptor Antagonist, in Healthy Male Volunteers

Stefanie Reif[1], Marcus-Hillert Schultze-Mosgau[2], Anna Engelen[3], Isabel Piel[3], Karsten Denner[2], Ad Roffel[4], Renger Tiessen[4], Stefan Klein[2], Klaus Francke[2], Antje Rottmann[2]

Affiliations expand

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Abstract

Background: Overactive adenosine triphosphate signaling via P2X3 homotrimeric receptors is implicated in multiple conditions. To fully understand the metabolism and elimination pathways of eliapixant, a study was conducted to assess the pharmacokinetics, mass balance, and routes of excretion of a single oral dose of the selective P2X3 receptor antagonist eliapixant, in addition to an in vitro characterization.

Methods: In this single-center open-label non-randomized non-placebo-controlled phase I study, healthy male subjects (n = 6) received a single dose of 50 mg eliapixant blended with 3.7 MBq [^{14}C]eliapixant as a PEG 400-based oral solution. Total radioactivity and metabolites excreted in urine and feces, and pharmacokinetics of total radioactivity, eliapixant, and metabolites in plasma were assessed via liquid scintillation counting and high-performance liquid chromatography-based methods coupled to radiometric and mass spectrometric detection. Metabolite profiles of eliapixant in human in vitro systems and metabolizing enzymes were also investigated.

Results: After administration as an oral solution, eliapixant was rapidly absorbed, reaching maximum plasma concentrations within 2 h. Eliapixant was eliminated from plasma with a mean terminal half-life of 48.3 h. Unchanged eliapixant was the predominant component in plasma (72.6% of total radioactivity area under the curve). The remaining percentage of drug-related components in plasma probably represented the sum of many metabolites, detected in trace amounts. Mean recovery of total radioactivity was 97.9% of the administered dose (94.3-99.4%) within 14 days, with 86.3% (84.8-88.1%) excreted via feces and 11.6% (9.5-13.1%) via urine. Excretion of parent drug was minimal in feces (0.7% of dose) and urine (≈ 0.5%). In feces, metabolites formed by oxidation represented > 90% of excreted total radioactivity. The metabolites detected in the in vitro experiments were similar to those identified in vivo.

Conclusion: Complete recovery of administered eliapixant-related radioactivity was observed in healthy male subjects with predominant excretion via feces. Eliapixant was almost exclusively cleared by oxidative biotransformation (> 90% of dose), with major involvement of cytochrome P450 3A4. Excretion of parent drug was of minor importance (~ 1% of dose).

Clinical trial registration: ClinicalTrials.gov: NCT04487431 (registered 27 July 2020)/EudraCT number: 2020-000519-54 (registered 3 February 2020), NCT02817100 (registered 26 June 2016), NCT03310645 (registered 16 October 2017).

Plain language summary

Eliapixant is a drug that acts on structures in the body called P2X3 receptors that are involved in several conditions, including chronic cough, overactive bladder, and endometriosis-related pain. When evaluating a new drug, it is important to know how it is being removed from the body by natural mechanisms. We performed a study in which six healthy male volunteers took a single dose of eliapixant, and we investigated what happened to the drug after it was taken. We measured the amount of eliapixant in the volunteers' blood, urine, and feces, and also measured the compounds formed when eliapixant was broken down naturally by the body ("metabolites"). We also used human cells in the laboratory to investigate how the different metabolites of eliapixant are formed. Almost three-quarters of eliapixant in the blood had not been broken down at all, while the remaining one-quarter had been converted into many different metabolites. A total of 2 weeks after taking eliapixant, almost all of it had been converted to metabolites and eliminated from the body (mostly in feces, but also a small amount in urine). The most important organ for breaking down eliapixant is the liver. The information from this study will help doctors determine whether eliapixant is likely to interfere with other drugs taken simultaneously, and whether patients with liver or kidney problems might take longer than healthy people to remove it from their bodies.

- 14 references

SUPPLEMENTARY INFO

Associated dataexpand

FULL TEXT LINKS

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

1

Review

Lancet Respir Med

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A core outcome set for bronchiectasis in children and adolescents for use in clinical research: an international consensus study

Anne B Chang[1], Jeanette Boyd[2], Andrew Bush[3], Adam T Hill[4], Zena Powell[2], Angela Zacharasiewicz[5], Efthymia Alexopoulou[6], Andrew J Collaro[7], James D Chalmers[8], Carolina Constant[9], Konstantinos Douros[10], Rebecca Fortescue[11], Matthias Griese[12], Jonathan Grigg[13], Andreas Hector[14], Bulent Karadag[15], Oleksandr Mazulov[16], Fabio Midulla[17], Alexander Moeller[18], Marijke Proesmans[19], Christine Wilson[20], Stephanie T Yerkovich[21], Ahmad Kantar[22], Keith Grimwood[23]

Affiliations expand

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Abstract

Improving the treatment of non-cystic fibrosis bronchiectasis in children and adolescents requires high-quality research with outcomes that meet study objectives and are meaningful for patients and their parents and caregivers. In the absence of systematic reviews or agreement on the health outcomes that should be measured in paediatric bronchiectasis, we established an international, multidisciplinary panel of experts to

develop a core outcome set (COS) that incorporates patient and parent perspectives. We undertook a systematic review from which a list of 21 outcomes was constructed; these outcomes were used to inform the development of separate surveys for ranking by parents and patients and by health-care professionals. 562 participants (201 parents and patients from 17 countries, 361 health-care professionals from 58 countries) completed the surveys. Following two consensus meetings, agreement was reached on a ten-item COS with five outcomes that were deemed to be essential: quality of life, symptoms, exacerbation frequency, non-scheduled health-care visits, and hospitalisations. Use of this international consensus-based COS will ensure that studies have consistent, patient-focused outcomes, facilitating research worldwide and, in turn, the development of evidence-based guidelines for improved clinical care and outcomes. Further research is needed to develop validated, accessible measurement instruments for several of the outcomes in this COS.

Conflict of interest statement

Declaration of interests ABC is a member of the independent data management committees for clinical trials for Moderna (COVID-19 vaccine), GSK (an unlicensed vaccine), and AstraZeneca (a monoclonal antibody); she also reports payments to her institution for consulting on study designs for Zambon and Boehringer Ingelheim, travel expenses from the European Respiratory Society and Boehringer Ingelheim, and personal fees for authorship of two UpToDate chapters, outside of the submitted work. AZ reports personal fees for lectures from AstraZeneca, Chiesi, Vertex Pharmaceuticals, and Sanofi, and travel fees from Vertex, outside of the submitted work. JDC reports personal consulting fees from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Insmed, Grifols, Pfizer, Jansen, Antabio, and Zambon, outside of the submitted work but related to bronchiectasis in adults; he also reports grants from AstraZeneca, Boehringer Ingelheim, Novartis, GSK, Gilead Sciences, Insmed, Grifols, and Genentech, outside of the submitted work but related to bronchiectasis in adults. MG reports personal consulting fees and honoraria for lectures and presentations and for advice on an adjudication board from Boehringer Ingelheim and for advice on study development from Roche, outside of the submitted work. JG reports unrestricted grants from OM Pharma and Mariomed Biotech, and receipt of wheeze-detection equipment without cost from OMRON; he also reports personal fees for advisory board membership from OM Pharma, GSK, and AstraZeneca, for his role as a chief investigator on an asthma study from AstraZeneca, for lectures from Sanofi, and for expert testimony for medical advice, outside of the submitted work. AM reports grants to his institution from Vertex. All other authors declare no competing interests.

2

Pulmonology

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Association between sputum myeloperoxidase concentration and acute exacerbation of bronchiectasis

B Yang[1], H Yun[2], C Seong[3], E-G Kim[4], J-K Choi[5], H Lee[6]

Affiliations expand

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Free article

No abstract available

Conflict of interest statement

Declaration of Competing Interest None.

3

BMC Pulm Med

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Factors influencing poor response to type 2 targeted therapies in severe asthma: a retrospective cohort study

Mona Al-Ahmad[#1,2], Asmaa Ali[#3,4,5], Ahmed Maher[4]

Affiliations expand

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- PMCID: PMC10699072
- DOI: 10.1186/s12890-023-02786-w

Free PMC article

Abstract

Background: A significant breakthrough has been made in treating severe asthma, with the recognition of various asthma phenotypes and an updated management guideline. Type 2 targeted therapies, such as benralizumab and omalizumab; have been identified as an effective treatment for severe asthma, improving patient response, lung function tests

and asthma symptom control. This study aimed to evaluate factors contributing to poor response to therapy.

Methods: A retrospective single-center cohort study of 162 patients with severe asthma who started biologic therapy; their data were retrieved from medical records for further analysis. Poor responders were patients remained clinically and functionally uncontrolled despite even after augmenting all treatment options.

Results: Childhood-onset asthma, bronchiectasis, poor symptom control (ACT below 19), severe airway obstruction (< 60% predicted), and maintenance oral corticosteroid (mOCS) use were significantly associated with poor response to omalizumab and benralizumab; p = 0.0.4 and 0.01; 0.003 and 0.01; 0.01 and 0.001, 0.05 and 0.04; 0.006 and 0.02, respectively. However, chronic rhinosinusitis and IgE < 220kIU/L were associated with higher poor response rates to omalizumab (p = 0.01 and 0.04, respectively). At the same time, female patients and those with blood eosinophils level < 500 cells/mm3 had a higher poor response rate to benralizumab (p = 0.02 and 0.01, respectively). Ischemic heart disease (IHD), bronchiectasis, and continued use of OCS increased the likelihood of poor response to omalizumab by 21, 7, and 24 times (p = 0.004, 0.008, and 0.004, respectively). In contrast, the female gender, childhood-onset asthma and higher BMI increased the likelihood of poor response to benralizumab by 7, 7 and 2 times more, p = 0.03, 0.02 and 0.05, respectively.

Conclusion: Poor response to omalizumab treatment was independently associated with ischemic heart disease (IHD), bronchiectasis, and a history of maintenance oral corticosteroid (mOCS) use. Conversely, poor response to benralizumab therapy was independently linked to female gender, childhood-onset asthma and higher body mass index (BMI).

Keywords: Benralizumab; Omalizumab; Poor response; Severe asthma.

Conflict of interest statement

The authors declare no competing interests.

- 81 references

SUPPLEMENTARY INFO

MeSH terms, Substancesexpand

FULL TEXT LINKS

4

Indian J Pediatr

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MDCT and MRI in Bronchiectasis in Older Children and Young Adults - A Non-Inferiority Trial

Lokesh[1], Manisha Jana[2], Priyanka Naranje[1], Ashu Seith Bhalla[1], Sushil K Kabra[3], Vijay Hadda[4], Arun Kumar Gupta[1]

Affiliations expand

- PMID: 38051445

- DOI: 10.1007/s12098-023-04921-1

Abstract

Objectives: To compare and evaluate the usefulness of magnetic resonance imaging (MRI) with computed tomography (CT) in bronchiectasis; to compare MRI and CT scores with pulmonary function tests (PFT) and to evaluate the role of Diffusion-weighted imaging (DWI) in bronchiectasis.

Methods: In this prospective study, 25 patients between 7-21 y of age with a clinical/radiological diagnosis of bronchiectasis underwent MDCT and MRI chest. MRI and CT scoring was performed using modified Bhalla-Helbich's score by two independent radiologists for all parameters. A final consensus score was recorded. The overall image quality of different MRI sequences to identify pathologies was also assessed. Appropriate

statistical tests were used for inter-observer agreements, and correlation amongst CT and MRI; as well as CT, MRI and PFT.

Results: Strong agreement (ICC 0.80-0.95) between CT and MRI was seen for extent and severity of bronchiectasis, number of bullae, sacculation/abscess, emphysema, collapse/consolidation, mucus plugging, and mosaic perfusion. Overall CT and MRI scores had perfect concordance (ICC 0.978). Statistically significant (p-value <0.01) intra-observer and inter-observer agreement for all CT and MRI score parameters were seen. A strong negative correlation was seen between total CT and MRI severity scores and forced expiratory volume in 1 s (FEV1), forced vital capacity (FVC), forced expiratory flow (FEF) 25-75%. DWI MR, with an apparent diffusion coefficient (ADC) cut-off of 1.62×10^{-3} mm^3/s had a sensitivity of 70% and specificity of 75% in detecting true mucus plugs.

Conclusions: MRI with DWI can be considered as a radiation-free alternative in the diagnostic algorithm for assessment of lung changes in bronchiectasis, especially in follow-up.

Keywords: Air trapping; Bronchiectasis; Chest CT; Chest MRI; DWI in lungs; Mosaic perfusion; Peribronchial thickening; Radiation exposure; T2 MVXD-MultiVane-Xd MRI sequence; True mucus plugs.

- 29 references