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. 2022 Dec 17;1-9.

doi: 10.1080/09593985.2022.2157688. Online ahead of print.

Cardiopulmonary responses during unsupported upper limb exercise tests and limitations in activities of daily living in individuals with chronic obstructive pulmonary disease

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Affiliations expand

- PMID: 36528786

- DOI: 10.1080/09593985.2022.2157688

Abstract

Introduction: Cardiopulmonary responses during unsupported upper limb function assessment may vary in chronic obstructive pulmonary disease (COPD).

Objective: To compare the cardiopulmonary responses during the function assessment with the Six-Minute Pegboard and Ring Test (6PBRT) and the incremental Unsupported Upper Limb Exercise (UULEX) test in COPD and to investigate the correlations with muscle strength and the limitations on activity of daily living (ADLs).

Methods: This was a cross-sectional study. Cardiopulmonary variables were recorded during tests using a breath-by-breath analyzer. Muscle strength was assessed using a hand-held dynamometer. Self-reported ADL was evaluated using the modified Pulmonary Functional Status and Dyspnea Questionnaire (PFSDQ-M). Paired t-test, Wilcoxon signed rank test, and Spearman correlation coefficients were used.

Results: Fifteen individuals with moderate-to-severe COPD participated (66 ± 9 years old, forced expiratory volume in the first second [FEV_1]: 48%±14% of predicted). The UULEX induced higher oxygen consumption (0.54 ± 0.20 *vs*. 0.44 ± 0.09 L/min, p = .01) and dyspnea (4.0 [2.6 to 6.9] *vs*. 0.5 [0.9 to 5.1], p < .01) than 6PBRT. The performance in both tests was correlated with self-reported ADL limitations on PFSDQ-M (6PBRT: r = -0.69, p < .01; UULEX: r = -0.62, p = .01).

Conclusion: The UULEX promoted greater cardiopulmonary responses than 6PBRT, and performance in 6PBRT and UULEX was correlated with ADL limitations in individuals with COPD.

Keywords: Chronic obstructive pulmonary disease; activities of daily living; exercise testing; upper limb.

. 2022 Dec 17;22(1):412.

doi: 10.1186/s12935-022-02833-2.

Emerging roles and mechanisms of miR-206 in human disorders: a comprehensive review

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- PMID: 36528620

- DOI: 10.1186/s12935-022-02833-2

Abstract

As a member of the miR-1 family, miR-206 is located between IL-17 and PKHD1 genes in human. This miRNA has been shown to be involved in the pathogenic processes in a variety of human disorders including cancers, amyotrophic lateral sclerosis, Alzheimer's disease, atherosclerosis, bronchopulmonary dysplasia, coronary artery disease, chronic obstructive pulmonary disease, epilepsy, nonalcoholic fatty liver disease, Hirschsprung disease, muscular dystrophies, pulmonary arterial hypertension, sepsis and ulcerative colitis. In the current review, we summarize the role of miR-206 in both malignant and non-malignant situations and explain its possible therapeutic implications.

Keywords: Biomarkers; Cancer; Noncoding RNA; miR-206; microRNAs.

- 81 references

SUPPLEMENTARY INFO

Publication typesexpand

Proceed to details

Cite

Review

Curr Probl Cardiol

. 2022 Dec 14;101539.

doi: 10.1016/j.cpcardiol.2022.101539. Online ahead of print.

Potential mechanisms between HF and COPD: new insights from bioinformatics

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- PMID: 36528207

- DOI: 10.1016/j.cpcardiol.2022.101539

Abstract

Heart failure (HF) and chronic obstructive pulmonary disease (COPD) are closely related in clinical practice. This study aimed to investigate the co-genetic characteristics and potential molecular mechanisms of HF and COPD.HF and COPD datasets were downloaded from gene expression omnibus database. After identifying common differentially expressed genes (DEGs), the functional analysis highlighted the critical role of extracellular matrix and ribosomal signaling pathways in both diseases. In addition, GeneMANIA's results suggested that the two diseases were related to immune infiltration, and CIBERSORT suggested the role of macrophages. We also discovered four TFs and 1408 miRNAs linked to both diseases, and salbutamol may positively affect them.

Keywords: bioinformatics; chronic obstructive pulmonary disease; differentially expressed genes; heart failure; immune infiltration.

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Expert Opin Biol Ther

. 2022 Dec 16.

doi: 10.1080/14712598.2022.2160238. Online ahead of print.

Biologic therapies for chronic obstructive pulmonary disease

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- PMID: 36527286

- DOI: 10.1080/14712598.2022.2160238

Abstract

Introduction: Chronic obstructive pulmonary disease (COPD) is a disorder characterized by a complicated chronic inflammatory response that is resistant to corticosteroid therapy. As a result, there is a critical need for effective anti-inflammatory medications to treat people with COPD. Using monoclonal antibodies (mAbs) to inhibit cytokines and chemokines or their receptors could be a potential approach to treating the inflammatory component of COPD.

Areas covered: The therapeutic potential that some of these mAbs might have in COPD is reviewed.

Expert opinion: No mAb directed against cytokines or chemokines has shown any therapeutic impact in COPD patients, apart from mAbs targeting the IL-5 pathway that appear to have statistically significant, albeit weak, effect in patients with eosinophilic COPD. This may reflect the complexity of COPD, in which no single cytokine or chemokine has a dominant role. Because the umbrella term COPD encompasses several endotypes with diverse underlying processes, mAbs targeting specific cytokines or chemokines should most likely be evaluated in limited and focused populations.

Keywords: COPD; chemokines; chronic inflammation; cytokines; monoclonal antibodies.

Ecotoxicol Environ Saf

. 2022 Dec 14;249:114426.

doi: 10.1016/j.ecoenv.2022.114426. Online ahead of print.

Effects of chronic electronic cigarettes exposure in inducing respiratory function decline and pulmonary tissue injury – A direct comparison to combustible cigarettes

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- PMID: 36525947

- DOI: 10.1016/j.ecoenv.2022.114426

Abstract

Background: Electronic cigarette (e-cig) use is increasing worldwide, especially among young individuals. Spirometry measures airflow obstruction and is the primary tool for diagnosing/monitoring respiratory diseases in clinical settings. This study aims to assess the effects of chronic e-cig exposure on spirometric traits, and directly compare to conventional combustible-cigarette (c-cig).

Methods: We employed an e- and c-cig aerosol generation system that resembled human smoking/vaping scenario. Fifty 6-week old C57BL/6 mice were equally divided into five groups and exposed to clean air (control), e-cig aerosol (low- and high-dose), and c-cig aerosol (low- and high-dose), respectively, for 10 weeks. Afterwards, growth trajectory, spirometry and pulmonary pathology were analyzed.

Results: Both e- and c-cig exposure slowed down growth and weight gain. Low dose e-cig exposure (1 h exposure per day) resulted in minimal respiratory function damage. At high dose (2 h exposure per day), e-cig exposure deteriorated 7 spirometry traits but by a smaller magnitude than c-cig exposure. For example, comparing to clean air controls, high dose e- and c-cig exposure increased inspiratory resistance by 24.3% ($p = 0.026$) and 66.7% ($p = 2.6e-5$), respectively. Low-dose e-cig exposure increased alveolar macrophage count but did not lead to airway remodeling. In contrast, even low-dose c-cig caused alveoli break down and thickening of the small airway, hallmarks of airway obstructive disease.

Conclusions: We conducted well-controlled animal exposure experiments assessing chronic e-cig exposure's effects on spirometry traits. Further, mechanistic study characterized airway remodeling, alveolar tissue lesion and inflammation induced by e- and c-cig exposure. Our findings provided scientific and public health insights on e-cig's health consequences, especially in adolescent users.

Keywords: Combustible cigarettes; Electronic cigarettes; Pathogenic mechanism; Pulmonary tissue injury; Respiratory function decline.

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. MX, YX and ZS are employees of Smoore Research Institute, Smoore International.

Expert Opin Pharmacother

. 2022 Dec 16.

doi: 10.1080/14656566.2022.2160239. Online ahead of print.

Current pharmacological strategies for symptomatic reduction of persistent breathlessness – a literature review

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- PMID: 36525673

- DOI: 10.1080/14656566.2022.2160239

Abstract

Introduction: : Persistent breathlessness is a debilitating symptom that is prevalent in the community, particularly in people with chronic and life-limiting illnesses. Treatment includes different steps, including pharmacological treatment aiming to improve the symptom and optimize people's wellbeing.

Areas covered: : PubMed and Google Scholar were screened using 'chronic breathlessness' OR 'persistent breathlessness,' AND 'pharmacological treatment,' OR

'opioids'. This review focus on pharmacological treatments to reduce persistent breathlessness and discusses possible mechanisms involved in the process of breathlessness reduction through pharmacotherapy. Research gaps in the field of persistent breathlessness research are outlined and future research directions are suggested.

Expert opinion: : Regular, low-dose (≤30mg/day), sustained-release morphine is recommended as the first-line pharmacological treatment for persistent breathlessness. Inter-individual variation in response needs to be investigated in future studies in order to optimize clinical outcomes. This includes 1) better understanding the centrally mediated mechanisms associated with persisting breathlessness and response to pharmacological therapies, 2) understanding benefit from the perspective of people experiencing persistent breathlessness, small and meaningful gains in physical activity.

Keywords: Chronic obstructive pulmonary disease; evidence-based care; palliative care; persistent breathlessness; pharmacological treatment; quality of life; suffering; symptom control.

BMC Pulm Med

. 2022 Dec 15;22(1):476.

doi: 10.1186/s12890-022-02258-7.

Blood urea nitrogen to serum albumin ratio: a good predictor of in-hospital and 90-day all-cause mortality in patients with acute exacerbations of chronic obstructive pulmonary disease

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- PMID: 36522751
- PMCID: PMC9753245
- DOI: 10.1186/s12890-022-02258-7

Free PMC article

Abstract

Background: Previous studies on acute exacerbation of chronic obstructive pulmonary disease (AECOPD) have found that those who died in hospital had higher blood urea nitrogen levels and a worse nutritional status compared to survivors. However, the association between the blood urea nitrogen to serum albumin ratio (BUN/ALB ratio) and in-hospital and short-term prognosis in patients with AECOPD remains unclear. The aim of this study was to explore the usefulness of BUN/ALB ratio in AECOPD as an objective predictor for in-hospital and 90-day all-cause mortality.

Methods: We recorded the laboratory and clinical data in patients with AECOPD on admission. By drawing the ROC curve for the patients, we obtained the cut-off point for the BUN/ALB ratio for in-hospital death. Multivariate logistic regression was used for analyses of the factors of in-hospital mortality and multivariate Cox regression was used to analyze the factors of 90-day all-cause mortality.

Results: A total of 362 patients were recruited and 319 patients were finally analyzed. Twenty-three patients died during hospitalization and the fatality rate was 7.2%. Furthermore, 14 patients died by the 90-day follow-up. Compared with in-hospital survivors, patients who died in hospital were older (80.78 ± 6.58 vs. 75.09 ± 9.73 years old, P = 0.001), had a higher prevalence of congestive heart failure(69.6% vs. 27.4%, P < 0.001), had a higher BUN/ALB ratio [0.329 (0.250-0.399) vs. 0.145 (0.111-0.210), P < 0.001], had higher neutrophil counts [10.27 (7.21-14.04) vs. 6.58 (4.58-9.04), P < 0.001], higher blood urea nitrogen levels [10.86 (7.10-12.25) vs. 5.35 (4.14-7.40), P < 0.001], a lower albumin level (32.58 ± 3.72 vs. 36.26 ± 4.53, P < 0.001) and a lower lymphocyte count [0.85 (0.58-1.21) vs. 1.22 (0.86-1.72), P = 0.001]. The ROC curve showed that the area under the curve (AUC) of BUN/ALB ratio for in-hospital death was 0.87, (95%CI 0.81-0.93, P < 0.001), the best cut-off point value to discriminate survivors from non-survivors in hospital was 0.249, the sensitivity was 78.3%, the specificity was 86.5%, and Youden's index was 0.648. Having

a BUN/ALB ratio ≥ 0.249 was an independent risk factor for both in-hospital and 90-day all-cause mortality after adjustment for relative risk (RR; RR = 15.08, 95% CI 3.80-59.78, P < 0.001 for a multivariate logistic regression analysis) and hazard ratio (HR; HR = 5.34, 95% CI 1.62-17.57, P = 0.006 for a multivariate Cox regression analysis).

Conclusion: An elevated BUN/ALB ratio was a strong and independent predictor of in-hospital and 90-day all-cause mortality in patients with AECOPD.

Keywords: AECOPD; Blood urea nitrogen to serum albumin ratio; Mortality; Prognosis.

Conflict of interest statement

All authors related to this manuscript declare that they have no conflicts of interest.

- 35 references
- 3 figures

Respir Res

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. 2022 Dec 15;23(1):347.

doi: 10.1186/s12931-022-02268-3.

Exercise capacity and physical activity in COPD patients treated with a

LAMA/LABA combination: a systematic review and meta-analysis

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Affiliations expand

- PMID: 36522735
- PMCID: PMC9753337
- DOI: 10.1186/s12931-022-02268-3

Free PMC article

Abstract

Background: Persistent airflow limitation and dyspnoea may reduce chronic obstructive pulmonary disease (COPD) patients exercise capacity and physical activity, undermining their physical status and quality of life. Long-acting muscarinic antagonists and long-acting beta-2 agonists (LAMA/LABA) combinations are amongst moderate-to-severe COPD recommended treatments. This article analyses LAMA/LABA combinations effect on COPD patients exercise capacity and physical activity outcomes.

Methods: A systematic review and meta-analysis of double-blind randomized controlled trials comparing LAMA/LABA combinations against monotherapy or placebo was conducted.

Results: Seventeen articles were identified (N = 4041 patients). In endurance shuttle walk test and constant work rate cycle ergometry, LAMA/LABA combinations obtained better results than placebo, but not monotherapy, whereas in 6-min walking test, results favoured LAMA/LABA over monotherapy (four studies), but not over placebo (one study). Moreover, LAMA/LABA combinations obtained better results than placebo in number of steps per day, reduction in percentage of inactive patients and daily activity-related energy expenditure, and better than monotherapy when measuring time spent on ≥ 1.0-1.5, ≥ 2.0 and ≥ 3.0 metabolic equivalents of task activities.

Conclusions: LAMA/LABA combinations in COPD patients provided better results than monotherapy or placebo in most exercise capacity and physical activity outcomes.

Keywords: Bronchodilators; COPD; Exercise capacity; LABA; LAMA; Physical activity.

Conflict of interest statement

Marc Miravitlles has received speaker fees from AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, Menarini, Rovi, Bial, Sandoz, Zambon, CSL Behring, Grifols and Novartis, consulting fees from AstraZeneca, Atriva Therapeutics, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Bial, Gebro Pharma, CSL Behring, Laboratorios Esteve, Ferrer, Mereo Biopharma, Verona Pharma, Spin Therapeutics, ONO Pharma, pH Pharma, Palobiofarma SL, Takeda, Novartis, Sanofi and Grifols and research grants from Grifols. Juan Luis García-Rivero has received speaker fees from Novartis, GSK, Boehringer-Ingelheim, Astra-Zeneca, Chiesi, ALK, Teva, Menarini, Viso and Sanofi; and consulting fees from Novartis, GSK, Astra-Zeneca, Teva, Boehringer-Ingelheim, ALK, Viso, Gebro and Sanofi. Xavier Pomares has received speaker fees from Boehringer Ingelheim, GlaxoSmithKline, Chiesi, Rovi, Novartis, Vertex and Actelion.

J Glob Health

. 2022 Dec 16;12:04100.

doi: 10.7189/jogh.12.04100.

Efficacy of vitamin D supplementation on COPD and asthma control: A systematic review and meta-analysis

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- PMID: 36520525

- DOI: 10.7189/jogh.12.04100

Free article

Abstract

Background: The role of vitamin D (VD) in the management of chronic obstructive pulmonary disease (COPD) and asthma remains largely undetermined. In the present meta-analysis, we aimed to comprehensively investigate the efficacy of VD in the treatment of COPD and asthma according to the latest update.

Methods: The PubMed, Embase, and Cochrane Library databases were searched from their inception to June 2, 2022. Randomized controlled trials (RCTs) comparing the efficacy of VD with placebo against COPD or asthma were included.

Results: A total of 11 RCTs consisting of 1183 COPD patients and 19 RCTs consisting of 2025 asthmatic patients were finally included. As for pulmonary function, FEV1/FVC was not changed significantly, while FEV1% was improved in the VD group. In the asthma subgroup, FEV1% was not changed significantly, while FEV1/FVC was improved in the VD group. For the questionnaire and rating scale, the mMRC (modified Medical Research Council) dyspnoea scale score for COPD and ACT (Asthma Control Test) score for asthma were not significantly changed, while the SGRQ (St. George's Respiratory Questionnaire) score for COPD was improved in the VD group. For inflammation indicators, IL-6 and IL-10 were statistically equivalent between the VD and placebo groups, while IgE, IL-5, and IL-10 (baseline VD deficiency subgroup) were improved in the VD group. The exacerbation, length of hospital stays, and mortality were statistically equivalent between the two groups.

Conclusions: VD supplementation improved the indicators of asthma and COPD, especially in pulmonary function, SGRQ scores, IL-5, and IgE.

Registration: The protocol could be found at PROSPERO with the registration number of CRD42020218058.

Conflict of interest statement

Disclosure of interest: The authors completed the ICMJE Disclosure of Interest Form (available upon request from the corresponding author) and disclose no relevant interests.

Chronic Obstr Pulm Dis

. 2022 Dec 14.

doi: 10.15326/jcopdf.2022.0332. Online ahead of print.

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

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- PMID: 36516330

- DOI: 10.15326/jcopdf.2022.0332

Free article

Abstract

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

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

Results: Of the 10,355 patients included, 5034 (49%) experienced moderate/severe exacerbations. Risk of ACM was significantly increased during a severe exacerbation event compared with baseline (hazard ratio [HR]: 41.22 [95% confidence interval (CI) 26.49-64.15]; p<0.001) but not significantly different at 1-90 days post-severe exacerbation (HR: 2.13 [95% CI: 0.86-5.29]; p=0.102). Moderate exacerbations did not significantly increase the risk of ACM during or after an exacerbation. Cardiopulmonary composite events occurred in 647 (16%), 636 (15%), and 356 (17%) patients receiving FF/UMEC/VI, FF/VI, and UMEC/VI, respectively; FF/UMEC/VI significantly reduced cardiopulmonary composite event risk versus UMEC/VI by 16.5% (95% CI: 5.0-26.7; p=0.006).

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

Keywords: Cardiovascular diseases; Pneumonia; Pulmonary disease; Respiratory therapy; chronic obstructive.

SUPPLEMENTARY INFO

Grant supportexpand

J Cardiopulm Rehabil Prev

. 2022 Dec 14.

doi: 10.1097/HCR.0000000000000764. Online ahead of print.

Smoking Cessation Interventions for Patients With Chronic Obstructive Pulmonary Disease: A NARRATIVE REVIEW WITH IMPLICATIONS FOR PULMONARY REHABILITATION

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- PMID: 36515573

- DOI: 10.1097/HCR.0000000000000764

Abstract

Purpose: Reducing disease burden in patients with chronic obstructive pulmonary disease (COPD) focuses, in part, on helping patients become more functional through programs such as pulmonary rehabilitation (PR). Smoking cessation may be a prerequisite or

component of PR, and determining which smoking interventions (eg, behavioral, pharmacotherapy, combination) are most effective can help guide efforts to extend them to patients with COPD. The purpose of this narrative review was to summarize evidence from studies testing smoking cessation interventions in patients with COPD and discuss how these interventions may be integrated into PR programs.

Review methods: Searches were conducted in the PubMed and Web of Science databases. Search terms included "(smoking cessation) AND (RCT OR clinical trial OR intervention) AND (pulmonary OR chronic bronchitis OR emphysema OR COPD)." Published original studies were included if they used a prospective, experimental design, tested a smoking cessation intervention, reported smoking cessation rate, and included patients with COPD or a subgroup analysis focused on smokers with COPD.

Summary: Twenty-seven distinct studies were included in the review. Most studies tested multitreatment smoking cessation interventions involving some form of counseling in combination with pharmacotherapy and/or health education. Overall, smoking cessation interventions may help promote higher rates of smoking abstinence in patients with COPD, particularly multifaceted interventions that include intensive counseling (eg, individual, group, and telephone support), smoking cessation medication or nicotine replacement therapy, and health education.

Conflict of interest statement

The authors declare no conflicts of interest.

- 51 references

. 2022 Dec 13;222675.

doi: 10.1148/radiol.222675. Online ahead of print.

Artificial Intelligence Analysis of Bronchiectasis Is Predictive of Outcomes in Chronic Obstructive Pulmonary Disease

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Affiliations expand

- PMID: 36511811

- DOI: 10.1148/radiol.222675

No abstract available

Comment on

- Artificial Intelligence-based CT Assessment of Bronchiectasis: The COPDGene Study. Díaz AA, Nardelli P, Wang W, San José Estépar R, Yen A, Kligerman S, Maselli DJ, Dolliver WR, Tsao A, Orejas JL, Aliberti S, Aksamit TR, Young KA, Kinney GL, Washko GR, Silverman EK, San José Estépar R.Radiology. 2022 Dec 13:221109. doi: 10.1148/radiol.221109. Online ahead of print.PMID: 36511808

Radiology

. 2022 Dec 13;221109.

doi: 10.1148/radiol.221109. Online ahead of print.

Artificial Intelligence–based CT Assessment of Bronchiectasis: The COPDGene Study

Alejandro A Díaz[1], Pietro Nardelli[1], Wei Wang[1], Rubén San José Estépar[1], Andrew Yen[1], Seth Kligerman[1], Diego J Maselli[1], Wojciech R Dolliver[1], Andrew Tsao[1], José L Orejas[1], Stefano Aliberti[1], Timothy R Aksamit[1], Kendra A Young[1], Gregory L Kinney[1], George R Washko[1], Edwin K Silverman[1], Raúl San José Estépar[1]

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- PMID: 36511808

- DOI: 10.1148/radiol.221109

Abstract

Background CT is the standard method used to assess bronchiectasis. A higher airway-to-artery diameter ratio (AAR) is typically used to identify enlarged bronchi and bronchiectasis; however, current imaging methods are limited in assessing the extent of this metric in CT scans. Purpose To determine the extent of AARs using an artificial intelligence-based chest CT and assess the association of AARs with exacerbations over time. Materials and Methods In a secondary analysis of ever-smokers from the prospective, observational, multicenter COPDGene study, AARs were quantified using an artificial intelligence tool. The percentage of airways with AAR greater than 1 (a measure of airway dilatation) in each participant on chest CT scans was determined. Pulmonary exacerbations were prospectively determined through biannual follow-up (from July 2009 to September 2021). Multivariable zero-inflated regression models were used to assess the association

between the percentage of airways with AAR greater than 1 and the total number of pulmonary exacerbations over follow-up. Covariates included demographics, lung function, and conventional CT parameters. Results Among 4192 participants (median age, 59 years; IQR, 52-67 years; 1878 men [45%]), 1834 had chronic obstructive pulmonary disease (COPD). During a 10-year follow-up and in adjusted models, the percentage of airways with AARs greater than 1 (quartile 4 vs 1) was associated with a higher total number of exacerbations (risk ratio [RR], 1.08; 95% CI: 1.02, 1.15; *P* = .01). In participants meeting clinical and imaging criteria of bronchiectasis (ie, clinical manifestations with ≥3% of AARs >1) versus those who did not, the RR was 1.37 (95% CI: 1.31, 1.43; *P* < .001). Among participants with COPD, the corresponding RRs were 1.10 (95% CI: 1.02, 1.18; *P* = .02) and 1.32 (95% CI: 1.26, 1.39; *P* < .001), respectively. Conclusion In ever-smokers with chronic obstructive pulmonary disease, artificial intelligence-based CT measures of bronchiectasis were associated with more exacerbations over time. Clinical trial registration no. NCT00608764 © RSNA, 2022 *Online supplemental material is available for this article.* See also the editorial by Schiebler and Seo in this issue.

Comment in

- Artificial Intelligence Analysis of Bronchiectasis Is Predictive of Outcomes in Chronic Obstructive Pulmonary Disease.
  Schiebler ML, Seo JB.Radiology. 2022 Dec 13:222675. doi: 10.1148/radiol.222675. Online ahead of print.PMID: 36511811 No abstract available.

Case Reports

Am J Case Rep

. 2022 Dec 13;23:e938450.

doi: 10.12659/AJCR.938450.

Mepolizumab as a Potential Protective Factor of COVID-19 Mortality: A Case Report of Chronic Bronchitis and Asthma in an Elderly Patient

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Affiliations expand

- PMID: 36510448

- DOI: 10.12659/AJCR.938450

Abstract

BACKGROUND Patients with multiple comorbidities who are infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have a higher risk of mortality. However, treatment with mepolizumab may be a key factor in counteracting the risk of these comorbidities. We present a patient who had an uneventful recovery from coronavirus disease 2019 (COVID-19), despite having 5 independent risk factors for severe disease and increased mortality. CASE REPORT A 75-year-old man with a long-standing history of asthma, chronic bronchitis, coronary artery disease, and hypertension presented to the Emergency Department in November 2020 with a 4-day history of fever, chills, shortness of breath, cough, and fatigue. Six months prior to this presentation, the patient was hospitalized for severe chronic bronchitis and acute exacerbation of asthma. His medications included mepolizumab, aclidinium, ramipril, diltiazem, aspirin, albuterol sulfate, and micronized budesonide/micronized formoterol fumarate dihydrate. Physical examination was unremarkable, except for cardiopulmonary distress. Laboratory tests showed leucocytosis. His chest X-ray revealed infiltrates and interstitial edema in the lower lung fields. A PCR test for SARS-CoV-2 was positive. COVID-19 pneumonia was diagnosed, and the patient was admitted to the hospital, where he was treated with acetaminophen, amoxicillin, dexamethasone, and supplemental oxygen. The patient remained stable and was discharged from the hospital the following day. He was free of all symptoms after 21 days. CONCLUSIONS This case of a 75-year-old man who presented with mild COVID-19 supports the findings from other reports of improvement in clinical outcomes for some patients with asthma who received treatment with mepolizumab.

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

Int J Cardiol

. 2022 Dec 15;369:48-53.

doi: 10.1016/j.ijcard.2022.08.016. Epub 2022 Aug 6.

Association among myocardial injury and mortality in Influenza: A prospective cohort study

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Affiliations expand

- PMID: 35944772

- DOI: 10.1016/j.ijcard.2022.08.016

Free article

Abstract

Background: Myocardial injury (MINJ) is a well-recognized prognostic marker in different acute cardio-respiratory illnesses, nonetheless, its relevance in Influenza remains poorly defined. Our aim was to assess incidence, correlates, short and mid-term prognostic role of MINJ in Influenza.

Methods: Hospitalized patients (pts) with laboratory confirmed Influenza A or B underwent highly sensitive cardiac T Troponin (hs-cTnT) measurement at admission in four regional Swiss hospitals during the 2018-2019 epidemic. MINJ was defined as hs-cTnT

>14 ng/L. Clinical, laboratory and outcome data were prospectively collected. The primary endpoint was mortality at 28 days while the composite of mortality, admission to intensive care unit (ICU) or need for mechanical ventilation at 28-days and mortality at 30-months were set as secondary endpoints.

Results: The presence of MINJ was assessed within 48 h from admission in 145 consecutive hospitalized pts, being evident in 94 (65.5%) pts and associated with older age, higher C-reactive protein levels, renal impairment or chronic obstructive pulmonary disease. At a 28-days follow-up, 7 deaths (4.8%) occurred, all in patients with MINJ at admission (log-rank p = 0.048). MINJ was strongly associated with occurrence of death, ICU admission or mechanical ventilation (OR 5.74, 95% CI 1.28-53.29; p = 0.015). After a median follow-up of 32.7 months (IQR 32.2-33.4), 15 (10.3%) deaths occurred, all among pts with MINJ at index hospitalization leading to a higher mortality at follow-up among patients with MINJ (log-rank p = 0.003).

Conclusions: MINJ is common in patients hospitalized for Influenza and is able to stratify the risk of short-term adverse events and mid-term mortality.

Keywords: Biomarker; Influenza; Mortality; Myocardial injury; Myocarditis; Troponin.

Comment in

- Influenza virus and cardiovascular death: Looking through and beyond myocardial injury.
  Peretto G.Int J Cardiol. 2022 Dec 1;368:70-71. doi: 10.1016/j.ijcard.2022.08.031. Epub 2022 Aug 19.PMID: 35988672 No abstract available.

SUPPLEMENTARY INFO

MeSH terms, Substancesexpand

FULL TEXT LINKS

ELSEVIER
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ASTHMA

1
J Adolesc Health

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. 2022 Dec 15;S1054-139X(22)00775-3.

doi: 10.1016/j.jadohealth.2022.10.034. Online ahead of print.

Adolescent Knowledge of When to Use Inhaled Asthma Medications: Implications for Management

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Affiliations expand

- PMID: 36528520

- DOI: 10.1016/j.jadohealth.2022.10.034

Abstract

Purpose: It is unclear how often adolescents with persistent asthma know when to use different inhaled medications (as-needed rescue vs. daily controller; 'accurate use'), or whether this knowledge is associated with clinical asthma outcomes. This study aimed to characterize adolescent knowledge of accurate use; examine whether accurate use is associated with controller medication adherence, asthma symptoms, or exacerbations requiring acute health care services; and determine whether knowledge of accurate use improves following regular exposure to controller medications with school-based directly observed therapy (DOT).

Methods: We analyzed baseline and 7-month data from the School-Based Asthma Care for Teens trial. Adolescents (12-16 years) identified inhaled medications on a chart and stated when each is used. We compared accurate use with adolescent-reported adherence, recent symptoms, and asthma-related acute health care visits; and exposure to DOT. Analyses were limited to subjects with controller medication.

Results: Of 430 participants, 252 had controller medication at baseline. Knowledge of accurate use was described by 62%, and associated with adherence (odds ratio [OR]: 2.06, 95% confidence interval [CI]: 1.12-3.83). By 7 months, 313 adolescents had controller medication; 75% described accurate use, which was associated with adherence (OR: 3.46, 95% CI: 1.83-6.54), health care (OR: 0.39, 95% CI: 0.20-0.79), and DOT exposure (OR: 1.83, 95% CI: 1.10-3.32). Associations with adherence and health care at 7 months persisted in adjusted analyses.

Discussion: Adolescent knowledge of accurate medication use was linked with greater adherence (baseline, 7 months), less acute health care (7 months), and exposure to in-school DOT. Interventions to support adolescents with persistent asthma should consider school-based care strategies and facilitate adolescent understanding of when to use different medications.

Keywords: Adherence; Adolescent; Asthma; Identification; Management; Medication; Respiratory; Treatment.

Review

Auris Nasus Larynx

. 2022 Dec 15;S0385-8146(22)00225-5.

doi: 10.1016/j.anl.2022.11.004. Online ahead of print.

Eosinophilic otitis media; state-of-the-art diagnosis and treatment

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Affiliations expand

- PMID: 36528403

- DOI: 10.1016/j.anl.2022.11.004

Abstract

Eosinophilic otitis media (EOM) is an intractable otitis media with highly viscous middle ear effusion and is usually associated with bronchial asthma. Since the diagnostic criteria of EOM were established in 2011, the concept of EOM has been known worldwide. EOM is caused by Type 2 inflammation in the respiratory tract, similar to bronchial asthma and eosinophilic rhinosinusitis. With the appreciation of Type 2 inflammatory diseases, EOM is no longer considered to be a rare disease and should be specifically treated to improve quality of life. The diagnosis of EOM needs to be reconsidered because many reports have described varying pathogenesis and mechanisms of rare middle ear conditions. Systemic and topical administration of corticosteroids is presently the most effective treatment to control EOM. However, EOM treatments are developing because various biologics have been used to treat patients with bronchial asthma with and without eosinophilic rhinosinusitis and EOM. Surgical intervention is also no longer contraindicated with the use of biologics. These advances represent the beginning of a new stage of basic and clinical research for EOM. This review focuses on the diagnosis and treatment of EOM based on the most recent advances regarding EOM.

Keywords: Biologics; Bronchial asthma; Chronic eosinophilic rhinosinusitis; Diagnostic criteria; Eosinophilic otitis media; Type 2 inflammation.

Conflict of interest statement

Disclosure Statement We have no conflicts of interest to disclose in connection with this review.

J Allergy Clin Immunol

. 2022 Dec 14;S0091-6749(22)02454-X.

doi: 10.1016/j.jaci.2022.12.800. Online ahead of print.

Treating Asthma in the Time of COVID

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Affiliations expand

- PMID: 36528110

- DOI: 10.1016/j.jaci.2022.12.800

Abstract

The Precision Interventions for Severe and/or Exacerbation-Prone Asthma (PrecISE) clinical trials network is actively assessing novel treatments for severe asthma during the COVID-19 pandemic and has needed to adapt to various clinical dilemmas posed by the COVID-19 pandemic. Pharmacologic interactions between established asthma therapies and novel drug interventions for COVID-19 infection, including antivirals, biologics, and vaccines, have emerged as a critical and unanticipated issue in the clinical care of asthma. In particular, impaired metabolism of some long-acting beta-2 agonists by the cytochrome P4503A4 enzyme in the setting of antiviral treatment using ritonavir-boosted nirmatrelvir (NVM/r, brand name Paxlovid) may increase risk for adverse cardiovascular events. While available data have documented the potential for such interactions, these issues are largely unappreciated by clinicians who treat asthma, or those dispensing COVID-19 interventions in patients who happen to have asthma. As these drug-drug interactions have not previously been relevant to patient care, clinicians have had no guidance on management strategies to reduce potentially serious interactions between treatments for asthma and COVID-19. The PrecISE network considered the available literature and product information, and herein share our considerations and plans for treating asthma within the context of these novel COVID-19-related therapies.

Keywords: Asthma; COVID-19; CYP3A4; corticosteroids; cytochrome P450; interaction; long-acting beta adrenergic agonists; ritonavir; salmeterol.

Respir Res

. 2022 Dec 16;23(1):352.

doi: 10.1186/s12931-022-02275-4.

Clinical and functional characteristics of individuals with alpha-1 antitrypsin deficiency: EARCO international registry

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Affiliations expand

- PMID: 36527073

- DOI: 10.1186/s12931-022-02275-4

Free article

Abstract

Background: Alpha-1 antitrypsin deficiency (AATD) is a rare disease that is associated with an increased risk of pulmonary emphysema. The European AATD Research Collaboration (EARCO) international registry was founded with the objective of characterising the individuals with AATD and investigating their natural history.

Methods: The EARCO registry is an international, observational and prospective study of individuals with AATD, defined as AAT serum levels < 11 µM and/or proteinase inhibitor genotypes PI*ZZ, PI*SZ and compound heterozygotes or homozygotes of other rare

deficient variants. We describe the characteristics of the individuals included from February 2020 to May 2022.

Results: A total of 1044 individuals from 15 countries were analysed. The most frequent genotype was PI*ZZ (60.2%), followed by PI*SZ (29.2%). Among PI*ZZ patients, emphysema was the most frequent lung disease (57.2%) followed by COPD (57.2%) and bronchiectasis (22%). Up to 76.4% had concordant values of FEV1(%) and KCO(%). Those with impairment in FEV1(%) alone had more frequently bronchiectasis and asthma and those with impairment in KCO(%) alone had more frequent emphysema and liver disease. Multivariate analysis showed that advanced age, male sex, exacerbations, increased blood platelets and neutrophils, augmentation and lower AAT serum levels were associated with worse FEV1(%).

Conclusions: EARCO has recruited > 1000 individuals with AATD from 15 countries in its first 2 years. Baseline cross sectional data provide relevant information about the clinical phenotypes of the disease, the patterns of functional impairment and factors associated with poor lung function. Trial registration www.

Clinicaltrials: gov (ID: NCT04180319).

Keywords: Alpha-1 antitrypsin; Phenotypes; Registry.

- 40 references

SUPPLEMENTARY INFO

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. 2022 Dec 16;12(1):21728.

doi: 10.1038/s41598-022-26067-4.

Childhood asthma is associated with development of type 1 diabetes and inflammatory bowel diseases: a Danish nationwide registry study

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Affiliations expand

- PMID: 36526660

- DOI: 10.1038/s41598-022-26067-4

Free article

Abstract

Asthma and autoimmune disorders might be affected by opposing immune mechanisms, T helper cells type 2 (Th2) and T helper cells type 1 (Th1) immunity, respectively. Knowledge on comorbidity can increase understanding of the underlying etiologies. We aim to examine the association between childhood asthma and subsequent risk of type 1 diabetes (T1D) and inflammatory bowel diseases (IBD) in Danish children. Children of Danish origin born during 1991-1996 were included and childhood asthma, defined as a minimum of two collected prescriptions of inhalation corticosteroids age 5-7 years, was linked to hospitalisations with either T1D or IBD after age 8. Associations between childhood asthma and incidence of T1D and IBD were analysed using sex- and year stratified Cox regression. A total of 366,200 children were included in the study, 4.9% had asthma, which increased the risk of both T1D and IBD, hazard ratios of 1.32 (1.08-1.61) and 1.27 (1.09-1.48). In this large nationwide Danish study, we found that children with asthma have increased risk of developing immune diseases T1D and IBD. This contradicts the Th1 vs Th2 paradigm and points towards shared disease mechanisms and risk factors.

- 33 references

Review

Environ Res

. 2022 Dec 13;115061.

doi: 10.1016/j.envres.2022.115061. Online ahead of print.

Ambient ultrafine particle ($PM_{0.1}$): Sources, characteristics, measurements and exposure implications on human health

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Affiliations expand

- PMID: 36525995

- DOI: 10.1016/j.envres.2022.115061

Abstract

The problem of ultrafine particles (UFPs; $PM_{0.1}$) has been prevalent since the past decades. In addition to become easily inhaled by human respiratory system due to their ultrafine

diameter (<100 nm), ambient UFPs possess various physicochemical properties which make it more toxic. These properties vary based on the emission source profile. The current development of UFPs studies is hindered by the problem of expensive instruments and the inexistence of standardized measurement method. This review provides detailed insights on ambient UFPs sources, physicochemical properties, measurements and estimation models development. Implications on health impacts due to short-term and long-term exposure of ambient UFPs are also presented alongside the development progress of potentially low-cost UFPs sensors which can be used for future UFPs studies references. Current challenge and future outlook of ambient UFPs research are also discussed in this review. Based on the review results, ambient UFPs may originate from primary and secondary sources which include anthropogenic and natural activities. In addition to that, it is confirmed from various chemical content analysis that UFPs carry heavy metals, PAHs, BC which are toxic in its nature. Measurement of ambient UFPs may be performed through stationary and mobile methods for environmental profiling and exposure assessment purpose. UFPs PNC estimation model (LUR) developed from measurement data could be deployed to support future epidemiological study of ambient UFPs. Low-cost sensors such as bipolar ion and ionization sensor from common smoke detector device may be further developed as affordable instrument to monitor ambient UFPs. Recent studies indicate that short-term exposure of UFPs can be associated with HRV change and increased cardiopulmonary effects. On the other hand, long-term UFPs exposure have positive association with COPD, CVD, CHF, pre-term birth, asthma and also acute myocardial infection cases.

Keywords: Exposure; Low-cost sensors; Measurement methodologies; Particulate matter; Ultrafine particles.

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.

J Asthma

. 2022 Dec 16;1-10.

doi: 10.1080/02770903.2022.2160345. Online ahead of print.

Feasibility and acceptability of home monitoring with portable spirometry in young adults with asthma

Ross Bindler[1], Hans C Haverkamp[2], Hannah O'Flanagan[3,4], Justin Whicker[5], Ana G Rappold[6], Von Walden[7], Julie Postma[1]

Affiliations expand

- PMID: 36525469

- DOI: 10.1080/02770903.2022.2160345

Abstract

Objective: Self-monitoring asthma control is a key component of asthma management. Few studies have reported usability and acceptability of portable spirometry among young adults with asthma. Portable spirometry offers a practical solution to monitoring airway narrowing at home. The purpose of this paper was to determine if self-administered spirometry is feasible and acceptable in young adults with asthma and whether regular monitoring resulted in improved airway function as measured by forced expiratory volume in one second (FEV_1).

Methods: Sixty-seven young adults (18-26 years) with self-reported asthma participated in a clinical trial during wildfire season which measured FEV_1 as an outcome measure. Data was collected at baseline, week 4, and week 8 using a portable spirometer linked to a smartphone application. A subset of intervention participants completed spirometry twice

daily. Acceptability of self-administered spirometry was evaluated after the trial among participants that volunteered to submit a survey and be interviewed.

Results: At baseline, all 67 participants (100.0%) completed their scheduled spirometry readings which declined to 94.0% (n = 63) at week 4 and 86.6% (n = 58) at week 8. Daily readings were completed 83.2% of the time in the mornings and 84.3% of the time in the evenings. Mean FEV_1 values were lower than predicted values, but above the lower limit of expected. FEV_1 remained steady throughout the study period. Over two-thirds of participants used the notes feature in the application and described symptoms, asthma triggers, mitigating actions and test-taking issues.

Conclusions: Young adults in our sample were highly compliant with regular, self-administered spirometry.

Keywords: Asthma; Feasibility Studies; Self-management; Spirometry; Wildfires; Young Adult.

Review

Curr Allergy Asthma Rep

. 2022 Dec 16.

doi: 10.1007/s11882-022-01056-9. Online ahead of print.

Understanding the Functional Role of the Microbiome and Metabolome in Asthma

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Affiliations expand

- PMID: 36525159

- DOI: 10.1007/s11882-022-01056-9

Abstract

Purpose of review: Asthma is a heterogenous respiratory disease characterized by airway inflammation and obstruction. However, the causes of asthma are unknown. Several studies have reported microbial and metabolomic dysbiosis in asthmatic patients; but, little is known about the functional role of the microbiota or the host-microbe metabolome in asthma pathophysiology. Current multi-omic studies are linking both the metabolome and microbiome in different organ systems to help identify the interactions involved in asthma, with the goal of better identifying endotypes/phenotypes, causal links, and potential targets of treatment. This review thus endeavors to explore the benefits of and current advances in studying microbiome-metabolome interactions in asthma.

Recent findings: This is a narrative review of the current state of research surrounding the interaction between the microbiome and metabolome and their role in asthma. Associations with asthma onset, severity, and phenotype have been identified in both the microbiome and the metabolome, most frequently in the gut. More recently, studies have begun to investigate the role of the respiratory microbiome in airway disease and its association with the systemic metabolome, which has provided further insights into its role in asthma phenotypes. This review also identifies gaps in the field in understanding the direct link between respiratory microbiome and metabolome, hypothesizes the benefits for conducting such studies in the future for asthma treatment and prevention, and identifies current analytical limitations that need to be addressed to advance the field. This is a comprehensive review of the current state of research on the interaction between the microbiome and metabolome and their role in asthma.

Keywords: Asthma; Interaction; Metabolome; Microbiome; Respiratory.

- 64 references

SUPPLEMENTARY INFO

Publication types, Grant supportexpand

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Cite

Hosp Pediatr

. 2022 Dec 16;e2022006746.

doi: 10.1542/hpeds.2022-006746. Online ahead of print.

Overweight Infants Hospitalized for Bronchiolitis Associated With Severe Disease

Leann Madion[1,2], Sarah Corey Bauer[1,2], Amy Pan[3], Daiva Parakininkas[4,5,2], Catherine Karls[2], Vanessa McFadden[1,2], Tracey Liljestrom[1,2]

Affiliations expand

- PMID: 36524326

- DOI: 10.1542/hpeds.2022-006746

Abstract

Objectives: Overweight negatively affects pediatric respiratory function. In this study, we evaluate if overweight is associated with more severe bronchiolitis in hospitalized infants.

Methods: This retrospective cohort study analyzed infants aged 30 to 365 days hospitalized for bronchiolitis from September 2019 to April 2020. Exclusion criteria included known risk factors for severe bronchiolitis, asthma treatment, or bacterial pneumonia. Weight-for-length z-score was categorized per the World Health Organization's growth assessments as overweight (z-score >2), underweight (z-score <-2), and standard weight (between -2 and ≤2). Primary outcomes included respiratory support, ICU stay, and local bronchiolitis score. Secondary outcomes included supplemental interventions.

Results: After exclusion criteria, 385 of 644 infants were categorized as overweight (n = 24), standard (n = 335), or underweight (n = 26). There were differences in need for

respiratory support (overweight, 100%; standard weight, 81.8%; underweight, 76.9%; P = .03), highest support of high-flow nasal cannula (overweight, 75%; standard weight, 48%; underweight, 42%; P = .03), admission to ICU (overweight, 54.2%; standard weight, 21.5%; underweight, 34.7%; P < .001), and median bronchiolitis score (overweight, 8 [interquartile range 5-10]; standard weight, 4 [3-7]; underweight, 4 [3-7]; P = .01). Findings remained significant after age adjustments. Additionally, overweight experienced higher frequency of certain treatments.

Conclusions: This study suggests overweight is associated with more severe bronchiolitis in hospitalized infants supported by increased respiratory support level, bronchiolitis scores, and interventions. Higher need for ICU admission may be related to high-flow nasal cannula limitations on the acute care floor.

Conflict of interest statement

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

J Clin Pharmacol

. 2022 Dec 15.

doi: 10.1002/jcph.2194. Online ahead of print.

What is the Role of Sex-Related Differences in the Effectiveness and Safety of Biological Drugs used in Patients' Severe Asthma?

Corrado Pelaia[1], Alessandro Casarella[1], Giulia Pelaia[1], Gianmarco Marcianò[1], Vincenzo Rania[1], Lucia Muraca[2], Erika Cione[3,4,5], Luigi Bianco[6], Caterina Palleria[6], Bruno D'Agostino[7], Daniela Mazzuca[1], Giovambattista De Sarro[1,6,8], Giulio Di Mizio[9], Luca Gallelli[1,4,6,8,5]

Affiliations expand

- PMID: 36524322

- DOI: 10.1002/jcph.2194

Abstract

Biological drugs are used to treat severe asthma with an improvement of clinical symptoms. Data on sex-difference of these drugs in patients with severe asthma are sparse. This study aimed to assess the effects of sex-related differences on biological drugs, in patients with severe asthma. In this observational open-label prospective non-controlled, single-center cohort pilot study, we enrolled adult patients > 18 years diagnosed with severe asthma and not previously treated with biological drugs. The first clinical endpoint was the statistical difference (P<0.05) in the efficacy of biological drugs evaluated using asthma control test (ACT) and spirometry between sexes. The first safety endpoint was the statistical difference (P<0.05) in developing adverse drug reactions (ADRs) between sexes. We enrolled 74 severe asthmatic patients (48 women and 26 men) with a mean age of 59.4 (11.8) years. The mean forced expiratory volume in one second was 6.9 (13.9) for women and 9.4 (10.7) for men and improved significantly after the treatment (P<0.01), with no significant differences in sex [P = 0.8]. Similarly, ACT improved 12 months after the beginning of the treatment, without significant differences between men and women (P = 0.5). The most common drug used was omalizumab (45.9% of the patients, P<0.01) without significant differences between sex (P > 0.05). We didn't observe the development of ADRs during the study. In conclusion, in asthmatic patients, sex does not have a role in both the effectiveness and safety of biological drugs. This article is protected by copyright. All rights reserved.

Keywords: biological drugs; efficacy; safety; severe asthma; sex.

Am J Respir Crit Care Med

. 2022 Dec 15.

doi: 10.1164/rccm.202209-1654LE. Online ahead of print.

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

Tara F Carr[1], Debra A Stern[2], Wayne Morgan[3], Stefano Guerra[4], Fernando D Martinez[5]

Affiliations expand

- PMID: 36521027

- DOI: 10.1164/rccm.202209-1654LE

No abstract available

Keywords: asthma; dysanapsis; insulin.

doi: 10.1080/02770903.2022.2158858. Online ahead of print.

Breath-Actuated INhalation TheRapy: Survey Of phySicians' PErCepTion (INTROSPECT) in Nepal

Ramesh Chokhani [1], Vaibhav Gaur [2], Jaideep Gogtay [2]

Affiliations expand

- PMID: 36519280

- DOI: 10.1080/02770903.2022.2158858

Abstract

Objective: Breath-actuated inhalers (BAIs) are gaining attention in the management of obstructive airway diseases (OADs). In Nepal, a BAI containing fluticasone propionate/salmeterol (FPS) has been available for a year. This survey is aimed at determining the perception and experience of physicians in Nepal concerning BAIs.

Methods: A cross-sectional, questionnaire-based survey was conducted. A total of 141 physicians participated and filled the survey.

Results: Most physicians felt that the right device should be easy to teach, learn and remember. They considered coordination and multiple steps as the primary challenges with pressurized metered-dose inhalers and dry powder inhalers, respectively. Most of them agreed that BAIs could address these challenges. BAIs were not only preferred by most of the physicians for asthma and chronic obstructive pulmonary disease but were also the preferred choice in newly diagnosed patients. Physicians believed that if current patients were shifted to BAIs, it could improve inhalation technique (88%) and compliance/adherence (81%). Almost all of them (92-97%) agreed that teaching the breathing technique and the cleaning process was easier and faster in BAIs. BAIs were considered easy and simple to use. Also, BAI's dose-counter helps patients to increase adherence to inhalation therapy.In this INTROSPECT survey, physicians in Nepal believed that BAIs could address the key challenges faced with using pMDIs and DPIs in asthma and COPD patients.

Keywords: Asthma; Breath-actuated inhalers; COPD; Dry powder inhalers; Obstructive airway diseases; Pressurized metered-dose inhaler.

Thorax

. 2022 Dec 14;thoraxjnl-2022-219192.

doi: 10.1136/thorax-2022-219192. Online ahead of print.

Plasma thymic stromal lymphopoietin (TSLP) in adults with non-severe asthma: the EGEA study

Bakari Ibrahim[1], Djamal Achour[2], Farid Zerimech[2], Patricia de Nadai[3], Valerie Siroux[4], Anne Tsicopoulos[3], Régis Matran[5], Vanessa Granger[6,7], Rachel Nadif[8]

Affiliations expand

- PMID: 36517245

- DOI: 10.1136/thorax-2022-219192

Abstract

Thymic stromal lymphopoietin (TSLP), a cytokine involved in severe asthma treatment, was never studied in non-severe asthma.Among 969 adults from a large epidemiological study, cross-sectional analyses showed that plasma TSLP levels were associated with increased age and BMI, male sex, smoking and high TSLP levels (one IQR increase) with current asthma and poor lung function. High TSLP levels were also associated with persistence of asthma attacks (aOR=2.14 (95% CI 1.23 to 3.72)) and dyspnoea (aOR=2.71 (95% CI 1.39 to 5.28)) 10 years later.Our results suggest that TSLP could be a cytokine of interest in non-severe asthma, and its determinants of circulating levels could be considered in asthma management.

Keywords: Asthma; Asthma Epidemiology; Cytokine Biology.

Conflict of interest statement

Competing interests: None declared.

Eur Respir J

. 2022 Dec 14;2200558.

doi: 10.1183/13993003.00558-2022. Online ahead of print.

Development of a tool to detect small airways dysfunction in asthma clinical practice

Janwillem Kocks[1,2,3,4], Thys van der Molen[1,2], Jaco Voorham[5], Simonetta Baldi[6], Maarten van den Berge[2,4], Chris Brightling[6], Leonardo M Fabbri[7], Monica Kraft[8], Gabriele Nicolini[9], Alberto Papi[7], Klaus F Rabe[10], Salman Siddiqui[11], Dave Singh[12], Judith Vonk[2,13], Marika Leving[1], Bertine Flokstra-de Blok[14,2,15]

Affiliations expand

- PMID: 36517179

- DOI: 10.1183/13993003.00558-2022

Free article

Abstract

Background: Small airways dysfunction (SAD) in asthma is difficult to measure and a gold standard is lacking. The aim of this study was to develop a simple tool including items of the small airways dysfunction tool (SADT) questionnaire, basic patient characteristics and respiratory tests available depending on clinical setting, to predict SAD in asthma.

Methods: This study was based on the data of the multinational ATLANTIS (Assessment of Small Airways Involvement in Asthma) study including the earlier developed SADT questionnaire. Key SADT-items together with clinical information was now used to build logistic regression models to predict SAD group (less likely or more likely to have SAD). Diagnostic ability of the models was expressed as area under the receiver operating characteristic curve (AUC) and positive likelihood ratios (LR+).

Results: SADT-item 8, "I sometimes wheeze when I am sitting or lying quietly", and the patient characteristics age, age at asthma diagnosis and BMI could reasonably well detect SAD (AUC:0.74, LR+:2.3). The diagnostic ability increased by adding spirometry (FEV_{1pp}; AUC:0.87, LR+:5.0) and oscillometry (R5-R20 and AX; AUC:0.96, LR+:12.8).

Conclusion: If access to respiratory tests is limited (*e.g.* primary care in many countries), patients with SAD could reasonably well be identified by asking about wheezing at rest and a few patient characteristics. In (advanced) hospital settings patients with SAD could be identified with considerably higher accuracy using spirometry and oscillometry.

. 2022 Dec 14;17(12):e0276731.

doi: 10.1371/journal.pone.0276731. eCollection 2022.

Temporal trends of hospitalizations, comorbidity burden and in-hospital outcomes in patients admitted with asthma in the United States: Population-based study

Salwa S Zghebi[1,2], Mohamed O Mohamed[3,4], Mamas A Mamas[3], Evangelos Kontopantelis[1,5]

Affiliations expand

- PMID: 36516114

- PMCID: PMC9750011

- DOI: 10.1371/journal.pone.0276731

Free PMC article

Abstract

Background: Asthma is a prevalent chronic respiratory condition and remains a common cause for hospitalization. However, contemporary data on asthma hospitalization rates, comorbidity burden, and in-hospital outcomes are lacking.

Methods: Survey-weighted analysis of hospitalization records with a primary diagnosis of asthma using data from the US National (Nationwide) Inpatient Sample between 2004 and 2017. Outcomes were number of hospitalizations per 100,000 population and in-hospital outcomes including receipt of ventilation, length of stay, and hospital costs. Patient and admission characteristics and comorbidity burden were examined over time. Multivariable logistic and linear regression models were fitted for over-time risks of the outcomes.

Results: Among 3,098,863 asthma admissions between 2004 and 2017, mean (±SD) age was 29 (±25), 57% females, 36% White, 40% had Medicaid as primary payer. During 2004-2017, asthma hospitalizations declined from 89 to 56 per 100,000 population; length of

stay remained overall stable; median (interquartile range IQR) inflation-adjusted hospital costs doubled from $8,446 (9,227) in 2004 to $17,756 (19,434) in 2017. Common comorbidities in patients admitted with asthma were hypertension and diabetes in adults, but gastroesophageal reflux disease, obstructive sleep apnoea, anemia, and obesity in children. Over time, the prevalence of mental illness increased by >50%. Severe asthma (IRR, 2.48; 95%CI: 2.27-2.72) and psychoses (IRR, 1.10; 1.05-1.14) were predictors of prolonged hospitalization. Asian/Pacific Islanders were more likely to receive ventilation (OR: 2.35; 1.73-3.20) than White patients. Hospital costs were significantly higher in females and adults with hypertension (coefficient, 1405.2; 283.1-2527.4) or psychoses (coefficient, 1978.4; 674.9-3282.0).

Conclusions: US asthma hospitalization rates fluctuated in earlier years but declined over time, which may reflect improvements in community care and declining asthma prevalence. Comorbidity burden, including mental illness, increased over time and is associated with in-hospital outcomes. This highlights the changing landscape of asthma admissions which may inform redesigning services to support pre-hospitalization asthma care and help further reduce admissions, particularly among patients with multimorbidity.

Conflict of interest statement

The authors have declared that no competing interests exist.

- 29 references
- 2 figures

Scand J Med Sci Sports

. 2022 Dec 14.

doi: 10.1111/sms.14286. Online ahead of print.

Adjusted incidence, remission, and relapse of self-reported physician-diagnosed asthma and asthma medication usage in endurance athletes

Nikolai Stenfors[1], Tommie Irewall[1], Anne Lindberg[1]

Affiliations expand

- PMID: 36514895

- DOI: 10.1111/sms.14286

Abstract

Longitudinal studies are needed to increase our knowledge of the natural history of asthma in athletes. Our aims were to estimate the incidence, remission, and relapse, of self-reported asthma among endurance athletes. A postal questionnaire on self-reported physician-diagnosed asthma, asthma medication, allergy, and respiratory symptoms was sent annually 2011-2015 to 666 Swedish elite athletes competing in cross-country skiing, biathlon, ski orienteering, or orienteering. Athletes at risk for 1) incident asthma were those without previous self-reported asthma, use of asthma medication, or asthma-like symptoms, 2) remission those who discontinued asthma medication usage and 3) relapse those who resumed asthma medication usage during the observation period. The population at risk was used as denominator in the calculations of subsequent event rate. At baseline, 89 % responded, the median age was 17 years and 47% were females. Of the 373 athletes with never asthma nor use of asthma medication/asthma-like symptoms at baseline, 31 (8%) reported physician-diagnosed asthma during follow-up, giving an adjusted incidence rate of asthma of 42/1000 person-years. Among the 110 athletes with self-reported asthma and use of asthma-medication at baseline, 26 (24%) discontinued use of asthma medication during the follow-up, giving a remission rate of 142/1000 person-years. Of the 31 athletes with previous asthma and no use of asthma medication at

baseline, 9 (29%) resumed use of asthma medication during follow-up, giving a relapse rate was 148/1000 person-years. Elite endurance athletes have a high incidence of self-reported physician-diagnosed asthma. The remission and relapse of self-reported asthma medication usage in endurance athletes appear similar to that of the general population.

Keywords: Incidence; asthma; athlete; relapse; remission; risk factors; sport.

Respir Res

. 2022 Dec 13;23(1):342.

doi: 10.1186/s12931-022-02265-6.

Outcomes and risk factors with COVID-19 or influenza in hospitalized asthma patients

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Affiliations expand

- PMID: 36514068

- PMCID: PMC9745693

- DOI: 10.1186/s12931-022-02265-6

Free PMC article

Abstract

Background: At the time of the SARS-CoV-2 emergence, asthma patients were initially considered vulnerable because respiratory viruses, especially influenza, are associated with asthma exacerbations, increased risk of hospitalization and more severe disease course. We aimed to compare the asthma prevalence in patients hospitalized for COVID-19 or influenza and risk factors associated with poor prognosis with the diseases.

Methods: This retrospective cohort study used the Paris university hospitals clinical data warehouse to identify adults hospitalized for COVID-19 (January to June 2020) or influenza (November 2017 to March 2018 for the 2017-2018 influenza period and November 2018 to March 2019 for the 2018-2019 period). Asthma patients were identified with J45 and J46 ICD-10 codes. Poor outcomes were defined as admission in intensive care or death.

Results: Asthma prevalence was significantly higher among influenza than COVID-19 patients (n = 283/3 119, 9.1%, 95% CI [8.1-10.1] in 2017-2018 and n = 309/3 266, 9.5%, 95% CI [8.5-10.5] in 2018-2019 versus n = 402/9 009, 4.5%, 95% CI [4.0-4.9]). For asthma patients, 31% with COVID-19 were admitted to an intensive care unit versus 23% and 21% with influenza. Obesity was a risk factor for the 2017-2018 influenza period, smoking and heart failure for the 2018-2019 period. Among COVID-19 patients with asthma, smoking and obesity were risk factors for the severe form.

Conclusions: In this study, patients with an asthma ICD-10 code were less represented among COVID-19 patients than among influenza-infected ones. However, outcomes were poorer for COVID-19 than influenza patients, both with asthma. These data highlight the importance of protective shields and vaccination against influenza and COVID-19 in this population.

Keywords: Asthma; COVID-19; Clinical Data Warehouses; Influenza; Prognosis.

Conflict of interest statement

CT reports personal fees and other from Novartis, GSK, Sanofi, Astrazeneca, Chiesi, outside the submitted work. The others authors declare that they have no competing interests.

- 58 references
- 1 figure

SUPPLEMENTARY INFO

MeSH termsexpand

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Eur Heart J Cardiovasc Pharmacother

. 2022 Dec 13;pvac070.

doi: 10.1093/ehjcvp/pvac070. Online ahead of print.

Design and rationale of randomized evaluation of decreased usage of beta-blockers after acute myocardial infarction (REDUCE-AMI)

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Affiliations expand

- PMID: 36513329

- DOI: 10.1093/ehjcvp/pvac070

Abstract

Background: Most trials showing benefit of beta-blocker treatment after myocardial infarction (MI) included patients with large MIs and are from an era before modern biomarker-based MI diagnosis and reperfusion treatment. The aim of the Randomized Evaluation of Decreased Usage of betabloCkErs after Acute Myocardial Infarction (REDUCE-AMI) trial is to determine whether long-term oral beta-blockade in patients with an acute MI and preserved left ventricular ejection fraction (EF) reduces the composite endpoint of death of any cause or recurrent MI.

Methods: It is a registry-based, randomized, parallel, open-label, multicenter trial performed at 38 centers in Sweden, one center in Estonia and six centers in New Zealand. About 5000 patients with an acute MI who have undergone coronary angiography and with EF ≥ 50% will be randomized to long-term treatment with beta-blockade or not. The primary endpoint is the composite endpoint of death of any cause or new non-fatal MI. There are several secondary endpoints, including all-cause death, cardiovascular death, new MI, readmission because of heart failure and atrial fibrillation, symptoms, functional status, health related quality of life after 6-10 weeks and after 1 year of treatment. Safety endpoints are bradycardia, AV-block II-III, hypotension, syncope or need for pacemaker, asthma or chronic obstructive pulmonary disease and stroke.

Conclusion: The results from REDUCE-AMI will add important evidence regarding the effect of beta-blockers in patients with MI and preserved EF and may change guidelines and clinical practice.

Keywords: Beta-blocker; Clinical trial; Myocardial infarction; Outcome; RRCT; Registry.

. 2022 Dec 13;1-17.

doi: 10.1080/02770903.2022.2158101. Online ahead of print.

The role of serum inflammatory in mycoplasma pneumoniae infection with respiratory asthma

Qianyi Zhou[1], Xiaoju Zhou[2], Wei Jiang[2]

Affiliations expand

- PMID: 36511625

- DOI: 10.1080/02770903.2022.2158101

Abstract

BackgroundsWith the growing frequency of M. pneumoniae infections linked to respiratory asthma (MP-RA), particularly in children, the quest for novel diagnostic molecular markers has become critical. We examined the link between serum immunoglobulin, inflammatory variables, vitamin A, and vitamin D levels in MP-RA patients and then found markedly diagnostic indicators.MethodsFrom January 2015 to March 2020, our hospital screened 55 cases of healthy control children (HC), 53 instances of mycoplasma pneumonia infection complicated with respiratory asthma (MP-RA), and 58 cases of non-respiratory asthma children for pneumonia mycoplasma infection (MP). Serum immunoglobulins, inflammatory markers, vitamin D, and vitamin A levels were analyzed, and a predictive model including the feature chosen in the least absolute shrinkage and selection operator regression model was developed.ResultsSerum TNF- and IL-1b levels were greater in MP-RA children than in MP children, but 25(OH)D, IgG, and IgA levels were lower. Our findings verified the link between IgA, TNF-a, 25(OH)D, and vitamin A with MP-RA. In addition, TNF-a, IL-1b, 25(OH)D (Vit-D), IgG, and IgA were the predictors in the prediction nomogram, showing the combined influence of serum inflammation in MP-RA. C-index of 0.985 (95% CI: -1.25 to 1.68) shows high scaling ability and the model exhibits good discriminative capacity. With range validation, the high C-index value of 0.96 is still possible.ConclusionTNF-a, IL-1b, 25(OH)D (Vit-D), IgG, and IgA were considered as predictors in children with MP-RA was investigated in this research.

Keywords: Mycoplasma pneumonia; asthma; inflammatory factors; serum immunoglobulin; vitamin A; vitamin D.

Indian Pediatr

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. 2022 Dec 15;59(12):949.

Feasibility of Pulse Oximeter Derived Respiratory Parameters in Young Children: A Pilot Study: Pediatric Pulmonologist's Viewpoint

Venkatesh Chandrasekaran[1]

Affiliations expand

- PMID: 36511211

No abstract available

Case Reports

Am J Case Rep

. 2022 Dec 13;23:e938450.

doi: 10.12659/AJCR.938450.

Mepolizumab as a Potential Protective Factor of COVID-19 Mortality: A Case Report of Chronic Bronchitis and Asthma in an Elderly Patient

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Affiliations expand

- PMID: 36510448

- DOI: 10.12659/AJCR.938450

Abstract

BACKGROUND Patients with multiple comorbidities who are infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have a higher risk of mortality. However, treatment with mepolizumab may be a key factor in counteracting the risk of these comorbidities. We present a patient who had an uneventful recovery from coronavirus disease 2019 (COVID-19), despite having 5 independent risk factors for severe disease and increased mortality. CASE REPORT A 75-year-old man with a long-standing history of asthma, chronic bronchitis, coronary artery disease, and hypertension presented to the Emergency Department in November 2020 with a 4-day history of fever, chills, shortness of breath, cough, and fatigue. Six months prior to this presentation, the patient was hospitalized for severe chronic bronchitis and acute exacerbation of asthma. His medications included mepolizumab, aclidinium, ramipril, diltiazem, aspirin, albuterol sulfate, and micronized budesonide/micronized formoterol fumarate dihydrate. Physical examination was unremarkable, except for cardiopulmonary distress. Laboratory tests showed leucocytosis. His chest X-ray revealed infiltrates and interstitial edema in the lower

lung fields. A PCR test for SARS-CoV-2 was positive. COVID-19 pneumonia was diagnosed, and the patient was admitted to the hospital, where he was treated with acetaminophen, amoxicillin, dexamethasone, and supplemental oxygen. The patient remained stable and was discharged from the hospital the following day. He was free of all symptoms after 21 days. CONCLUSIONS This case of a 75-year-old man who presented with mild COVID-19 supports the findings from other reports of improvement in clinical outcomes for some patients with asthma who received treatment with mepolizumab.

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

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Respir Res

. 2022 Dec 12;23(1):341.

doi: 10.1186/s12931-022-02266-5.

Associations of symptoms of anxiety and depression with health-status, asthma control, dyspnoea, dysfunction breathing and obesity in people with severe asthma

Michelle A Stubbs[1 2 3], Vanessa L Clark[4 5 6], Peter G Gibson[4 5 7], Janelle Yorke[8 9], Vanessa M McDonald[4 5 6]

Affiliations expand

- PMID: 36510255

- PMCID: PMC9743554

- DOI: 10.1186/s12931-022-02266-5

Free PMC article

Abstract

Background: Anxiety and depression are comorbidities of severe asthma. However, clinical characteristics associated with coexisting severe asthma and anxiety/depression are poorly understood. The study objective is to determine clinical characteristics associated with anxiety and depressive symptoms in severe asthma.

Methods: Severe asthma participants (N = 140) underwent a multidimensional assessment. Categorization of symptoms of anxiety and depression were based on HADS scale sub-scores and divided into four groups (< 8 on both subscales; ≥ 8 on one subscale; ≥ 8 on both subscales). Clinical characteristics were compared between subgroups. Multivariate logistic regression determined associations of clinical characteristics and anxiety and/or depressive symptoms in people with severe asthma.

Results: Participants were (mean ± SD) 59.3 ± 14.7 years old, and 62% female. There were 74 (53%) severe asthma participants without symptoms of anxiety/depression, 11 (7%) with symptoms of anxiety, 37 (26%) with symptoms of depression and 18 (13%) with symptoms of anxiety and depression. Quality of life impairment was greater in participants with symptoms of depression (4.4 ± 1.2) and combined symptoms of anxiety and depression (4.4 ± 1.1). Asthma control was worse in those with symptoms of depression (2.9 ± 1.1) and combined anxiety and depression (2.6 ± 1.0). In multivariate models, dysfunctional breathing was associated with symptoms of anxiety (OR = 1.24 [1.01, 1.53]). Dyspnoea was associated with symptoms of depression (OR = 1.90 [1.10, 3.25]). Dysfunctional breathing (OR 1.16 [1.04, 1.23]) and obesity (OR 1.17 [1.00, 1.35]) were associated with combined symptoms of anxiety and depression.

Conclusion: People with severe asthma and anxiety and/or depressive symptoms have poorer QoL and asthma control. Dyspnoea, dysfunctional breathing and obesity are associated with these symptoms. These key clinical characteristics should be targeted in severe asthma management.

Keywords: Anxiety; Asthma control; Depression; Dysfunctional breathing; Dyspnoea; Obesity; Quality of life; Severe asthma.

Conflict of interest statement

M.A. Stubbs reports personal speaker fees from AstraZeneca, outside the submitted work. V.L. Clark receives a fellowship from the National Health and Medical Research Council, Centre of Research Excellence in Severe Asthma, and also reports a grant from AstraZeneca to cover research-related costs, received for providing education to AstraZeneca staff, outside the submitted work. J. Yorke reports personal fees from Dysnpoae-12 questionnaire, personal fees from SGRQ-I questionnaire, outside the submitted work. P.G. Gibson reports personal fees from AstraZeneca, GlaxoSmithKline, Novartis, Grants from AstraZeneca, GlaxoSmithKline, outside the submitted work. V.M. McDonald reports grants and speaker fees from GlaxoSmithKline and AstraZeneca, and advisory board fees from Novartis, all outside the submitted work.

- 58 references
- 2 figures

SUPPLEMENTARY INFO

MeSH terms, Grant supportexpand

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Thromb J

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. 2022 Dec 12;20(1):76.

doi: 10.1186/s12959-022-00439-2.

Modern thromboprophylaxis protocol based on guidelines applied in a

respiratory intensive care unit: a single-center prospective cohort study

Xiao Tang[#1], Wen-Rui Lyu[#1], Yu Jin[#1], Rui Wang[1], Xu-Yan Li[1], Ying Li[1], Chun-Yan Zhang[1], Wei Zhao[2], Zhao-Hui Tong[1], Bing Sun[3]

Affiliations expand

- PMID: 36510234
- PMCID: PMC9746213
- DOI: 10.1186/s12959-022-00439-2

Free PMC article

Abstract

Background: Critically ill patients in intensive care units (ICUs) are at high risk of venous thromboembolism (VTE). This study aimed to explore the prophylaxis effect under a guideline-based thromboprophylaxis protocol among critically ill patients in a respiratory ICU.

Methods: For this single-center prospective cohort study, we followed the thromboprophylaxis protocol, which was drawn up based on relevant guidelines and Chinese experts' advice. Clinical data were entered into an electronic case report form and analyzed. Multivariate logistic regression was conducted to explore independent risk factors of VTE event under this protocol.

Results: From August 1, 2014, to December 31, 2020, 884 patients underwent thromboprophylaxis according to this protocol; 10.5% of them received mechanical prophylaxis, 43.8% received pharmacological prophylaxis, and 45.7% received pharmacological combined with mechanical prophylaxis. The proportion of VTE events was 14.3% for patients who received the thromboprophylaxis protocol, of which 0.1% had pulmonary thromboembolism (PTE), 2.0% had proximal deep vein thrombosis (DVT), and 12.1% had isolated distal DVT. There was no significant difference between different thromboprophylaxis measures. Cirrhosis (OR 5.789, 95% CI [1.402, 23.894], P = 0.015), acute asthma exacerbation (OR 39.999, 95% CI [4.704, 340.083], P = 0.001), and extracorporeal membrane oxygenation treatment (OR 22.237, 95%CI [4.824, 102.502], P < 0.001) were independent risk factors for proximal DVT under thromboprophylaxis.

Conclusions: The thromboprophylaxis protocol based on guidelines applied in the ICU was practicable and could help decrease the proportion of PTE and proximal DVT events. The risk factors of VTE events happening under the thromboprophylaxis protocol require more attention.

Trial registration: ClinicalTrials.gov: NCT02213978.

Keywords: Critical illness; Intensive care unit; Risk factors; Thromboprophylaxis; Venous thromboembolism.

Conflict of interest statement

The authors declare that they have no competing interests.

- 37 references
- 3 figures

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Clin Respir J

.
. 2022 Dec 12.

doi: 10.1111/crj.13565. Online ahead of print.

The value of concentration of alveolar nitric oxide in diagnosing small airway dysfunction in patients with stable asthma

Jing Wang[1], Ke Wu[2], Xianliang Cheng[3], Xiangsong Chen[3], Yanan Qi[3], Limin Zhao[4]

Affiliations expand

- PMID: 36508744

- DOI: 10.1111/crj.13565

Abstract

Background: Exhaled nitric oxide (FeNO) is a simple, noninvasive, and reproducible test, and FeNO (50 ml/s) is often used to reflect airway inflammation. The peripheral small airway/alveolar nitric oxide (NO) concentration is derived from the output of NO at multiple flow rates. Concentration of alveolar NO (CANO), which has been reported to reflect peripheral small airway inflammation, may be related to parameters that reflect abnormal small airway function.

Aim: This study aims to investigate the relationship among CANO levels, clinical features, and small airway function-related indicators in patients with stable asthma and to provide a simple method for monitoring small airway function in asthma.

Design and methods: We recruited 144 patients with well-controlled, stable asthma, including 69 patients with normal small airway function (normal group) and 75 patients with small airway dysfunction (abnormal group). CANO and pulmonary function were measured.

Results: CANO was significantly higher in the abnormal group ([7.28 ± 3.25] ppb) than the normal group CANO ([2.87 ± 1.50] ppb). FEF25-75%pred ([55.0 ± 16.5]%), FEF50%pred ([46.4 ± 13.2]%), and FEF75%pred ([41.9 ± 13.1]%) in abnormal group were significantly lower compared with normal group ([89.9 ± 7.5]%), ([80.9 ± 6.8]%), and ([73.8 ± 5.0]%). CANO was negatively correlated and FEF25-75%pred, FEF50%pred, and FEF75%pred ($r = -0.87$, $P < 0.001$; $r = -0.82$, $P < 0.001$; $r = -0.78$, $P < 0.001$). CANO was positively correlated with age ($r = 0.27$, $P = 0.001$). The area under the ROC curve was 0.875 for CANO. The optimal cutoff point of 5.3 ppb had sensitivity and specificity values of 72% and 92% in diagnosing small airway dysfunction.

Conclusion: CANO has diagnostic value for small airway dysfunction, and the optimal cutoff value is 5.3 ppb. However, the diagnostic evidence is still insufficient, so it still needs further exploration for its value in detecting small airway dysfunction.

Keywords: CANO; asthma; lung function; small airway function.

- 26 references

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Clin Exp Allergy

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. 2022 Dec 12.

doi: 10.1111/cea.14256. Online ahead of print.

Efficacy of tezepelumab in patients with evidence of severe allergic asthma: Results from the phase 3 NAVIGATOR study

Jonathan Corren[1], Christopher S Ambrose[2], Janet M Griffiths[3], Åsa Hellqvist[4], Andrew W Lindsley[5], Jean-Pierre Llanos[6], Gene Colice[7], Andrew Menzies-Gow[8]

Affiliations expand

- PMID: 36507576

- DOI: 10.1111/cea.14256

Abstract

Background: Allergic asthma is the most common phenotype among patients with severe asthma. In the phase 3 NAVIGATOR study (NCT03347279), tezepelumab significantly reduced the annualized asthma exacerbation rate (AAER) versus placebo in patients with severe, uncontrolled asthma. This exploratory analysis evaluated the efficacy of tezepelumab in NAVIGATOR participants with evidence of severe allergic asthma.

Methods: Patients (12-80 years old) receiving medium- or high-dose inhaled corticosteroids and ≥ 1 additional controller medication, with or without oral corticosteroids, were randomized to tezepelumab 210 mg or placebo subcutaneously every 4 weeks for 52 weeks in NAVIGATOR. In this analysis, the AAER, forced expiratory volume in 1 second (FEV_1), patient-reported outcomes (PROs), and type 2 biomarker levels were evaluated in patients grouped by sensitivity to perennial aeroallergens, confirmed symptomatic allergy, and eligibility for omalizumab treatment according to the United States (OMA-US) and the European Union (OMA-EU) prescribing information, including subgroups according to baseline blood eosinophil counts and fractional exhaled nitric oxide (FeNO) levels.

Results: Of 1059 patients who received treatment in NAVIGATOR, 680 (64%) had perennial aeroallergen sensitivity and 318 (30%) had confirmed symptomatic allergy; 379 (36%) and 359 (34%) patients were OMA-US- and OMA-EU-eligible, respectively. Tezepelumab reduced the AAER over 52 weeks versus placebo by 58% (95% confidence interval [CI]: 47-67) to 68% (95% CI: 55-77) across these subgroups. Among omalizumab-eligible patients, AAERs were reduced in patients across baseline blood eosinophil counts and FeNO levels. Tezepelumab improved FEV_1 and PROs, and reduced type 2 biomarkers, versus placebo in patients with and without perennial allergy.

Conclusions: Tezepelumab was efficacious in patients with severe, uncontrolled asthma with evidence of allergic inflammation, defined by multiple clinically relevant definitions. These findings further support the benefits of tezepelumab in a broad population of patients with severe asthma, including those with severe allergic asthma.

Keywords: asthma; omalizumab; perennial aeroallergens; tezepelumab; thymic stromal lymphopoietin.

- 34 references

SUPPLEMENTARY INFO

Grant supportexpand

FULL TEXT LINKS

J Asthma

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. 2022 Dec 13;1-10.

doi: 10.1080/02770903.2022.2152351. Online ahead of print.

Obesity-related pediatric asthma: relationships between pulmonary function and clinical outcomes

Sheena Starr[1], Matthew Wysocki[2], Jesenya D DeLeon[2], Gabriella Silverstein[1], Kimberly Arcoleo[3], Deepa Rastogi[2], Jonathan M Feldman[1,2]

Affiliations expand

- PMID: 36420526

- DOI: 10.1080/02770903.2022.2152351

Abstract

Objective: We hypothesized that children with obesity-related asthma would have worse self-reported asthma control, report an increased number of asthma symptoms and have lower FEV_1/FVC associated with worse clinical asthma outcomes compared to children with asthma only.

Methods: Cross sectional analyses examined two hundred and eighteen (obesity-related asthma = 109, asthma only = 109) children, ages 7-15 that were recruited from clinics and hospitals within the Bronx, NY. Pulmonary function was assessed by forced expiratory volume in the first second (percent predicted FEV_1) and the ratio of FEV_1 to the forced vital capacity of the lungs (FEV_1/FVC). Structural equation modeling examined if pulmonary function was associated with asthma control and clinical outcomes between groups.

Results: Lower percent predicted FEV_1 was associated with increased hospitalizations (p = 0.03) and oral steroid bursts in the past 12 months (p = 0.03) in the obesity-related asthma group but not in the asthma only group. FEV_1/FVC was also associated with increased hospitalizations (p = 0.02) and oral steroid bursts (p = 0.008) in the obesity-related asthma group but not the asthma only group. Lower FEV_1/FVC was associated with the number of asthma symptoms endorsed in the asthma only group but not in the obesity-related asthma group. Percent predicted FEV_1 and FEV_1/FVC was not associated with asthma control in either group.

Conclusions: Pulmonary function was associated with oral steroid bursts and hospitalizations but not self-reported asthma control, suggesting the importance of incorporating measures of pulmonary function into the treatment of pediatric obesity-related asthma.

Keywords: Asthma control; body mass index; health disparities; healthcare utilization; oral steroids.

. 2022 Dec 12;1-9.

doi: 10.1080/02770903.2022.2149409. Online ahead of print.

Utilization of the emergency department as a routine source of care among children with asthma

Erin Davis[1], Maria Fagnano[1], Jill S Halterman[1], Sean M Frey[1]

Affiliations expand

- PMID: 36399630

- DOI: 10.1080/02770903.2022.2149409

Abstract

Objective: To describe characteristics of children with persistent asthma in the ED who receive most of their healthcare in emergency settings; and determine whether recent asthma experiences or historic patterns of care are associated with identifying the ED as a typical location for care.**Methods:** We conducted a sub-analysis of baseline data from Telemedicine Enhanced Asthma Management through the Emergency Department (TEAM-ED), an RCT of children (3-12 years) presenting to the ED with persistent asthma (2016-2020). Caregivers identified reasons for seeking emergency care, including if their child received most overall healthcare in the ED ('ED Care'; primary outcome) or not ('Other Care'). Independent variables included demographics, recent symptoms and quality of life (QOL), and historic preventive care and healthcare use. We compared responses between ED Care and Other Care groups using bivariate and multivariate analyses.**Results:** We analyzed data for 355 children (31% ED Care, 69% Other Care). Compared with Other Care, ED Care respondents were more likely to identify the ED as the closest source of healthcare; report fewer symptom nights but a poorer quality of life; and describe the ED as a usual place for sick care, despite most having a PCP.**Conclusions:** Many children with asthma use the ED as a typical source of healthcare, and are distinguished by need for proximity, poorer caregiver QOL, and historic patterns of care-seeking. Efforts to improve timely access to outpatient care and reinforce the role of PCP-directed asthma management, such as through telemedicine, may reduce preventable morbidity including ED visits.

Keywords: Pediatrics; asthma; control/management; emergency department; prevention.

Review

Eur Respir J

. 2022 Dec 15;60(6):2200546.

doi: 10.1183/13993003.00546-2022. Print 2022 Dec.

Increasing physical activity in severe asthma: a systematic review and meta-analysis

Rebecca F McLoughlin[1 2 3], Vanessa L Clark[1 2 3], Paola D Urroz[1 2 3], Peter G Gibson[1 2 4], Vanessa M McDonald[5 2 3 4]

Affiliations expand

- PMID: 35896208

- PMCID: PMC9753478

- DOI: 10.1183/13993003.00546-2022

Free PMC article

Abstract

Introduction: Physical inactivity is common in asthma and is recognised as an important modifiable risk for poor clinical outcomes such as impaired asthma control and health-related quality of life (HRQoL). Despite evidence supporting the role of physical activity in reducing the risk of these outcomes, little is known about optimal interventions for increasing physical activity in those with severe disease. This systematic review and meta-analysis evaluates the effectiveness of interventions in increasing physical activity in severe asthma.

Methods: MEDLINE, the Cumulative Index to Nursing and Allied Health Literature, Embase, PubMed, Informit, SPORTDiscus and Cochrane databases were searched up to September 2021 for physical activity-based intervention studies that assessed physical activity outcomes (*e.g.* steps per day, time spent undertaking physical activity) in adults with severe asthma. Data on asthma-related (*e.g.* asthma control) and health-related outcomes (*e.g.* HRQoL) were assessed as secondary outcomes. The revised Cochrane Risk of Bias tool was used to assess risk of bias. Random-effects meta-analyses synthesised data where possible.

Results: Four randomised controlled trials (all 12 weeks in duration) including 176 adults with moderate-to-severe asthma were included. An increase in physical activity was reported with a moderate-vigorous intensity aerobic and resistance training intervention (steps per day and time spent undertaking physical activity), and an unsupervised pedometer-based intervention (steps per day). Meta-analyses showed that physical activity interventions had an overall positive effect on steps per day (mean difference (MD) 1588, 95% CI 399-2778; p=0.009, I^2=23), asthma control (MD -0.65, 95% CI -0.95--0.35; p<0.0001, I^2=0%) and HRQoL (MD 0.56, 95% CI 0.10-1.01; p=0.02, I^2=16%) compared to control.

Conclusion: While there is some evidence supporting the effectiveness of interventions in improving physical activity in adults with severe asthma, higher-quality, large-scale studies of longer duration are needed to determine the optimal intervention.

Conflict of interest statement

Conflict of interest: R.F. McLoughlin, V.L. Clark and P.D. Urroz have nothing to disclose. P.G. Gibson reports lecture honoraria from GSK, outside the submitted work. V.M. McDonald reports grants from GSK, AstraZeneca, NHMRC, Ramaciotti Foundation, MRFF and JHH Charitable Trust, outside the submitted work; and also reports the following leadership roles: Co-Director NHMRC Centre of Research Excellence in Treatable Traits, Co-Director NHMRC Centre of Research Excellence in Severe Asthma, Co-Director Priority Research Centre for Healthy Lungs, Co-Director Virus, Vaccines, Immumology and Asthma HMRI programme, Head of Research, School of Nursing and Midwifery, University of Newcastle and COPD-X Guideline.

- 51 references
- 3 figures

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Eur Respir J

. 2022 Dec 15;60(6):2200660.

doi: 10.1183/13993003.00660-2022. Print 2022 Dec.

Benefits of specialist severe asthma management: demographic and geographic disparities

Charlene Redmond[1], Liam G Heaney[1,2], Rekha Chaudhuri[3], David J Jackson[4,5], Andrew Menzies-Gow[6], Paul Pfeffer[7], John Busby[8]; UK Severe Asthma Registry

Affiliations expand

- PMID: 35777771

- PMCID: PMC9753476

- DOI: 10.1183/13993003.00660-2022

Free PMC article

Abstract

Background: The benefits of specialist assessment and management have yet to be evaluated within the biologic era of UK severe asthma treatment, and potential disparities have not been considered.

Methods: In an uncontrolled before-and-after study, we compared asthma symptoms (Asthma Control Questionnaire-6 (ACQ-6)), exacerbations, unscheduled secondary care use, lung function (forced expiratory volume in 1 s (FEV_1)) and oral corticosteroid (OCS) dose after 1 year. We compared outcomes by sex, age (18-34, 35-49, 50-64 and ≥65 years), ethnicity (Caucasian *versus* non-Caucasian) and hospital site after adjusting for demographics and variation in biologic therapy use.

Results: 1140 patients were followed-up for 1370 person-years from 12 specialist centres. At annual review, ACQ-6 score was reduced by a median (interquartile range (IQR)) of 0.7 (0.0-1.5), exacerbations by 75% (33-100%) and unscheduled secondary care by 100% (67-100%). FEV_1 increased by a median (IQR) of 20 (-200-340) mL, while OCS dose decreased for 67% of patients. Clinically meaningful improvements occurred across almost all patients, including those not receiving biologic therapy. There was little evidence of differences across demographic groups, although those aged ≥65 years demonstrated larger reductions in exacerbations (69% *versus* 52%; $p<0.001$) and unscheduled care use (77% *versus* 50%; $p<0.001$) compared with patients aged 18-34 years. There were >2-fold differences between the best and worst performing centres across all study outcomes.

Conclusions: Specialist assessment and management is associated with substantially improved patient outcomes, which are broadly consistent across demographic groups and are not restricted to those receiving biologic therapy. Significant variation exists between hospitals, which requires further investigation.

Conflict of interest statement

Conflict of interest: C. Redmond and J. Busby declare no competing interests. L.G. Heaney 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. A. Menzies-Gow has consultancy agreements with AstraZeneca and Sanofi; is participating in research funded by AstraZeneca; has received lecture fees from Teva, AstraZeneca, Novartis and Sanofi; has attended advisory boards for Novartis, Sanofi, GlaxoSmithKline, AstraZeneca and Teva; and has attended international conferences with Teva. D.J. Jackson has received advisory board and speaker fees from AstraZeneca,

Boehringer Ingelheim, Chiesi Farmaceutici, GlaxoSmithKline, Napp and Novartis. P. Pfeffer has attended advisory boards for AstraZeneca, GlaxoSmithKline and Sanofi; has given lectures at meetings with/without lecture honoraria supported by AstraZeneca and GlaxoSmithKline; has taken part in clinical trials sponsored by AstraZeneca, GlaxoSmithKline and Novartis; and is conducting research funded by GlaxoSmithKline for which his institution receives remuneration. R. Chaudhuri has received lecture fees from GlaxoSmithKline, AstraZeneca, Teva, Chiesi, Sanofi and Novartis; honoraria for advisory board meetings from GlaxoSmithKline, AstraZeneca, Teva, Chiesi and Novartis; sponsorship to attend international scientific meetings from Chiesi, Napp, Sanofi and GlaxoSmithKline; and a research grant to her institute from AstraZeneca for a UK multicentre study.

J Investigig Allergol Clin Immunol

. 2022 Dec 15;32(6):482-484.

doi: 10.18176/jiaci.0786. Epub 2022 Jan 28.

Support for Home Administration of Biological Therapy in Patients With Severe Asthma: BioCart©

J Delgado Romero[1,2], M Blanco-Aparicio[3], C Cisneros Serrano[4], D Díaz-Pérez[5], R Ferrando Piqueres[6], V López-Carrasco[2,7], V Merino-Bohórquez[8], L Soto-Retes[2,9], J Domínguez-Ortega[2,10]

Affiliations expand

- PMID: 35088761

- DOI: 10.18176/jiaci.0786

Free article
No abstract available

Keywords: Home biologic treatment administration; Notebook; Patient health care; Severe asthma; Treatment adherence.

J Investig Allergol Clin Immunol

. 2022 Dec 15;32(6):471-478.

doi: 10.18176/jiaci.0753. Epub 2022 Jul 9.

Serum microRNAs Catalog Asthma Patients by Phenotype

M Gil-Martínez[1], J M Rodrigo-Muñoz[1,2], B Sastre[1,2], J A Cañas[1,2], R García-Latorre[1], N Redondo[1], L de la Fuente[3], P Mínguez[3,4], I Mahíllo-Fernández[5], J Sastre[2,6], S Quirce[2,7], M L Caballero[2,7], J M Olaguibel[2,6], V Del Pozo[1,2,8]

Affiliations expand

- PMID: 34489228

- DOI: 10.18176/jiaci.0753

Free article

Abstract

Background and objectives: Asthma is a chronic inflammatory condition of the airways with a complex pathophysiology. Stratification of asthma subtypes into phenotypes and endotypes should move the field forward, making treatment more effective and personalized. Eosinophils are the key inflammatory cells involved in severe eosinophilic asthma. Given the health threat posed by eosinophilic asthma, there is a need for reliable biomarkers to identify affected patients and treat them properly with novel biologics. microRNAs (miRNAs) are a promising diagnostic tool. The aim of this study was to identify serum miRNAs that can phenotype asthma patients.

Methods: Serum miRNAs of patients with eosinophilic asthma (N=40) and patients with noneosinophilic asthma (N=36) were evaluated using next-generation sequencing, specifically miRNAs-seq, and selected miRNAs were validated using RT-qPCR. Pathway enrichment analysis of deregulated miRNAs was performed.

Results: Next-generation sequencing revealed 15 miRNAs that were expressed differentially between eosinophilic and noneosinophilic asthma patients, although no differences were observed in the miRNome between atopic and nonatopic asthma patients. Of the 15 miRNAs expressed differentially between eosinophilic and noneosinophilic asthma patients, hsa-miR-26a-1-3p and hsa-miR-376a-3p were validated by RT-qPCR. Expression levels of these 2 miRNAs were higher in eosinophilic than in noneosinophilic asthma patients. Furthermore, expression values of hsa-miR-26a-1-3p correlated inversely with peripheral blood eosinophil count, and hsa-miR-376a-3p expression values correlated with FeNO values and the number of exacerbations. Additionally, in silico pathway enrichment analysis revealed that these 2 miRNAs regulate signaling pathways associated with the pathogenesis of asthma.

Conclusions: hsa-miR-26a-1-3p and hsa-miR-376a-3p could be used to differentiate between eosinophilic and noneosinophilic asthma.

Keywords: Asthma patients; Eosinophilic asthma; Serum microRNAs; microRNA-seq. Phenotypes/endotypes.

RHINITIS

1
Ann Allergy Asthma Immunol

.
. 2022 Dec 12;S1081-1206(22)01993-7.

doi: 10.1016/j.anai.2022.12.009. Online ahead of print.

Risk of anaphylaxis in cluster versus standard subcutaneous multi-allergen immunotherapy

Jonathan H Chen [1], Tony Orden [2], Jiangxia Wang [3], Mudiaga Sowho [4], Jody R Tversky [5]

Affiliations expand

- PMID: 36521783

- DOI: 10.1016/j.anai.2022.12.009

Abstract

Background: Cluster schedules for subcutaneous allergen immunotherapy require significantly fewer injections, but there have been conflicting reports regarding the risk of systemic reaction.

Objective: To compare the incidence of systemic reactions during the build-up stages of multi-allergen standard versus cluster immunotherapy.

Methods: Data on systemic reactions were collected prospectively from 91 adult, urban patients who underwent either standard or cluster allergen immunotherapy at the Johns Hopkins Allergy and Asthma Center between 2014-2022. Systemic reactions were recorded during build-up phase and compared for both protocols using Pearson's chi-square, Fisher exact test, and multivariate logistic regression models.

Results: Overall, systemic reaction rates were 21% for patients in the standard schedule and 37% for patients in the cluster immunotherapy schedule which was not statistically

different (P = 0.084). However, the systemic reaction rate for each individual injection was 0.69% per injection in the standard protocol and 2.29% per injection in the cluster schedule (IRR = 3.3). 100% of all systemic reactions in both groups occurred in the second half of the build-up phase. Multivariate regression showed that the target prescription PNU and the number of allergens in the treatment vial did not influence systemic reaction rates (OR = 1.00 and 1.06 respectively).

Conclusion: The overall incidence of systemic reaction was not statistically different for cluster and standard allergen immunotherapy protocols. However, since cluster patients received about half the number of injections, the risk for systemic reaction per individual injection is more than 3 fold higher than that of standard immunotherapy.

Keywords: SCIT; accelerated; adverse reaction; allergen; allergic rhinitis; anaphylaxis; build up; cluster; immunotherapy; safety; systemic.

Immunopharmacol Immunotoxicol

. 2022 Dec 15;1-3.

doi: 10.1080/08923973.2022.2151916. Online ahead of print.

Seasonal facial erythema in a patient with allergic rhinitis treated using a combination of tranilast and roxithromycin

Yasuhiro Horiuchi[1]

Affiliations expand

- PMID: 36519507

- DOI: 10.1080/08923973.2022.2151916

Abstract

Objective: A competitive effect with suppression of Th2 immune responses of the tranilast and roxithromycin combination is examined in an allergic rhinitis patient. **Patient and Methods:** A 42-year-old female patient with allergic rhinitis caused by cedar pollen, which is one of the most common allergies during the spring, exhibited facial erythema with itching, particularly on both cheeks, and rhinitis symptoms, such as nasal discharge, and 200 mg/day of tranilast (original) and 300 mg/day of roxithromycin were administered. **Results:** After 2 weeks, the patient's skin lesions were mostly eliminated, with the skin appearing almost normal; itching was nearly absent; and rhinitis symptoms disappeared. **Conclusion:** This combination may be a promising new therapeutic strategy for allergic rhinitis.

Keywords: Facial erythema; allergic rhinitis; roxithromycin; tranilast.

Laryngoscope

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. 2022 Dec 12.

doi: 10.1002/lary.30512. Online ahead of print.

Trigeminal Sensitivity in Patients With Allergic Rhinitis and Chronic Rhinosinusitis

Georg Karl Ludwig Burghardt[1], Mandy Cuevas[1], Rumi Sekine[1,2], Thomas Hummel[1]

Affiliations expand

- PMID: 36504410

- DOI: 10.1002/lary.30512

Abstract

Objective: Allergic rhinitis (AR) and chronic rhinosinusitis with nasal polyps (CRSwNP) are of high importance in otorhinolaryngology. Some of their symptoms are related to changes in the nasal trigeminal sensitivity. The aim of this study was to compare nasal trigeminal sensitivity in patients with AR, CRSwNP, and healthy controls (HC).

Methods: A total of 75 individuals participated (age 19-78 years; 34 AR, 10 CRSwNP and 31 HC). Olfactory function was determined using the extended Sniffin' Sticks test battery. Trigeminal sensitivity was assessed with CO_2 detection thresholds. Trigeminal negative mucosal potentials (NMP) and EEG-derived event-related potentials (ERP) were recorded in response to selective olfactory (phenylethyl alcohol) and trigeminal (CO_2) stimuli using high-precision air-dilution olfactometry.

Results: In comparison to HC, AR patients had lower CO_2 thresholds, also reflected in shorter peak latencies in NMP and trigeminal ERP measurements. CRSwNP patients had a decreased sensitivity for trigeminal stimuli, also reflected in prolonged trigeminal ERP latencies, and reduced olfactory function compared to HC.

Conclusion: AR patients seemed to be more sensitive to trigeminal stimuli than CRSwNP patients. Importantly, the differences could be shown on psychophysical and electrophysiological levels. The changes in trigeminal sensitivity appear to be present already at the level of the respiratory epithelium. The differences between the two groups may depend on the specific inflammatory changes accompanying each disorder, the degree of inflammatory activity, or duration of the inflammatory disorder. However, because the sample sizes are relatively small, these results need to be confirmed in the future studies with larger groups.

Level of evidence: 4 Laryngoscope, 2022.

Keywords: allergic rhinitis; chronic rhinosinusitis; nasal mucosa; olfaction; trigeminal.

- 49 references

Food Funct

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. 2022 Dec 13;13(24):12664-12673.

doi: 10.1039/d2fo02867k.

Inter-individual characteristics on basic taste recognition thresholds in a college-aged cohort: potential predictive factors

Marta Trius-Soler[1 2 3], Emily P Laveriano-Santos[1 2 3], Clara Góngora[1], Juan J Moreno[1 2 3]

Affiliations expand

- PMID: 36454091

- DOI: 10.1039/d2fo02867k

Abstract

Studying nutritional status from the perspective of taste sensitivity, rather than only dietary patterns, may provide new insights into the role of taste receptor signaling in the development of metabolic-associated diseases. In this cross-sectional study, we investigated the possible influence of sociodemographic (sex and smoking habit) and clinical variables (dental cavities, missing teeth, sinusitis, rhinitis, body mass index and metabolic high prevalence family antecedent diseases) on tastant (sucrose, monosodium glutamate, sodium chloride, citric acid, quinine, sinigrin, phenylthiocarbamide) recognition thresholds (RTs) in a college-aged cohort (*n* = 397). Predictive models for the tastant RTs were generated and a higher sucrose RT was found in females than in males, while sinusitis and rhinitis explained sucrose and sodium chloride RTs. Smoking habit was not an important predictive factor of taste sensitivity, although its long-term influence on RTs remains unclear. Additionally, a positive correlation was found between all the tastant RTs studied. Although results did not show a clear pattern, the statistical approach employed should prove useful in future studies of predictors of taste sensitivity.

Review

J Investig Allergol Clin Immunol

. 2022 Dec 15;32(6):438-450.

doi: 10.18176/jiaci.0853. Epub 2022 Aug 24.

Eosinophilic Esophagitis due to Aeroallergens: A Systematic Review and Update

A R Gratacós Gómez[1], E Gómez Torrijos[1]

Affiliations expand

- PMID: 36000828

- DOI: 10.18176/jiaci.0853

Free article

Abstract

Eosinophilic esophagitis is a chronic antigen-mediated esophageal disease characterized clinically by symptoms related to esophageal dysfunction and histologically by TH2 inflammation (at least 15 eosinophils/high power field) when other secondary systemic and local causes of esophageal eosinophilia are excluded. Although this disease was initially ascribed to a delayed reaction to food allergens, emerging evidence suggests that aeroallergens may also play a role in pathogenesis and disease course. Some studies support seasonal variations in the diagnosis of eosinophilic esophagitis and disease exacerbations owing to the increase in aeroallergens to which patients are sensitized. It is also known that this disease can be caused by extensive, identifiable exposure to aeroallergens and after treatment with specific immunotherapy based on food or aeroallergens. It was recently postulated that treatment of allergic rhinoconjunctivitis can improve the symptoms of eosinophilic esophagitis, although data are limited to case reports and small series. Currently, biomarkers and biologic therapies are not helpful for diagnosis or inducing clinical and histological remission of the disease. Nevertheless, there are high hopes for dupilumab. This review aims to give visibility to the involvement of aeroallergens in the triggering and exacerbation of eosinophilic esophagitis, since many of them, in addition to being airborne and inhalant, can also be ingested as food. Clearly, we must try to identify the cause of the disease to ensure remission.

Keywords: Aeroallergens; Asthma; Eosinophilic esophagitis; Pollen; Rhinitis.

SUPPLEMENTARY INFO

Publication typesexpand

CHRONIC COUGH

1
Ann Allergy Asthma Immunol

. 2022 Dec 13;S1081-1206(22)01990-1.

doi: 10.1016/j.anai.2022.12.008. Online ahead of print.

Yardstick for Managing Cough. Part 1: in Adults and Adolescent Patients >14 years of age

Richard S Irwin[1], John J Oppenheimer[2], Whitney Dunlap[3], Jay A Lieberman[4], Anne B Chang[5]

Affiliations expand

- PMID: 36526233

- DOI: 10.1016/j.anai.2022.12.008

No abstract available

Keywords: Acute Cough; Chronic Cough; Cough; Diagnosis; Subacute Cough; Treatment.

2

Lung

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. 2022 Dec 13;1-11.

doi: 10.1007/s00408-022-00592-5. Online ahead of print.

A Randomized, Double-Blind, Placebo-Controlled, Parallel-Group Phase 2b Trial of P2X3 Receptor Antagonist Sivopixant for Refractory or Unexplained Chronic Cough

Lorcan McGarvey[1], Jaclyn A Smith[2], Alyn Morice[3], Surinder S Birring[4], Kian Fan Chung[5], Peter V Dicpinigaitis[6], Akio Niimi[7], Michael S Benninger[8], Mandel Sher[9], Yuko Matsunaga[#10], Sayaka Miyazaki[11], Mitsuaki Machida[11], Hiroyuki Ishihara[11], Adnan Mahmood[12], Juan-Carlos Gomez[13]

Affiliations expand

- PMID: 36512069

- PMCID: PMC9745691

- DOI: 10.1007/s00408-022-00592-5

Free PMC article

Abstract

Introduction: To determine the optimal dose of sivopixant, a highly selective P2X3 receptor antagonist, for refractory or unexplained chronic cough (RCC/UCC).

Methods: In this phase 2b, randomized, double-blind, placebo-controlled, parallel-group, multicenter trial, patients received sivopixant 50, 150, or 300 mg or placebo once daily for

4 weeks. The primary endpoint was a change from baseline in 24-h cough frequency (coughs/h) with sivopixant vs placebo.

Results: Overall, 390/406 randomized patients completed the study. Placebo-adjusted changes in hourly cough count over 24 h were 13.17% (P = 0.3532), - 1.77% (P = 0.8935), and - 12.47% (P = 0.3241) and in cough severity (visual analog scale) were 1.75 mm (P = 0.5854), - 1.21 mm (P = 0.7056), and - 6.55 mm (P = 0.0433) with sivopixant 50, 150, and 300 mg, respectively. Placebo-adjusted changes from baseline in Leicester Cough Questionnaire total scores were - 0.37 (P = 0.4207), - 0.07 (P = 0.8806), and 0.69 (P = 0.1473) with sivopixant 50, 150, and 300 mg, respectively. Additionally, 61.3%, 78.3%, 86.8%, and 71.4% of patients receiving sivopixant 50, 150, and 300 mg and placebo, respectively, reported any improvements in Patient Global Impression of Change. The incidence of treatment-emergent adverse events (TEAEs) was 25.7%, 32.0%, 49.0%, and 20.6% in sivopixant 50, 150, and 300 mg and placebo groups, respectively; all TEAEs in the sivopixant group were mild-to-moderate.

Conclusion: Sivopixant did not demonstrate a statistically significant difference vs placebo in change from baseline in 24-h cough frequency. The dose of 300 mg has potential for RCC/UCC, showing the greatest improvements in cough frequency and patient-reported outcomes and dose-related mild to moderate reversible taste disturbance, although further trials are needed.

Clinical trial registration: ClinicalTrials.gov identifier NCT04110054; registered September 26, 2019.

Keywords: Chronic cough; Cough frequency; P2X3 receptor antagonist; Phase 2b trial; Sivopixant.

Conflict of interest statement

LMG has received grants or contracts and consulting fees from Shionogi Inc., Bayer, Merck, Bellus Health, and Chiesi; consulting fees from AstraZeneca, Nocion, Trevi Therapeutics, Reckitt Benckiser Health Limited, NeRRe Therapeutics, and Bionorica; payment or honoraria from Merck, Chiesi, Bellus, Bionorica, GSK, and Shionogi Inc. and participated on a Data Safety Monitoring Board or the Advisory Board for Applied Clinical Intelligence. JAS has served as a consultant and helped in the setup of clinical studies for Shionogi; received grants or contracts from Wellcome Trust investigator award and NIHR Manchester Biomedical Research Centre; her hospital has received royalties from Vitalograph Ltd.; received consulting fee from Bellus Health, Axalbion, Merck, Bayer, Algernon, Nocion, Chiesi, Boehringer Ingelheim, and AstraZeneca; received honoraria from Merck and Boehringer Ingelheim; has a patent issued for cough monitoring; and received equipment supply from Vitalograph Ltd. AMo has received funding from Shionogi; received payment or honoraria from Merck, Bayer, and NeRRe; participated on a Data Safety Monitoring

Board or an Advisory Board for Merck, Bayer, NeRRe, Shionogi, and Bellus; and served as the task force chair for the European Respiratory Society. SSB has received personal fees from Shionogi Inc., Merck, Bellus, Bayer, and Nocion. KFC has speaking engagements for Novartis and AstraZeneca; has participated on Advisory Boards for Roche, Merck, Reckitt Benckiser, and Shionogi & Co., Ltd., on asthma, COPD, and chronic cough; serves on Data Safety Monitoring Board for Nocion; and has received grants including MRC grant on Precision Medicine for severe asthma, an EPSRC grant on air pollution and asthma, and a GSK grant on mepolizumab and eosinophils in asthma. PVD has served as a consultant to Bayer, Bellus, Chiesi, Merck, and Shionogi Inc. and is the editor-in-chief of Lung. MSB has served as a consultant for Merck (2020) and Shionogi Inc. (2020) and received research funding from Merck. MS has served on the Medical Advisory Board and as a principal investigator for Bayer, Bellus, Merck, NeRRe, and Shionogi Inc.; serves on the Medical Advisory Board and Data Safety Monitoring Board for Nocion; and is a consultant for Soundable Health. YM is a former employee of Shionogi Inc. SM, MM, and HI are employees of Shionogi & Co. Ltd. JCG is an employee of Shionogi B.V. AMa is a medical consultant for Shionogi B.V. AN has no disclosures.

- 33 references
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Case Reports

Am J Case Rep

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. 2022 Dec 13;23:e938450.

doi: 10.12659/AJCR.938450.

Mepolizumab as a Potential Protective Factor of COVID-19 Mortality: A Case Report of Chronic Bronchitis and Asthma in an Elderly Patient

Sanamveer S Dhillon[1], Nimrit K Toor[1], Maria E Ramos-Nino[2], Prakash V A K Ramdass[1]

Affiliations expand

- PMID: 36510448

- DOI: 10.12659/AJCR.938450

Abstract

BACKGROUND Patients with multiple comorbidities who are infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have a higher risk of mortality. However, treatment with mepolizumab may be a key factor in counteracting the risk of these comorbidities. We present a patient who had an uneventful recovery from coronavirus disease 2019 (COVID-19), despite having 5 independent risk factors for severe disease and increased mortality. CASE REPORT A 75-year-old man with a long-standing history of asthma, chronic bronchitis, coronary artery disease, and hypertension presented to the Emergency Department in November 2020 with a 4-day history of fever, chills, shortness of breath, cough, and fatigue. Six months prior to this presentation, the patient was hospitalized for severe chronic bronchitis and acute exacerbation of asthma. His medications included mepolizumab, aclidinium, ramipril, diltiazem, aspirin, albuterol sulfate, and micronized budesonide/micronized formoterol fumarate dihydrate. Physical examination was unremarkable, except for cardiopulmonary distress. Laboratory tests showed leucocytosis. His chest X-ray revealed infiltrates and interstitial edema in the lower lung fields. A PCR test for SARS-CoV-2 was positive. COVID-19 pneumonia was diagnosed, and the patient was admitted to the hospital, where he was treated with acetaminophen, amoxicillin, dexamethasone, and supplemental oxygen. The patient remained stable and was discharged from the hospital the following day. He was free of all symptoms after 21 days. CONCLUSIONS This case of a 75-year-old man who presented with mild COVID-19 supports the findings from other reports of improvement in clinical outcomes for some patients with asthma who received treatment with mepolizumab.

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

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BRONCHIECTASIS

1
Respir Res

.
. 2022 Dec 17;23(1):359.

doi: 10.1186/s12931-022-02280-7.

Sputum from patients with primary ciliary dyskinesia contains high numbers of dysfunctional neutrophils and inhibits efferocytosis

Marfa Blanter[1], Maaike Cockx[1], Liesel Wittebols[1], Sara Abouelasrar Salama[1], Mirre De Bondt[1], Nele Berghmans[1], Noëmie Pörtner[1], Lotte Vanbrabant[1], Natalie Lorent[2], Mieke Gouwy[1], Mieke Boon[3], Sofie Struyf[4]

Affiliations expand

- PMID: 36528664

- DOI: 10.1186/s12931-022-02280-7

Abstract

Background: Primary ciliary dyskinesia (PCD) is a genetic disorder characterized by recurrent airway infection and inflammation. There is no cure for PCD and to date there are

no specific treatments available. Neutrophils are a crucial part of the immune system and are known to be dysfunctional in many inflammatory diseases. So far, the role of the neutrophils in PCD airways is largely unknown. The purpose of this study was to investigate the phenotype and function of airway neutrophils in PCD, and compare them to blood neutrophils.

Methods: Paired peripheral blood and spontaneously expectorated sputum samples from patients with PCD (n = 32) and a control group of patients with non-PCD, non-cystic fibrosis bronchiectasis (n = 5) were collected. The expression of neutrophil-specific surface receptors was determined by flow cytometry. Neutrophil function was assessed by measuring the extent of actin polymerization, production of reactive oxygen species (ROS) and release of neutrophil extracellular traps (NETs) in response to activating stimuli.

Results: Sputum neutrophils displayed a highly activated phenotype and were unresponsive to stimuli that would normally induce ROS production, actin polymerization and the expulsion of NETs. In addition, PCD sputum displayed high activity of neutrophil elastase, and impaired the efferocytosis by healthy donor macrophages.

Conclusions: Sputum neutrophils in PCD are dysfunctional and likely contribute to ongoing inflammation in PCD airways. Further research should focus on anti-inflammatory therapies and stimulation of efferocytosis as a strategy to treat PCD.

Keywords: Airway; Bronchiectasis; Efferocytosis; Inflammation; Neutrophil; Neutrophil elastase; Primary ciliary dyskinesia; Sputum.

- 64 references

SUPPLEMENTARY INFO

Grant supportexpand

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2

Respir Res

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. 2022 Dec 16;23(1):352.

doi: 10.1186/s12931-022-02275-4.

Clinical and functional characteristics of individuals with alpha-1 antitrypsin deficiency: EARCO international registry

Marc Miravitlles[1,2], Alice M Turner[3,4], María Torres-Duran[5], Hanan Tanash[6], Carlota Rodríguez-García[7], José Luis López-Campos[8,9], Jan Chlumsky[10], Catarina Guimaraes[11], Juan Luis Rodríguez-Hermosa[12,13], Angelo Corsico[14,15], Cristina Martinez-González[16], José María Hernández-Pérez[17], Ana Bustamante[18], David G Parr[19], Francisco Casas-Maldonado[20], Ana Hecimovic[21,22], Wim Janssens[23,24], Beatriz Lara[19], Miriam Barrecheguren[25], Cruz González[26], Jan Stolk[27], Cristina Esquinas[25], Christian F Clarenbach[28]

Affiliations expand

- PMID: 36527073

- DOI: 10.1186/s12931-022-02275-4

Free article

Abstract

Background: Alpha-1 antitrypsin deficiency (AATD) is a rare disease that is associated with an increased risk of pulmonary emphysema. The European AATD Research Collaboration (EARCO) international registry was founded with the objective of characterising the individuals with AATD and investigating their natural history.

Methods: The EARCO registry is an international, observational and prospective study of individuals with AATD, defined as AAT serum levels < 11 µM and/or proteinase inhibitor genotypes PI*ZZ, PI*SZ and compound heterozygotes or homozygotes of other rare deficient variants. We describe the characteristics of the individuals included from February 2020 to May 2022.

Results: A total of 1044 individuals from 15 countries were analysed. The most frequent genotype was PI*ZZ (60.2%), followed by PI*SZ (29.2%). Among PI*ZZ patients, emphysema was the most frequent lung disease (57.2%) followed by COPD (57.2%) and bronchiectasis (22%). Up to 76.4% had concordant values of FEV1(%) and KCO(%). Those with impairment

in FEV1(%) alone had more frequently bronchiectasis and asthma and those with impairment in KCO(%) alone had more frequent emphysema and liver disease. Multivariate analysis showed that advanced age, male sex, exacerbations, increased blood platelets and neutrophils, augmentation and lower AAT serum levels were associated with worse FEV1(%).

Conclusions: EARCO has recruited > 1000 individuals with AATD from 15 countries in its first 2 years. Baseline cross sectional data provide relevant information about the clinical phenotypes of the disease, the patterns of functional impairment and factors associated with poor lung function. Trial registration www.

Clinicaltrials: gov (ID: NCT04180319).

Keywords: Alpha-1 antitrypsin; Phenotypes; Registry.

- 40 references

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. 2022 Dec 12;11(1):e01072.

doi: 10.1002/rcr2.1072. eCollection 2023 Jan.

A left pulmonary artery sling with left bronchiectasis in an adult patient: A case report and review of literature

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Affiliations expand

- PMID: 36523544
- PMCID: PMC9744713
- DOI: 10.1002/rcr2.1072

Abstract

Pulmonary artery sling (PAS) is a rare congenital vascular anomaly, and is usually diagnosed during the infantile or fetal period. Adult presentation of PAS is rare. We report a 55-year-old woman with left pulmonary artery sling and left lung bronchiectasis, performing as persistent shortness of breath, coronary computed tomography angiography (CTA) showed the aberrant left pulmonary artery emerging from the right pulmonary artery and crossing to the left between the trachea and oesophagus. We experienced a rare adult case with LPAS and left bronchiectasis, stressing the importance of the anatomic abnormalities in such cases.

Keywords: anomalous pulmonary artery; bronchiectasis; case report; pulmonary artery sling.

Conflict of interest statement

None declared.

- 14 references
- 1 figure

SUPPLEMENTARY INFO

Editorial

Radiology

. 2022 Dec 13;222675.

doi: 10.1148/radiol.222675. Online ahead of print.

Artificial Intelligence Analysis of Bronchiectasis Is Predictive of Outcomes in Chronic Obstructive Pulmonary Disease

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- PMID: 36511811

- DOI: 10.1148/radiol.222675

No abstract available

Comment on

- Artificial Intelligence-based CT Assessment of Bronchiectasis: The COPDGene Study. Díaz AA, Nardelli P, Wang W, San José Estépar R, Yen A, Kligerman S, Maselli DJ, Dolliver WR, Tsao A, Orejas JL, Aliberti S, Aksamit TR, Young KA, Kinney GL, Washko

GR, Silverman EK, San José Estépar R.Radiology. 2022 Dec 13:221109. doi: 10.1148/radiol.221109. Online ahead of print.PMID: 36511808

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Radiology

. 2022 Dec 13;221109.

doi: 10.1148/radiol.221109. Online ahead of print.

Artificial Intelligence–based CT Assessment of Bronchiectasis: The COPDGene Study

Alejandro A Díaz[1], Pietro Nardelli[1], Wei Wang[1], Rubén San José Estépar[1], Andrew Yen[1], Seth Kligerman[1], Diego J Maselli[1], Wojciech R Dolliver[1], Andrew Tsao[1], José L Orejas[1], Stefano Aliberti[1], Timothy R Aksamit[1], Kendra A Young[1], Gregory L Kinney[1], George R Washko[1], Edwin K Silverman[1], Raúl San José Estépar[1]

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- PMID: 36511808

- DOI: 10.1148/radiol.221109

Abstract

Background CT is the standard method used to assess bronchiectasis. A higher airway-to-artery diameter ratio (AAR) is typically used to identify enlarged bronchi and bronchiectasis; however, current imaging methods are limited in assessing the extent of this metric in CT scans. Purpose To determine the extent of AARs using an artificial intelligence-based chest CT and assess the association of AARs with exacerbations over time. Materials and Methods In a secondary analysis of ever-smokers from the prospective, observational, multicenter COPDGene study, AARs were quantified using an artificial intelligence tool. The percentage of airways with AAR greater than 1 (a measure of airway dilatation) in each participant on chest CT scans was determined. Pulmonary exacerbations were prospectively determined through biannual follow-up (from July 2009 to September 2021). Multivariable zero-inflated regression models were used to assess the association between the percentage of airways with AAR greater than 1 and the total number of pulmonary exacerbations over follow-up. Covariates included demographics, lung function, and conventional CT parameters. Results Among 4192 participants (median age, 59 years; IQR, 52-67 years; 1878 men [45%]), 1834 had chronic obstructive pulmonary disease (COPD). During a 10-year follow-up and in adjusted models, the percentage of airways with AARs greater than 1 (quartile 4 vs 1) was associated with a higher total number of exacerbations (risk ratio [RR], 1.08; 95% CI: 1.02, 1.15; P = .01). In participants meeting clinical and imaging criteria of bronchiectasis (ie, clinical manifestations with ≥3% of AARs >1) versus those who did not, the RR was 1.37 (95% CI: 1.31, 1.43; P < .001). Among participants with COPD, the corresponding RRs were 1.10 (95% CI: 1.02, 1.18; P = .02) and 1.32 (95% CI: 1.26, 1.39; P < .001), respectively. Conclusion In ever-smokers with chronic obstructive pulmonary disease, artificial intelligence-based CT measures of bronchiectasis were associated with more exacerbations over time. Clinical trial registration no. NCT00608764 © RSNA, 2022 *Online supplemental material is available for this article.* See also the editorial by Schiebler and Seo in this issue.

Comment in

- Artificial Intelligence Analysis of Bronchiectasis Is Predictive of Outcomes in Chronic Obstructive Pulmonary Disease.
  Schiebler ML, Seo JB.Radiology. 2022 Dec 13:222675. doi: 10.1148/radiol.222675. Online ahead of print.PMID: 36511811 No abstract available.

Eur J Phys Rehabil Med

. 2022 Dec 13.

doi: 10.23736/S1973-9087.22.07805-4. Online ahead of print.

Dyspnea: a map of Cochrane evidence relevant to rehabilitation for people with post COVID-19 condition

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- PMID: 36511169

- DOI: 10.23736/S1973-9087.22.07805-4

Free article

Abstract

Introduction: Rehabilitation focuses on impairments, activity limitations and participation restrictions being informed by the underlying health condition. In the current absence of direct "evidence on" rehabilitation interventions for people with post COVID-19 condition (PCC), we can search and synthesize the indirect "evidence relevant to" coming from interventions effective on the symptoms of PCC in other health conditions. The World Health Organization (WHO) required this information to inform expert teams and provide specific recommendations in their Guidelines. With this overview of reviews with mapping we aimed to synthesize in a map the Cochrane evidence relevant to rehabilitation for dyspnea due to PCC.

Evidence acquisition: We searched the last five years' Cochrane Systematic Review (CSRs) using the terms "dyspnea" and its synonyms in the Cochrane Library. We extracted and

summarized all the available evidence using a map. We grouped the included CSRs for health conditions and interventions, indicating the effect and the quality of evidence.

Evidence synthesis: We found 371 CSRs published between 2016 and 2021 and included 15 in this overview. We found eight studies on chronic obstructive pulmonary disease, two on cancer, and one for bronchiectasis, chronic respiratory disease, cystic fibrosis, idiopathic pulmonary fibrosis and interstitial lung disease. Effective interventions included pulmonary rehabilitation, also in combination with exercise training, non-invasive ventilation, upper limb training and multicomponent integrated interventions, with very low- to moderate-quality evidence.

Conclusions: These results are the first step of indirect evidence to generate helpful hypotheses for clinical practice and future research on dyspnea in adults with PCC. They served as the basis for one recommendation on treatments for dyspnea as a PCC symptom published in the current WHO Guidelines for clinical practice.

Pediatr Pulmonol

. 2022 Dec 13.

doi: 10.1002/ppul.26276. Online ahead of print.

Gastrointestinal Factors Associated with Risk of Bronchiectasis in Children

Daniel R Duncan[1], Alexandra Cohen[1], Clare Golden[1], Margot Lurie[1], Paul D Mitchell[2], Enju Liu[2], Tregony Simoneau[3], Rachel L Rosen[1]

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- PMID: 36510759

- DOI: 10.1002/ppul.26276

Abstract

Objective: To evaluate gastrointestinal (GI) risk factors for bronchiectasis in children. We hypothesized that upper GI tract dysmotility would be associated with increased risk of bronchiectasis.

Study design: Subjects in this retrospective cohort study included those evaluated for persistent pulmonary symptoms in the Aerodigestive Center at Boston Children's Hospital who underwent chest computed tomography (CT) between 2002 and 2019. To determine gastrointestinal predictors of bronchiectasis, baseline characteristics, comorbidities, enteral tube status, medications received, gastroesophageal reflux burden, adequacy of swallow function, esophageal dysmotility, gastric dysmotility, and neutrophil count on bronchoalveolar lavage (BAL) were compared between patients with and without bronchiectasis. Proportions were compared with Fisher's exact test and binary logistic regression with stepwise selection was used for multivariate analysis. ROC analyses were utilized to compare BAL neutrophils and bronchiectasis.

Results: Of 192 subjects, 24% were found to have evidence of bronchiectasis on chest CT at age 7.9±0.5 years. Enteral tubes (OR 5.77, 95% CI 2.25-14.83, p<0.001) and increased BAL neutrophil count (OR 5.79, 95% CI 1.87-17.94, p=0.002) were associated with increased risk while neurologic comorbidities were associated with decreased risk (OR 0.24, 95% CI 0.09-0.66, p=0.006). Gastroesophageal reflux was not found to be a significant risk factor. Neutrophil counts >10% had 72% sensitivity and 60% specificity for identifying bronchiectasis.

Conclusions: Enteral tubes were associated with significantly increased risk of bronchiectasis but gastroesophageal reflux was not. Providers should consider obtaining chest CT to evaluate for bronchiectasis in children found to have unexplained elevated BAL neutrophil count. This article is protected by copyright. All rights reserved.

Keywords: gastroesophageal reflux; gastrostomy tube; motility; oropharyngeal dysphagia.