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4225-A-2208

Uppföljning av inhalationsteknik hos patienter med kroniskt obstruktiv lungsjukdom

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Bakgrund

Korrekt inhalationsteknik är en förutsättning för en effektiv läkemedelsbehandling vid kroniskt obstruktiv lungsjukdom (KOL). Syftet var att studera förändringar i patienters inhalationsläkemedelsbehandling och inhalationsteknik under en period på ett år.

Material och metod

Kartläggning av läkemedelsbehandling (farmakologisk behandling och inhalatormodeller) gjordes för KOL-patienter (n=310) från primär- och specialistvården. Patienterna demonstrerade sin inhalationsteknik, vilken analyserades för kritiska fel. De observerade felen korrigerades, och datainsamlingen upprepades efter ett år.

Resultat

Andelen KOL-patienter med oförändrad och förändrad farmakologisk behandling var 74% och 26%. De identifierade ändringarna var upptrappning av behandling (14%), nedtrappning av behandling (11%) och byte till annan farmakologisk klass (1%). Sextionio procent av KOL-patienterna använde samma inhalatormodeller vid båda besöken. Andelen KOL-patienter med kritiska fel i inhalationsteknik var lägre vid uppföljning i hela studiepopulationen (46% vs 37%, p = 0.01) och bland patienter med oförändrade inhalatormodeller (46% vs 35%, p = 0.02), men inte bland patienter med förändrade inhalatormodeller (46% vs 41%, p = 0.56).

Slutsats

Majoriteten av KOL-patienterna hade en oförändrad farmakologisk läkemedelsbehandling samt oförändrade inhalatormodeller efter uppföljningsåret. Kontroll och korrigering av inhalationsteknik var associerat med en minskning av kritiska fel i inhalationsteknik. Detta var mest uttalad hos KOL-patienter som använde samma inhalatormodeller vid båda besöken.

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4227-A-2208

Low-dose, regular, extended-Release Morphine for Persisting Breathlessness in Chronic Obstructive Pulmonary Disease: A Randomised Controlled Trial with Blinded Up-Titration over Three Weeks

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Background: Chronic breathlessness is a major cause of suffering and limited activity in patients with chronic obstructive pulmonary disease (COPD). Regular, low-dose morphine might relieve breathlessness, but evidence on patient selection, efficacy and optimal dose is conflicting or lacking.

Methods: Multisite, phase III, double-blind, placebo-controlled, randomized trial of patients with COPD and chronic breathlessness (modified Medical Research Council score 3–4) randomized (1:1:1) to daily, oral extended-release (ER) morphine 8mg, 16mg, or placebo. After one and two weeks, participants were further randomized (1:1) to adding either ER morphine 8mg or placebo. Primary endpoint was intensity of worst breathlessness (previous 24 hours) after one week. Secondary endpoints included daily steps (Actigraphy), functional status, anxiety/depression, health-related quality of life, and adverse events, at one and three weeks.

Results: A total 156 patients with COPD (48% female) were randomized to daily morphine 8mg (n=55), 16mg (n=51), or placebo (n=50) for week one and analyzed by intention-to-treat. Treatment groups after three weeks were: morphine 8mg (n=39), 16mg (n=52), 24mg (n=40), 32mg (n=12), or placebo (n=13). Baseline characteristics were similar between groups. Primary endpoint of worst breathlessness after one week was similar with morphine vs. placebo, mean difference -0.25 (95% confidence interval, -0.83–0.33) on a 0–10 numerical rating scale. Secondary endpoints were similar by treatment group both after one and three weeks. Morphine increased harms including serious adverse events.

Conclusion: Morphine did not systematically improve breathlessness, physical activity or other secondary outcomes, but increased harms in COPD patients during three weeks up-titration.

Trial registration: NCT02720822.

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4228-A-2208

Race-adjusted Lung Function Increases Inequities in Diagnosis and Prognosis and Should Be Abandoned

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Background: Lung function assessment is essential for respiratory medicine and health. Recommended international reference values differ by race, which is controversial. We evaluated the effect of adjusting lung function for race on prevalence of lung function impairment, breathlessness and mortality in the US population.

Methods: Population-based analysis of the National Health and Nutrition Examination Survey (NHANES) 2007–2012. Race was analyzed as black, white, or other. Lung function was assessed as forced expired volume in one second (FEV1) and forced vital capacity (FVC). Predicted normal values were calculated for each person using the Global Lung Initiative (GLI)-2012 equations for 1) white; 2) black; and 3) other/mixed populations. Outcomes were compared for the different reference values in relation to: prevalence of lung function impairment (<lower limit of normal [LLN]), moderate/severe impairment (<50%pred); self-reported exertional breathlessness; and mortality up to 31 December, 2015.

Findings: We studied 14,123 people (50% female); white (n=5,928), black (n=3,130), and other (n=5,065). Compared to those for white, black reference values identified markedly fewer cases of lung function impairment (FEV1) both in black people (9.3% vs. 36.9%) and other non-white races (1.5% vs. 9.5%); and prevalence of moderate/severe impairment was approximately halved. Outcomes among those impaired differed by reference value used: white (best outcomes), other/mixed (intermediate), and black (worst outcomes). Black people with FEV1 ≥LLNblack but <LLNwhite had 48% increased rate of breathlessness and almost doubled mortality, compared to blacks ≥LLNwhite. Lung function ≥LLNwhite identified people with good outcomes, similarly in black and white people. Findings were similar when analyzing FEV1 or FVC.

Interpretation: Race adjustment of lung function should be abandoned. White reference values are most sensitive and specific to identify impairment, and could be applied across the population for improved assessment and health equity.

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4238-A-2208

Interstitiella lungabnormaliteter: prevalens och karakteristika i en svensk population

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Bakgrund

Interstitiella lungabnormaliteter (ILA) är incidentella fynd vid datortomografi och anses vara ett förstadium till interstitiell lungsjukdom och lungfibros. Tidig upptäckt av interstitiell lungsjukdom är av värde för att kunna påverka dess prognos. Prevalensen av ILA är främst kartlagd hos rökare, men större populationsbaserade studier saknas.

Material och metod

Deltagare i Swedish CArdioPulmonary bioImage Study (SCAPIS) som genomgått datortomografi inkluderades i studien. Data över demografi samlades, spirometri gjordes och ILA delades in i icke fibrotisk (”ground-glass”, cystor, retikulärt mönster utan bronkiektasier) och fibrotisk typ (bikakemönster och retikulärt mönster med bronkiektasier).

Resultat

Totalt inkluderades 29 521 deltagare i åldern 50-64 år, varav 2 870 (9,7%) hade ILA; 2 736 (9,3%) hade icke fibrotisk och 134 (0,5%) hade fibrotisk ILA. Prevalensen hos rökare var 13,2%, vilket var högre jämfört med ex-rökare (10,9%) och aldrig-rökare (7,9%), p<0,001 för båda jämförelserna. Individer med ILA var något äldre (median SD 58,5 4,3 vs 57,4 4,3 år), hade rökt mer (18,2±14,4 vs 15,4±12,9 paketår), hade större andel hypertoni (25,9% vs 22,5%) och högre Coronary Artery Calcification Score (andel med CACS > 400 5,8% vs 3,8%) jämfört med individer utan ILA, p<0,001 för samtliga jämförelser. Andelen individer med kronisk bronkit (7,1% vs 4,9%), dyspné (Modified Medical Research Council Dyspnea Scale ≥2 2,6% vs 1,7%) och lägre lungvolymer (FEV1% 99,9±15,0 vs 102,4±13,8; FVC% 101,5±13,6 vs 102,8±12,9) var högre i ILA-gruppen, p<0,001 för samtliga jämförelser. Logistisk regressionsanalys visade att ILA, framför allt fibrotisk typ, var associerad med restriktivt spirometriskt mönster (FVC<LLN och FEV1/FVC≥LLN) (OR 1,34, 95% CI 1,13-1,58 och 3,63, 95% CI 2,25-5,86 för total respektive fibrotisk ILA).

Slutsats

Interstitiella lungabnormaliteter förekommer både hos rökare och aldrig-rökare och är associerade till komorbiditeter och restriktivt spirometriskt mönster. Denna unika populationsstudie möjliggör fortsatt evaluering av gruppen aldrig-rökare.

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4241-A-2208

Impact of the COVID-19 pandemic on Swedish asthma and COPD care

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Background: Since the start of the pandemic, healthcare resources have been prioritized for covid-19 care.

Aim: To describe the impact of the COVID-19 pandemic on the care of patients with asthma and COPD in Sweden.

Methods: Within the Swedish National Airway Register (SNAR), healthcare data on patients with asthma and COPD has been registered since 2013 in primary and secondary care. The variables included in SNAR are harmonized with guidelines which gives the opportunity to identify inequalities and sub-optimal care of patients with obstructive lung diseases.

Results: The cumulative number of unique patients with asthma and COPD in SNAR were in 2019 n=277467, 2020 n=310436 and 2021 n=334639. Since the initiation of SNAR, annual registrations of visits, spirometries and other follow-up test have increased until the start of the covid-19 pandemic. Compared with 2019, total number of registrations decreased with 21% in 2020, and 41% in 2021 (Fig 1), while registrations of new patients decreased with 31% in 2020, and 50% in 2021, similarly in both asthma and COPD. The numbers of spirometries, available data on Asthma Control Test, and COPD Assessment Test decreased with 53%, 40% and 46% respectively, in 2021 compared with in 2019.

Conclusion: The reduced number of patient registrations, spirometries, and the use of symptom questionnaires shows that diagnosis and the care of patients with asthma and COPD have been highly affected by the pandemic.

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4244-A-2208

COVID-19 and risk of oxygen-dependent chronic respiratory failure – a national cohort study

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Introduction

COVID-19 can impair lung diffusion capacity, but the risk of developing oxygen-dependent chronic hypoxemia is unknown. The aim was to investigate cumulative incidence, risk factors and clinical course of long-term oxygen therapy (LTOT) after laboratory-confirmed COVID-19.

Methods

Population-based, national study of all patients in Sweden with laboratory-confirmed COVID-19 up to 31th January 2021, with linked data from the Swedish National Registry of Respiratory Failure (Swedevox) until 28th February 2021. Cumulative incidence and mortality/withdrawal rates were calculated. Risk factors for starting LTOT after COVID-19 were assessed using multivariable logistic regression.

Results

In total, 124 out of 531,759 people with laboratory-confirmed COVID-19 started LTOT; overall cumulative incidence 23/100,000 people with COVID-19. The frequency decreased from 76 to 15/100,000 infected people from the first to second half of the study period. The highest cumulative incidences were in patients with COVID-19 requiring intensive care unit (ICU) care (636/100,000) and with pre-existing chronic respiratory disease (996/100,000). The strongest independent risk factors for requiring LTOT were hospitalization without ICU (OR 15.9; [95% CI] 8.34-30.1) or with ICU care (64.2; 31.9-129.1) compared with no hospitalization, age 60-69 (12.7; 3.63-44.2) and >70 years (18.2; 5.30-62.5), respectively) compared with <50 years, and pre-existing chronic respiratory disease (9.43; 6.30-14.1). During a median follow-up time of 71 (IQR 26-240) days, 8 patients discontinued LTOT.

Conclusion

The risk of developing oxygen-dependent chronic respiratory failure after COVID-19 is overall low and mainly increased in patients hospitalized for severe and critical COVID-19, and with high age and pre-existing chronic respiratory disease.

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4245-A-2208

Polygenic scores for low lung function and the future risk of adverse health outcomes in the Malmö Diet and Cancer study

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Background: Associations between reduced lung function and adverse health outcomes are often observed. This study characterizes genetic predisposition to lung function and risk of developing a range of adverse health outcomes.

Methods: We studied 27,438 middle-aged adults from the Malmö Diet and Cancer study (MDCS) followed up to 28.8 years. Trait-specific Polygenic scores (PGS) for forced expiratory volume in 1 second (FEV1) and forced vital capacity (FVC) were constructed for each participant, using MDCS genetic data and summary statistics from the latest genome wide association studies of lung function. Linear regression and Cox proportional hazards regression models were used to assess associations between adverse health outcomes and quartiles of lung function-PGS (highest PGS Q1 = highest lung function, reference)

Results: FEV1-PGS and FVC-PGS were significantly associated with mean systolic blood pressure (sBP) at baseline in 27,438 subjects after adjusting for risk factors; (Mean sBP (mmHg) FEV1-PGS Q4: 141.5 vs Q1: 140.7, p-value 0.008). A low FVC-PGS (and to a lesser extent low FEV1-PGS) was significantly associated with the risk of future diabetic events after adjustments (Q4 vs Q1 HR: 1.22 (1.13-1.33), p-trend <0.001. Low FEV1-PGS was significantly associated with future coronary events (Q4 vs Q1 HR: 1.13 (1.04-1.22), p-trend 0.008. No significant association was found between FEV1-PGS or FVC-PGS and sudden cardiac death, chronic kidney disease or all-cause mortality.

Conclusion: Genetically reduced lung function is associated with higher sBP and is strongly related to an increased risk of future diabetes and to a lesser extent future coronary events, suggesting putative causal effects for lung function on these outcomes. Using PGS, high risk groups could be early detected so they can make early lifestyle changes attempting to mitigate the risk

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4246-A-2208

Comorbid allergy in asthma and COPD: prevalences and associations with outcomes

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Introduction

Asthma and COPD are both obstructive diseases. Allergic rhino-conjunctivitis is a well-known comorbid condition in asthma, but is less studied in COPD. Our aim was to examine and compare prevalence and impact of allergic symptoms on patient-related outcomes in patients with asthma and COPD.

Methods

The study included randomly selected primary and secondary care patients with doctor's diagnoses of asthma (n = 1291) and COPD (n = 1329). Data on patient demographics, self-reported allergic rhino-conjunctivitis at exposure to pollen or fur, exacerbations recent 6 months, self-assessed severity of disease and scores from Asthma Control Test (ACT) and respectively, COPD Assessment Test (CAT) were collected using questionnaires. Multivariable logistic regression used > one exacerbation recent 6 months, poor asthma control defined as ACT < 20, high COPD symptom burden defined as CAT>=10 and, respectively, subjective moderate/severe disease as dependent variables, with adjustment for sex, age, smoking habits, body mass index and educational level.

Results

Allergic rhino-conjunctivitis was reported in 75% of patients with asthma and 38% of patients with COPD. In asthma; allergic rhino-conjunctivitis was independently associated with increased risk for exacerbations (OR (95%CI) 1.60 (1.16 to 2.21), p = 0.004), with ACT <20 (1.39 (1.04 to 1.85), p = 0.024) and with subjectively moderate or severe disease (1.62 (1.21 to 2.16), p = 0.001). In COPD; allergic rhino-conjunctivitis was independently associated with increased risk for exacerbations (OR (95%CI) 1.91 (1.49 to 2.45), p < 0.001), with CAT >10 (1.46 (1.10 to 1.95), p = 0.010) and with subjectively moderate or severe disease (1.70 (1.31 to 2.22), p < 0.0001).

Conclusions

Allergic rhino-conjunctivitis is more common in asthma than in COPD, but is associated with worse patient-related outcomes in both diseases. We conclude that comorbid allergy should be examined and treated not only in asthma but also in COPD.

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4247-A-2208

Comorbid conditions as mortality predictors in severe COPD - an eight-year follow-up cohort study

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Background

The aim of the present study was to explore the prevalence of comorbid conditions in COPD stage 3 and 4 and to investigate and compare their associations with mortality.

Methods

In May 2011 to March 2012, 241 patients with COPD stage 3 or 4 were recruited from Swedish respiratory secondary care centres. Information was collected on sex, age, smoking history, body mass index (BMI), COPD Assessment Test score (CAT), Forced Expiratory Volume in one second (FEV1) expressed as percentage of predicted value, number of exacerbations during the recent year and comorbid conditions in terms of chronic bronchitis, cardiovascular disease, diabetes, renal impairment, malnutrition, musculoskeletal symptoms, osteoporosis or depression during May 2011 to March 2012. Mortality data (all-cause and cause specific) were collected from the National Cause of Death Register at 31st of December 2019. Cox regression analysis used sex, age, previously established mortality predictors and comorbid conditions as independent variables and all-cause mortality and cardiac and respiratory mortality, respectively, as dependent variables.

Results

Out of 241 patients, 155 (64%) were deceased at the end of the study period. In patients with available cause of death record, 103 (66%) died of respiratory disease and 25 (16%) of cardiovascular disease. Among comorbidities, renal impairment was significantly associated with increased all-cause mortality (HR (95%CI) 3.26 (1.29 to 8.27), p = 0.013) and respiratory mortality (4.63 (1.61 to 13.4), p = 0.005). In addition, age >70, BMI <22 and lower FEV1 were significantly associated with increased all-cause and respiratory mortality and BMI <22 with all-cause mortality.

Conclusion

In addition to the well-known predictors higher age, low BMI and poor lung function; renal impairment appears to be an important mortality predictor which should be taken into account in management of patients with severe COPD.

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4251-A-2208

Chronic airflow limitation and respiratory symptoms in relation to smoking in a general middle-aged population

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Background: Tobacco smoking is the main cause of chronic airflow limitation (CAL). As the prevalence of smoking decreases in the western world, the proportion of never-smokers among individuals with CAL is likely to increase. However, it is less known whether respiratory symptoms differ between never-smokers, ex-smokers and current smokers with CAL.The aim of the present study was to compare the prevalence of chronic bronchitis, breathlessness and wheeze between individuals with and without CAL and if the prevalence was associated with smoking history.

Material and method: In the Swedish CArdioPulmonary BioImage Study (SCAPIS), men and women, 50-64 years, were randomly invited from the general population at six sites in Sweden. Data on post-bronchodilator spirometry, self-reported smoking habits and respiratory symptoms were collected from 28,746 individuals. CAL was defined as FEV1/FVC<0.7.

Results: The overall prevalence of CAL in SCAPIS was 8.8%, and was higher in current smokers (19.4%) than in ex-smokers (9.5%) and never-smokers (5.0%). Among people with CAL, current smokers had a higher prevalence of chronic bronchitis (19% vs. 7.1%), breathlessness (15% vs. 5.0%) and wheeze (35% vs. 14%) compared with never-smokers. Never-smokers with CAL also had 1.5-3 times more respiratory symptoms than never-smokers without CAL, with a higher prevalence of chronic bronchitis (7.1% vs. 3.5%), breathlessness (5.0% vs. 3.2%) and wheeze (14% vs. 4.1%).

Conclusion: In this large population-based study of middle-aged people, CAL, regardless of smoking history, was associated with common respiratory symptoms. Of note, also in never-smokers with CAL, respiratory symptoms were common, and associations to other factors such as early-life events and asthma are important to elucidate.