

ABSTRACTS.

EFFECTS OF TIOTROPIUM WITH AND WITHOUT FORMOTEROL ON AIRFLOW OBSTRUCTION AND RESTING HYPERINFLATION IN PATIENTS WITH COPD*

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Abstract

Background: The combination of short-acting β_2 -agonists and anticholinergics in the treatment of COPD has been well documented, but data on combination of long-acting agents are lacking.

Methods: A randomized, open-label, placebo-controlled, three-way crossover study was conducted comparing 2-week treatment periods of tiotropium alone to tiotropium plus formoterol once or twice daily following a 2-week pretreatment period with tiotropium. Lung function (FEV_1 , FVC, and resting inspiratory capacity [IC]) serially over 24 h was measured in 95 patients with stable COPD at baseline and after 2 weeks of each treatment.

Results: Mean baseline FEV_1 was 1.05 L (38% of predicted). There was a circadian variation in FEV_1 , FVC, and IC at baseline that was maintained during all treatment periods. Average FEV_1 (0 to 24 h) improved by 0.08 L with tiotropium, by 0.16 L with tiotropium plus formoterol once daily, and by 0.20 L with tiotropium plus formoterol twice daily ($p < 0.01$ for all comparisons). Compared with tiotropium alone, add-on formoterol in the morning produced improvement in FEV_1 , FVC, and IC for > 12 h. The second add-on dose of formoterol in the evening caused further improvement in FEV_1 for 12 h, but in FVC and IC for < 12 h. Peak increase in FEV_1 was 0.23 L (22% of baseline) with tiotropium and 0.39 L (37% of baseline) with tiotropium plus formoterol ($p < 0.0001$). Compared with tiotropium alone, add-on formoterol once and twice daily reduced the use of rescue salbutamol during the daytime ($p < 0.01$) and with add-on formoterol twice daily also during the nighttime ($p < 0.05$). The combination of tiotropium and formoterol was well tolerated.

Conclusion: In the treatment of COPD, there is benefit from adding formoterol once or twice daily to tiotropium once daily in terms of improvement in airflow obstruction, resting hyperinflation, and the use of rescue salbutamol.

Key Words: COPD • formoterol • hyperinflation • long-acting anticholinergic • long-acting β_2 -agonist • tiotropium

BRONCHOSCOPIC LUNG VOLUME REDUCTION FOR END-STAGE EMPHYSEMA* REPORT ON THE FIRST 98 PATIENTS

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Abstract

Objectives: To report the first multicenter experience on the treatment of end-stage emphysema using an endobronchial valve (EBV) [Emphasys EBV; Emphasys Medical; Redwood City, CA].

Design: Retrospective analysis from prospective multicenter registry.

Patients and interventions: This is a study of the use of EBVs in the treatment of end-stage emphysema at nine centers in seven countries. Ninety-eight patients with mean FEV₁ of 0.9 ± 0.3 L (30.1 ± 10.7% of predicted) [± SD] and residual volume (RV) of 5.1 ± 1.3 L (244.3 ± 0.3% of predicted) were treated over a period of 20 months. Spirometry, plethysmography, and diffusing capacity of the lung for carbon monoxide (DLCO) and exercise tolerance testing were performed at 30 days and 90 days after the procedure.

Results: RV decreased by 4.9 ± 17.4% (p = 0.025), FEV₁ increased by 10.7 ± 26.2% (p = 0.007), FVC increased by 9.0 ± 23.9% (p = 0.024), and 6-min walk distance increased by 23.0 + 55.3% (p = 0.001). There was a trend toward improvement in DLCO, but this did not reach statistical significance (17.2 ± 52.0%, p = 0.063). Patients treated unilaterally showed a trend toward greater improvement than those treated bilaterally. A similar trend toward improvement was observed in patients who had one entire lobe treated compared to those with just one or two bronchopulmonary segments treated. Eight patients (8.2%) had serious complications in the first 90 days, including one death (1.0%).

Conclusion: This multicenter analysis confirms that improvement in pulmonary function and exercise tolerance can be achieved in emphysematous patients using EBVs. Future efforts should be directed to determining how to select those patients who would benefit most from this procedure and the best endobronchial treatment strategy.

Key Words: bronchoscopy • emphysema • lung volume reduction • minimally invasive

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TREATMENT WITH AM3 RESTORES DEFECTIVE T-CELL FUNCTION IN COPD PATIENTS*

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Abstract

Background: Lymphocyte alterations have been associated with an increased prevalence of acute respiratory infections in COPD patients. AM3 is an oral immunomodulator that normalizes the defective functions of peripheral blood natural killer and phagocytic cells in COPD patients and improves their health-related quality of life.

Objectives: To characterize putative systemic abnormalities of the T-cell compartment in COPD patients, and to investigate whether AM3 can restore such abnormalities.

Design: The study was a randomized, prospective, double-blind, placebo-controlled trial in a cohort of COPD patients. The results were also compared to those of nonsmoker and ex-smoker healthy control subjects.

Setting: Outpatient departments of four hospitals.

Patients: Seventy COPD patients were randomized to receive either AM3 or a placebo orally for 90 consecutive days. Populations of 36 healthy nonsmokers and 36 healthy ex-smokers were used as control subjects.

Measurements: Peripheral blood mononuclear cell (PBMC) proliferation and production of interleukin (IL)-2, IL-4, IL-12p40, tumor necrosis factor- α , and interferon (IFN)- γ proteins in response to the T-cell polyclonal mitogens were assessed at baseline and at the end of treatment.

Results: The proliferative response was significantly decreased in COPD patients. Decreased production of IFN- γ was the only defect in the profiles of the cytokine measures, and was selectively observed in COPD patients, but not in nonsmoker and ex-smoker healthy control subjects. Treatment with AM3 significantly restored the PBMC proliferative response to polyclonal mitogens and significantly promoted stimulated IFN- γ production in these patients. The normalization of these proliferative responses was not related to significant variations in the numbers of peripheral blood monocytes, CD3+, CD4+, CD8+ cells or of any major naïve/memory/activated T-cell subset. The increased IFN- γ production in the AM3 study arm was associated with an increase in the mean of number of IFN- γ molecules produced per CD8+ T cells.

Conclusions: PBMCs of COPD patients showed clear functional T-lymphocyte abnormalities that are rescued by AM3 treatment.

Key Words: COPD • immunity • Inmunoferon • interferon- • T-lymphocyte subsets

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PHYSICAL ACTIVITY AND HOSPITALIZATION FOR EXACERBATION OF COPD*

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Abstract

Background: Acute exacerbations (AEs) have a negative impact on various aspects of the progression of COPD, but objective and detailed data on the impact of hospitalizations for an AE on physical activity are not available.

Objective and measurements: We aimed to investigate physical activity using an activity monitor (DynaPort; McRoberts; the Hague, the Netherlands), pulmonary function, muscle force, 6-min walking distance, and arterial blood gas levels in 17 patients (mean age, 69 ± 9 years [\pm SD]; body mass index, 24 ± 5 kg/m²) at the beginning and end of a hospitalization period for an AE and 1 month after discharge.

Results: Time spent on weight-bearing activities (walking and standing) was markedly low both at day 2 and day 7 of hospitalization (median, 7%; interquartile range [IQR], 3 to 18% of the time during the day; and median, 9%; IQR, 7 to 21%, respectively) and 1 month after discharge (median, 19% [IQR, 10 to 34%]; Friedman test, $p = 0.13$). Time spent on weight-bearing activities was positively correlated to quadriceps force at the end of the hospitalization period ($r = 0.47$; $p = 0.048$). Patients with hospitalization for an AE in the previous year had an even lower activity level when compared to those without a recent hospitalization. In addition, patients with a lower activity level at 1 month after discharge were more likely to be readmitted in the following year.

Conclusions: Patients with COPD are markedly inactive during and after hospitalization for an AE. Efforts to enhance physical activity should be among the aims of the disease management during and following the AE periods.

Key Words: accelerometer • acute exacerbation • COPD • hospitalization • physical activity

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COPD CAN MIMIC THE APPEARANCE OF PNEUMOTHORAX ON THORACIC ULTRASOUND*

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Abstract

Purpose: To determine the diagnostic accuracy of ultrasound in the diagnosis of pneumothorax in patients with COPD with particular regard to false-positive diagnoses.

Materials and methods: This was a single-center, prospective, blinded study. Nine patients with pneumothorax, 9 patients with cystic fibrosis, 17 patients with COPD, and 6 control subjects were studied. Ultrasound clips were recorded at three positions in both hemithoraces of each patient and then reviewed by two observers blinded to patient status. Each clip was scored for the presence or absence of pneumothorax and the degree of observer confidence.

Results: The sensitivity and specificity for a pneumothorax were 100% and 84% for the experienced observer and 78% and 81% for the inexperienced observer, respectively. In the COPD patient group, specificity was 71% for the experienced observer and 65% for the inexperienced observer. There were no false-positive diagnoses in the cystic fibrosis or the control group.

Conclusion: Patients with COPD commonly show signs on ultrasound mimicking a pneumothorax, but this was not seen in patients with cystic fibrosis. In patients with COPD, ultrasound may be used to exclude the presence of a pneumothorax, but it cannot be used to confidently diagnose pneumothorax without using other imaging modalities.

Key Words: diagnosis • pneumothorax • ultrasound

(Chest. 2006;129:545-550.)

RELATIONSHIP OF UPPER-LIMB AND THORACIC MUSCLE STRENGTH TO 6-MIN WALK DISTANCE IN COPD PATIENTS*

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Abstract

Study objectives: This study was developed to investigate the influence of thoracic and upper-limb muscle function on 6-min walk distance (6MWD) in patients with COPD.

Design: A prospective, cross-sectional study.

Setting: The pulmonary rehabilitation center of a university hospital.

Patients: Thirty-eight patients with mild to very severe COPD were evaluated.

Measurements and results: Pulmonary function and baseline dyspnea index (BDI) were assessed, handgrip strength, maximal inspiratory pressure (P_Imax), and 6MWD were measured, and the one-repetition maximum (1RM) was determined for each of four exercises (bench press, lat pull down, leg extension, and leg press) performed on gymnasium equipment. Quality of life was assessed using the St. George Respiratory Questionnaire (SGRQ). We found statistically significant positive correlations between 6MWD and body weight ($r = 0.32$; $p < 0.05$), BDI ($r = 0.50$; $p < 0.01$), FEV₁ ($r = 0.33$; $p < 0.05$), P_Imax ($r = 0.53$; $p < 0.01$), and all values of 1RM. A statistically significant negative correlation was observed between 6MWD and dyspnea at the end of the 6-min walk test ($r = -0.29$; $p < 0.05$), as well as between 6MWD and the SGRQ activity domain ($r = -0.45$; $p < 0.01$) and impact domain ($r = -0.34$; $p < 0.05$) and total score ($r = -0.40$; $p < 0.01$). Multiple regression analysis selected body weight, BDI, P_Imax, and lat pull down 1RM as predictive factors for 6MWD ($R^2 = 0.589$).

Conclusions: The results of this study showed the importance of the skeletal musculature of the thorax and upper limbs in submaximal exercise tolerance and could open new perspectives for training programs designed to improve functional activity in COPD patients.

Key Words: 6-min walk distance • COPD • one-repetition maximum • thoracic muscles • upper-limb muscles

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SPIROMETRICALLY GATED HIGH-RESOLUTION CT FINDINGS IN COPD*

LUNG ATTENUATION VS LUNG FUNCTION AND DYSPNEA SEVERITY

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Abstract

Study objectives: The aim of this study was to investigate the relationship between high-resolution CT (HRCT) lung attenuation measurements, acquired under spirometric control of inspiratory and expiratory lung volume, and pulmonary dysfunction as well as dyspnea severity in patients with COPD.

Patients and design: In 51 patients with COPD, we compared by linear regression, univariate and multivariate logistic regression airflow limitation (FEV_1 /vital capacity [VC]), hyperinflation (percentage of predicted residual volume [RV%]), parenchymal loss (percentage of predicted diffusing capacity of the lung for carbon monoxide [DLCO%]), and Medical Research Council (MRC) dyspnea scale with relative area with attenuation values < -950 HU at 90% of VC [RAI_{950}] and < -910 HU at 10% of VC, respectively, and with mean lung attenuation measured at the same levels of VC (mean CT lung density at 10% of VC, and mean CT lung density at 90% of VC [MeanCTEXP]).

Results: All HRCT attenuation measurements were significantly related with functional abnormalities and dyspnea severity. In multivariate logistic models, with 1 indicating worse changes in dichotomous outcome variables, MeanCTEXP independently predicted FEV_1/VC (odds ratio [OR], 0.24; 95% confidence interval [CI], 0.11 to 0.56), RV% (OR, 0.57; 95% CI, 0.42 to 0.77), and MRC dyspnea scale (OR, 0.63; 95% CI, 0.48 to 0.82), while RAI_{950} independently predicted DLCO% (OR, 1.90; 95% CI, 1.37 to 2.65).

Conclusions: Spirometrically gated measurements of HRCT lung attenuation reflect differently functional changes and dyspnea perception in COPD. Inspiratory measurements assess the extent of emphysematous tissue loss, and expiratory measurements may reflect airflow limitation and lung hyperinflation with attendant dyspnea perception. Pulmonary dysfunction in COPD cannot be assessed by a single modality of lung attenuation measurement.

Key Words: COPD • diagnostic imaging • high-resolution CT imaging techniques in COPD • lung attenuation • respiratory function tests

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LOW SPUTUM EOSINOPHILS PREDICT THE LACK OF RESPONSE TO BECLOMETHASONE IN SYMPTOMATIC ASTHMATIC PATIENTS

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Abstract

Background: The prognostic role of low sputum eosinophils in steroid-naïve, symptomatic asthmatic patients is controversial.

Aim: To verify whether low sputum eosinophils predict poor response to treatment with inhaled corticosteroids.

Methods: Sixty-seven symptomatic asthmatic patients with moderate asthma were examined before and after 2 weeks and 4 weeks of treatment with beclomethasone dipropionate, 500 µg bid. None received corticosteroids in the 3 months preceding the study. At each visit, all patients underwent spirometry, methacholine challenge, and sputum induction. The patients recorded symptom scores and peak expiratory flow (PEF) throughout the study.

Results: Seventeen patients had low sputum eosinophils despite being symptomatic. Patients with high (> 3%) sputum eosinophils at baseline showed significant improvement in symptoms, pulmonary function, and bronchial hyperresponsiveness after treatment, whereas patients with low sputum eosinophils showed no significant improvement in most clinical and functional outcomes. Among the baseline indexes examined, sputum eosinophils had the highest negative predictive value but low positive predictive value for the response to treatment. Multiple stepwise regression showed that only baseline FEV₁ and sputum eosinophil percentages significantly correlated with changes in FEV₁ after treatment.

Conclusions: We suggest that, among the indexes examined, low sputum eosinophils are the best predictor for poor corticosteroid effects in asthma.

Key Words: asthma • beclomethasone dipropionate • eosinophils • induced sputum

NO SYMPTOMS, NO ASTHMA* THE ACUTE EPISODIC DISEASE BELIEF IS ASSOCIATED WITH POOR SELF-MANAGEMENT AMONG INNER-CITY ADULTS WITH PERSISTENT ASTHMA

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Abstract

Objective: Asthma morbidity and mortality is highest among inner-city populations. Suboptimal beliefs about the chronicity of asthma may perpetuate poor asthma control among inner-city asthmatics. This study sought to characterize beliefs about the chronicity of disease and its correlates in a cohort of inner-city adults with persistent asthma.

Design: Prospective, longitudinal, observational cohort study.

Patients: One hundred ninety-eight adults hospitalized with asthma over a 12-month period at an inner-city teaching hospital.

Measurements: Sociodemographics, clinical history, disease beliefs, and self-management behaviors were collected by interview. Information on self-reported use of inhaled corticosteroids (ICS), peak flowmeters, and regular asthma visits was collected during hospitalization, and 1 month and 6 months after discharge.

Results: This cohort was predominantly low income and nonwhite, with high rates of prior intubation, oral steroid use, and emergency department visits and hospitalizations. Overall, 53% of patients believed they only had asthma when they were having symptoms, what we call the no symptoms, no asthma belief. Men patients, those 65 years old, and those with no usual place of care had greater odds of having the no symptoms, no asthma belief, and those receiving oral steroids all or most of the time or with symptoms most days had half the odds of having this belief ($p < 0.05$ for all). The no symptoms, no asthma belief was negatively associated with beliefs about always having asthma, having lung inflammation, or the importance of using ICS, and was positively associated with expecting to be cured. The acute disease belief was associated with one-third lower odds of adherence to ICS when asymptomatic at all three time periods ($p < 0.02$ for all).

Conclusion: The single question, "Do you think you have asthma all of the time, or only when you are having symptoms?" can efficiently identify patients who do not think about or manage their asthma as a chronic disease.

Key Words: adherence • asthma • behaviors • beliefs • knowledge

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OUTCOMES OF A WEB-BASED PATIENT EDUCATION PROGRAM FOR ASTHMATIC CHILDREN AND ADOLESCENTS*

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Abstract

Background: Asthma is the most common chronic disease among children in Germany. Approaches to reduce the burden of asthma include patient education to improve self-management skills.

Study objectives: We determined whether a continuous Internet-based education program (IEP) or an add-on to a standardized patient management program (SPMP) improves health outcomes of asthma patients at a favorable benefit-cost ratio.

Patients and methods: A total of 438 asthmatic patients aged 8 to 16 years in 36 study centers were enrolled during a 6-month period. We performed a prospective cost-benefit analysis alongside a nonrandomized trial. At baseline and at 6 months and 12 months, health service utilization data were collected.

Interventions: Study participants were assigned to a control group and two intervention groups. Patients in both intervention groups participated in an SPMP. Additionally, patients in one intervention group received the IEP.

Results: Utilization of various health-care services decreased significantly in both intervention groups. From a payer perspective, the benefit-cost ratio of the traditional education program was 0.55. Adding the IEP improved the ratio (0.79). For patients with moderate or severe asthma, the benefit-cost ratios were 1.07 and 1.42 (with IEP), respectively.

Conclusions: The IEP offers the potential to decrease the burden of disease and to realize incremental morbidity cost savings. Subgroup analysis demonstrated that within 1 year, the savings exceed the intervention costs in patients with moderate or severe asthma.

Key Words: asthma • cost-benefit analysis • Internet costs • patient education • quality of life

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UNDERSTANDING OF ASTHMA MANAGEMENT MEDICAID PARENTS' PERSPECTIVES

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Abstract

Objective: This article explores parental caregiver perspectives on barriers to asthma care in the Medicaid system.

Methods: Focus groups were held for parents of children with persistent asthma to identify barriers to asthma care for children insured by Medicaid in the Ypsilanti, MI area. Semistructured questions regarding health goals, asthma care, and access were used. Themes were defined as distinct categories or concepts regarding aspects of asthma care and coded.

Results: Thirty-six adults participated in four focus groups, 89% were the biological mother, and 64% were African American. Major themes identified included caregiver emotions, caregiver/patient knowledge, environmental issues, school/daycare support, Medicaid health-care system issues, the role of medical providers, and emerging adolescence. Parents demonstrated asthma awareness but were not confident in their role as the child's disease manager. A specific gap was seen in the caregiver's level of self-efficacy to control exposure to asthma triggers, monitor the child's symptoms, and modify medications based on asthma symptoms.

Conclusion: Medicaid-insured families face unique barriers related to income and insurance limitations as well as issues common to others with asthma. Caregivers demonstrated a high level of asthma knowledge, but like other caregivers gaps between knowledge and behavior existed. Barriers to asthma care that may be specific to Medicaid-insured patients included difficulty maintaining continuity of care due to physician participation in Medicaid programs, and concerns about possible differences in asthma care from health-care providers due to their Medicaid insurance status.

Key Words: asthma • barriers to care • caregiver • Medicaid

(*Chest.* 2006;129:594-601.)

EFFECT OF CONTINUOUS POSITIVE AIRWAY PRESSURE ON SOLUBLE CD40 LIGAND IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA SYNDROME*

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Abstract

Background: Obstructive sleep apnea syndrome (OSAS) is an independent risk factor for atherosclerosis. CD40-CD40 ligand interaction promotes several proinflammatory mediators and plays a pivotal role in the various stages of atherosclerotic diseases. The present study examines whether CD40 ligation contributes to outcomes in patients with OSAS.

Methods: The study population comprised OSAS patients with an apnea hypopnea index (AHI) 30 (n = 35) and control subjects (AHI < 5; n = 16). We measured serum levels of soluble CD40 ligand (sCD40L), tumor necrosis factor (TNF)-, and hypersensitive C-reactive protein (hsCRP) before and after nasal continuous positive airway pressure (nCPAP) therapy for 3 months.

Results: Baseline levels of sCD40L were significantly higher in patients with OSAS (6.93 ± 4.64 ng/mL) [mean \pm SD] than in control subjects (3.43 ± 2.11 ng/mL, $p < 0.01$). Baseline levels of sCD40L positively correlated with TNF- but not with hsCRP. The elevation of sCD40L was improved for 1 night after nCPAP therapy (3.83 ± 2.78 ng/mL, $p < 0.001$). Even though patients with severe OSAS did not receive any other medication to control atherosclerotic risk factors for 3 months, nCPAP was continued to reduce the levels of sCD40L.

Conclusion: The present study suggested that sCD40L is a key factor that links OSAS and atherosclerotic progression.

Key Words: atherosclerosis • hypoxia • obstructive sleep apnea • soluble CD40 ligand

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THE COST UTILITY OF BUPROPION IN SMOKING CESSATION HEALTH PROGRAMS

SIMULATION MODEL RESULTS FOR SWEDEN

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Abstract

Study objectives: To calculate incremental cost-utility ratios (cost per quality-adjusted life-year [QALY] gained) for bupropion (Zyban; GlaxoSmithKline; Gothenburg, Sweden), as compared to nicotine replacement therapy (NRT) in smoking cessation programs for a follow-up period of 20 years.

Design: The Global Health Outcomes simulation model was used for a male cohort and for a female cohort as a point of departure but was further extended in order to include the following: (1) the indirect effects of smoking cessation on production and consumption in the economy, and (2) morbidity-specific QALYs gained.

Setting: Sweden in 2001

Patients or participants: Model cohort consisting of 612,851 male and 780,970 female smokers, distributed by age, 35 years old, as in the Swedish population of 2001.

Interventions: Bupropion, as compared to NRT (nicotine patches and nicotine gums), in smoking cessation programs for a follow-up period of 20 years.

Measurements and results: When the indirect effects on production and consumption were taken into account, bupropion was cost saving in comparison to both NRTs. When only the direct costs were included, bupropion was still cost saving in comparison to nicotine gum. The incremental costs per QALY gained were relatively low for bupropion in comparison to nicotine patches, 6,600 Swedish kronas (SEK) (approximately 725) per QALY gained for men and 4,900 SEK (approximately 535) for women, all calculations in 2001 Swedish prices. The comprehensive sensitivity analysis showed robust results; results were, however, more sensitive to quit rates and intervention costs than to other variables.

Conclusions: Bupropion is a cost-effective therapy in smoking cessation programs. Furthermore, recent studies report even higher effectiveness in terms of quit rates than was assumed here, indicating that our estimated cost-utility ratio should be even more favorable to bupropion.

Key Words: bupropion • economic evaluation • nicotine-replacement therapy • smoking cessation intervention • Sweden

(*Chest.* 2006;129:651-660.)

RESOLUTION OF RESIDUAL PLEURAL DISEASE ACCORDING TO TIME COURSE IN TUBERCULOUS PLEURISY DURING AND AFTER THE TERMINATION OF ANTITUBERCULOSIS MEDICATION*

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Study objectives: To assess the resolution of pleural disease in patients with tuberculous pleurisy (TP) during and after antituberculosis medication.

Design: An observational, prospective, longitudinal study.

Setting: University-affiliated general hospital in Seoul, Korea.

Patients and methods: Chest radiographs of 85 adult TP patients were followed up prospectively from diagnosis to 24 months after the start of medication. The extent of pleural disease, synonymous with the radiographic term, *pleural opacity* (PO), was evaluated at regular intervals according to a size scale. Additionally, following completion of 6 months of therapy, residual PO (RPO) was determined by either measurement of the widest width of the opacity, if loculated, or at the superior level of the hemidiaphragm.

Results: Seventy-seven patients had a PO graded 2 at the initial presentation. At 6, 9, and 24 months, the number of patients with these grades declined. At these time periods, there were 14, 8, and 7 patients, respectively, remaining with this classification. RPO > 10 mm at 24 months was considered indicative of significant residual pleural disease. During the period after 6 months of antituberculosis medication, the number of patients with RPO 10 mm declined from 43 patients at 6 months to 21 patients at 24 months. The presence of loculation on an initial chest decubitus view was associated with significant RPO at 24 months ($p = 0.009$).

Conclusion: In TP patients, improvement of RPO often occurred even after completion of 6 months of antituberculosis medication up to 24 months. A loculated PO at initial presentation, but not initial PO size, was a predictor of significant RPO at 24 months.

Key Words: pleural effusion • pleural thickening • tuberculosis

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SMOKING AND ASTHMA*

CLINICAL AND RADIOLOGIC FEATURES, LUNG FUNCTION, AND AIRWAY INFLAMMATION

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Abstract

Smoking may influence the type of airway inflammation observed in asthma and its response to therapy. More studies are needed on how smoking-induced changes in lung function/structure and airway inflammation may result in a change in clinical expression. We compared clinical, physiologic, radiologic, and airway inflammatory features of 22 smoking asthma patients (cigarette smoking history, 14.0 ± 7.6 pack-years [mean \pm SD]) and 27 nonsmoking asthma patients. Mean age/duration of asthma of smoking and nonsmoking asthma patients were 31 years/14 years and 29 years/17 years, respectively. Quality of life, FEV₁, bronchodilator response, perception of bronchoconstriction, and methacholine responsiveness were similar in the two groups. Compared to nonsmoking asthma patients, smokers had more respiratory symptoms, a lower mean forced expiratory flow at 25 to 75% of FVC, FEV₁/FVC ratio, and lung diffusion capacity, and a higher functional residual capacity. Induced-sputum neutrophil and bronchial cell counts were higher and exhaled breath condensate pH was more acidic in smoking asthma patients. On high-resolution CT, airway and parenchymal abnormalities were more common in smoking asthma patients than in nonsmokers. In conclusion, compared with nonsmoking asthma patients, smoking asthma patients have features similar to what could be found in early stages of COPD.

Key Words: asthma • COPD • exhaled breath condensate • high-resolution CT • induced sputum • lung diffusion capacity • pH • respiratory symptoms • smoking

(*Chest*. 2006;129:661-668.)