Eastern Pulmonary Conference
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All Scientific Posters will be on display in the Ponce de Leon 5 and 6 beginning Friday morning, September 11th. Authors of these posters are requested to be at their poster to discuss their work from 9:45 – 10:45 AM, both Friday and Saturday.

Not for CME Credit

EBUS-TBNA in a community hospital: Does formal training in fellowship improve diagnostic yield?

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PURPOSE: Endobronchial ultrasound-guided transbronchial needle aspiration(EBUS-TBNA) is a standard technique that allows diagnostic sampling of mediastinal/hilar lymph nodes and masses. The purpose of this study was to evaluate the diagnostic yield(DY) of linear EBUS and to determine if physicians with formal EBUS training in fellowship performed better than those who were self-trained.

METHODS: In a 293-bed community teaching hospital in Western Massachusetts, EBUS-TBNA procedures from 2011-2014 were retrospectively analyzed. Rapid on-site cytological examination(ROSE) was available for all procedures. Pathologists' report of presence of adequate diagnostic specimen was considered as positive diagnostic yield. The statistical analysis was performed using *one proportion testing* for comparison of DY between groups.

RESULTS: 76 EBUS-TBNA procedures were reviewed. The DY for the year 2013-14 was 93.1 %, when compared to 2012-13: 63.8 %. (95%CI -0.45 to -0.12, *p-value 0.001*). The DY was not higher for operators who had EBUS training in fellowship compared to operators who were self-trained (77 % vs 71%, *p-value 0.353*). 2 out of the 6 operators received training in fellowship. The DY was not significantly different between pulmonologists and thoracic surgeons (75%vs76%,*p-value0.964*). The diagnoses included NSCLC(38.2%), SCLC(22.4%), Sarcoidosis(15.8%), Lymphoma(2.6%) and reactive lymphadenopathy(21.1%). No complications were reported.

CONCLUSIONS: In a community hospital setting, we conclude that EBUS-TBNA has excellent safety profile; the yield improves over time as procedural volume increases. However formal training during fellowship is not necessarily predictive of a better diagnostic yield. Self-trained operators can achieve procedural competence and comparable diagnostic yield**,** although lower than academic centers.

Asthma in the Elderly: The Effect of Choline Supplementation

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Introduction: Asthma in the elderly is poorly understood as very few studies have included these patients. DNA methylation can affect the expression of asthma susceptibility genes. Methyl groups can be produced through a choline dependent pathway. Asthmatics have decreased serum choline. We studied the effect of choline supplementation in elderly asthmatics and associations between different parameters.

Methods: This is a double-blind, placebo-controlled, cross-over study. Thirty asthmatics 65 years old and older were evaluated at baseline and 3, 6, 9, and 12 weeks later. They randomly received choline bitartrate 310 mg and placebo capsules twice daily for 6 weeks.

Results: Mean age was 73.7±5.9 years, asthma duration 34.8±21.2 years. 27/30 subjects were atopic, 23/30 had rhinitis; 29/30 subjects were using inhaled corticosteroids, 20/30 long-acting bronchodilators, 11/30 montelukast. Baseline ACT (Asthma Control Test) was 22.1±3.3, FEV1% 75±20.4%, FEV1/FVC 0.73±0.1, FEF25-75% 71±38.2%, peripheral blood eosinophils 0.38±0.31 K/UL, serum IgE 198±210 U/ml. Choline supplementation did not affect ACT, spirometric values, eosinophils or IgE vs. placebo. In subjects with lower ACT (≤20, 16.7±3.3, n=6), lower FEV1% (<60%, 46.4±9.2%, n=6), or higher eosinophils (≥0.6, 0.88±0.35 K/UL, n=6), there was also no difference between choline and placebo. We found no significant association between the different parameters at baseline including in subjects with lower ACT or on higher inhaled steroid doses (≥400 mcg/day, n=13).

Conclusions: In summary, in this study of elderly asthmatics, choline supplementation for 6 weeks did not affect ACT scores, spirometric values, peripheral blood eosinophils, or serum IgE. These results will require confirmation in larger and longer studies.

Association of COPD with Heart failure – Analysis of NHANES Data

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Introduction: The rising prevalence of multiple comorbidities in individual patients challenges the resources of healthcare systems. The optimal treatment of these patients is often based on the individual disorders as if they occur in isolation. Chronic obstructive pulmonary disease (COPD) and heart failure (HF) are systemic disorders that share common risk factors. We analyzed National Health and Nutrition Examination Survey data to determine association on COPD with Heart Failure. Given COPD is a chronic inflammatory disorder we hypothesized that it is associated with heart failure.

Methods: We performed a retrospective, cross sectional analysis of NHANES data for the years 1999 to 2012. We constructed logistic regression models with heart failure as the dependent variable controlling for COPD, overweight, hypertension, diabetes mellitus, elevated cholesterol and physician-diagnosed cardiovascular disease (CVD) Data were standardized to the 2000 U.S. national population census 2000.

Results: Of approximately 209 million individuals, 14.9 million were diagnosed with COPD. The prevalence of heart failure in COPD cases was 9.3% compared to 1.9% in cases not diagnosed with COPD (OR = 5.3, p < 0.0005). In multivariate analysis controlling for relevant covariates, COPD patients had nearly four times greater odds of having HF, 3.7 (±0.7), p < 0.0005. CVD, OR 10.2 (±2.1) and diabetes, OR 2 (±0.3) (OR=2) were significantly associated with HF in participants with COPD.

Conclusion: COPD cases have 3.7 times higher odd of being associated with HF compared to cases without COPD. History of CVD and diabetes also attained statistically significant association.

Prognostic judgment of children with Mycoplasma pneumoniae pneumonia associated with airway mucous plug formation

AN Shu-Hua, TIAN Li-Yuan, ZHANG Li-Jun, LI Jin-Ying

Abstract: Objective To investigate the clinical characteristics and treatment defects in slow-to-recover children with Mycoplasma pneumoniae pneumonia (MPP) associated with airway mucous plug formation, and to provide a basis for prognostic judgment and therapeutic guidance.

Methods A retrospective analysis was performed on the clinical data of 67 children with MPP who were admitted between May 2012 and May 2014 and showed airway mucous plug formation in fiberoptic bronchoscope examinations. Based on the results of re-examinations using imaging methods, all patients were classified into a slow-to-recover group (n=30) and a control group (n=37). Comparisons of clinical outcomes, laboratory indices, imaging findings, and treatment methods were performed between the two groups. The receiver operating characteristic (ROC) curves were drawn to analyze the indices with significant differences.

Results The percentage of neutrophils, levels of C-reactive protein (CRP), lactic dehydrogenase (LDH), fibrinogen (FIB), and IgM in peripheral blood, and incidence of pleural effusion were significantly higher in the slow-to-recover group than in the control group (P<0.05). The fever duration and treatment time of azithromycin and fiberoptic bronchoscope for the first time were significantly longer in the slow-to-recover group than in the control group (P<0.05). The results of ROC curve analysis showed that the optimal cut-off points of fever duration, percentage of neutrophils, levels of CRP and FIB, and treatment time of fiberoptic bronchoscope for the first time were 11.5 days, 70.7%, 57 mg/L, 4.7 g/L, and 13.5 days, respectively, with sensitivity and specificity higher than 0.643 and 0.727.

Conclusions The fever duration, percentage of neutrophils, level of CRP, level of FIB, and treatment time of fiberoptic bronchoscope for the first time can predict a recovery time longer than two months in children with MPP associated with mucous plug formation.

RoIe of Common Pulmonary Function Testing in Diagnosis and Treatment of Asthma in Children

TIAN Li-Yuan, AN Shu—hua, Li Jin-Ying, ZHAO Qing-juan, ZHENG Bo-Juan

Abstract : Objective To investigate the changes in the large and small airway function in children with asthma and the time interval changes by comparing the lung function indexes pre and post regular treatment. To reveal the response of airway to bmnchodflator and the reversibility of airway stenosis and obstruction in childre,n with asthma in different ages by comparing the changes of lung function of asthmatic children pre and post inhaled bronchodilator.

Methods Twenty~five children with asthma were measured with general pulmonary at acutestage, remission stage of 3 months, 6 months and l year, the measured value and the estimated value of different stage welag compared. Moreover. 10 cases of them were received bronehodilation test respectively among acute attack period.

Results r11le measured value of forced vital capacity(FVC), forced expiratory voluEIIe in one second(FEVI)。 forced expiratory volume in one second to forced vital capacity ratio(FEV1. O%), peak expiratory flow(PEF), forced expiratory flow after 25%, 50%, 75%(FEF25, FEF50, FEF75), maximal midexpiratory flow (MMEF75／25)wel'e lower than predicted value in acute stage, then l'ecoYered in remission stage. the large airway function index were reCOVered after 3 months'therapy. and after treatment of l year or more. the small airway function were recoveried. Indicators of large airway function such as FEVI and PEF, and indicators of small airway function of FEF50, FEF'75, MMEF'75／25 etc. were recorded after atomized.

Conclusions There are dynamical changes of the lung function index during acute and remission stage. 80 pulmonary function testing has a good assessment in diagnosis, efficacy and disease in children with asthma.

SELECTED PERINATAL OUTCOMES IN PREGNANT WOMEN EXPOSED TO OMLIZUMAB: INTERIM RESULTS FROM A PROSPECTIVE, OBSERVATIONAL STUDY

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Introduction: Data regarding maternal and fetal outcomes for many asthma medications are insufficient.

Methods: EXPECT is an ongoing prospective, observational study of pregnant women exposed to ≥1 dose of omalizumab within 8 weeks prior to conception or at any time during pregnancy. Data on mother and pregnancy/infant are collected at enrollment, each trimester of pregnancy, pregnancy outcome, and up to 18 months post-delivery. Maternal asthma severity is assessed by mother's health provider. Data collected: rates of live births, spontaneous abortions, elective terminations, stillbirths, birth weight, gestational age, and congenital anomalies. Data are from an annual cumulative summary including September 29, 2006 - November 30, 2013.

Results: Of 207 prospectively enrolled pregnancies, outcomes from 186 pregnancies were reported. Asthma severity was available for 164 women: mild (4/164, 2.4%), moderate (55/164, 33.5%), severe (105/164, 64.0%). There were 174 live births of 178 infants (4 twin pairs), 8 spontaneous abortions, 2 fetal deaths/stillbirths and 2 elective terminations. Of 170 singleton infants, 24 (14.1%) were born prematurely (<37 weeks) and of these 3 (12.5%) were considered small for gestational age (SGA, <10th percentile). Of 140 singleton full-term infants with weight data, 4 (2.9%) had low birthweight and 16 (11.4%) were considered SGA. Overall, 27 infants had confirmed congenital anomalies (15.2%). Eleven infants had a major birth defect (6.2%); omalizumab exposure occurred in the first trimester in all cases. No pattern of anomalies was observed.

Conclusions: Given the small sample size and severity of maternal asthma, these pregnancy outcomes are not inconsistent with previous observations.

Supported by Genentech

Efficacy of omalizumab in allergic asthma by asthma severity and eosinophilic status

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Introduction Response to biologic therapies for the treatment of asthma may be predicted by clinical and biologic markers of asthma severity.

Objectives This post-hoc analysis was conducted to determine if clinical markers of asthma severity and blood eosinophils predict response to omalizumab (OMA) treatment for severe allergic asthma.

Methods Data were pooled from 2 phase 3 pivotal trials of OMA in allergic asthma (N=1071). The number of asthma exacerbations requiring systemic corticosteroids was analyzed over the 16-week-inhaled corticosteroid-stable dose phase of the studies. Effects of OMA on exacerbations relative to peripheral blood eosinophil counts (<300/µL[low] vs ≥300/µL[high]), use of long-acting beta agonists (LABAs), and asthma hospitalization in the year prior to screening were examined.

Results Exacerbations were reduced 53% with OMA vs PBO (95% CI, 33–68; *P*<0.001) in those requiring systemic corticosteroids; 75% in patients receiving LABAs (95% CI 30-91; *P*=0.008) compared with 47% not receiving LABAs (95% CI, 23–65; *P*=0.001); and 63% (95% CI, 34–79; *P*<0.001) with higher blood eosinophils compared with 39% with lower eosinophils (95% CI, 0–63; *P*=0.051). In patients hospitalized for asthma in the year prior to screening, no exacerbations occurred in 17 OMA-treated patients vs 17 exacerbations in 31 PBO patients, for a 100% reduction (*P*<0.001). Exacerbations were reduced 42% in patients not requiring hospitalization in the prior year (95% CI, 14–60; *P*=0.006).

Conclusions Patients with greater asthma severity, as assessed by baseline LABA use, prior hospitalizations for asthma, or higher blood eosinophil counts, have a better response to OMA.

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Effect of Budesonide/Formoterol or Formoterol on Lung Function and Patient-Centered Outcomes: Pooled Analysis of Chronic Obstructive Pulmonary Disease Patients With Moderate Versus Severe/Very Severe Airflow Limitation

Donald P. Tashkin, MD, Stephen I. Rennard, MD, Frank Trudo, MD

Purpose: To assess the efficacy of budesonide/formoterol (BUD/FM) or FM in chronic obstructive pulmonary disease (COPD) patients with moderate vs severe/very severe airflow limitation (AL) on lung function; rescue medication (RM) use; breathlessness, cough, and sputum score (BCSS); dyspnea score; and St. George's Respiratory Questionnaire (SGRQ) total score.

Methods: In a post-hoc analysis of pooled data from 3 double-blind, randomized studies (A: 12-month; NCT00206167; B: 12-month, NCT00419744; and C: 6-month, NCT00206154), COPD patients (aged ≥40 years) with ≥1 COPD exacerbation in the past year were stratified by moderate AL (forced expiratory volume in 1 second [FEV_1] % predicted ≥50%) and severe/very severe AL (FEV_1 % predicted <50%) and assigned to twice-daily BUD/FM via pressurized metered-dose inhaler 320/9 µg (n = 197, moderate AL; n = 975, severe/very severe AL) or FM via dry-powder inhaler 9 µg (n = 211, moderate AL; n = 963, severe/very severe AL). Changes from baseline to treatment period mean in predose FEV_1 (L), RM use (inhalations/d), BCSS, dyspnea score, and change to end of treatment in SGRQ scores are reported. For BCSS, dyspnea, and SRGQ, higher scores indicate greater severity/impairment.

Results: Increases in predose FEV_1 were greater in the BUD/FM vs FM group (0.13 vs 0.06 L, moderate AL; 0.07 vs 0.04 L, severe/very severe AL). Decrease in RM use was greater with BUD/FM vs FM (−1.33 vs −1.08, moderate AL; −1.13 vs -0.60, severe/very severe AL). BCSS improvements with BUD/FM were less than FM in moderate AL (−0.95 vs −1.13) but greater in severe/very severe AL patients (−0.76 vs −0.60). Dyspnea improvements were equal with BUD/FM vs FM in moderate AL patients (−0.44) but greater for BUD/FM vs FM in severe/very severe AL patients (−0.33 vs −0.23). Mean SGRQ improvements were also greater with BUD/FM vs FM (−6.88 vs −6.10, moderate AL; −5.13 vs −2.96, severe/very severe AL).

Conclusions: A robust response to BUD/FM vs FM was observed for all outcomes in all AL patients. Differential improvements with BUD/FM relative to FM alone were numerically better in moderate vs severe/very severe AL patients for lung function and more evident for severe/very severe vs moderate AL patients for patient-centered outcomes.

Clinical Implications: Patients with both moderate and severe/very severe AL benefit from BUD/FM vs FM alone. The relative magnitude of improvement with BUD/FM vs FM alone in lung function and patient-centered outcomes differs depending on AL severity.

Supported by AstraZeneca LP.

Comparative Effectiveness of Budesonide/Formoterol Combination (BFC) and Tiotropium Bromide Among Chronic Obstructive Pulmonary Disease (COPD) Patients New to Controller Treatment

Authors: C.B. Strange,[1] J. Racketa,[2] D.M. Kern,[3] S.A. Williams,[2] O. Tunceli,[3] S. Zhou,[3] E. Graham,[4] F. Trudo[2]

Rationale: Inhaled corticosteroid and long-acting beta$_2$-agonist (ICS/LABA) combination therapies and long-acting muscarinic antagonist (LAMA) therapies are considered first-line options for patients with a history of COPD exacerbations. Comparative effectiveness of BFC (ICS/LABA) vs. tiotropium (LAMA) in the US has not yet been studied.

Methods: Using US claims data from the HealthCore Integrated Research Environment, COPD patients ≥40 years old initiating BFC or tiotropium between 3/1/2009–2/28/2012 and considered at risk for a future exacerbation were identified and followed for 12 months. Patients with a cancer diagnosis, prior chronic OCS use (≥180 days) or ICS/LABA or LAMA prescription during 12 months pre-initiation were excluded. Patients were matched 1:1 on demographics and variables associated with COPD disease severity using propensity scores. Patients had a minimum of one prescription fill during the study intake period. The primary outcome was time to first COPD exacerbation (COPD-related hospitalization/ED visit, or a COPD-related office/outpatient visit followed by an OCS/antibiotic fill within 10 days), analyzed using a Cox proportional hazards model. A secondary outcome was COPD exacerbation rate post-initiation, analyzed using a negative binomial model. Because cohorts were well balanced after matching, no covariates met inclusion criteria for the analysis models. 95% confidence intervals (CI) were calculated and a p-value <0.05 was considered statistically significant.

Results: Among 1381 BFC and 2670 tiotropium patients, 1198 from each group were matched. Matched patients were well balanced on age (mean 63 years), gender (56% female), prior COPD-related medication use, healthcare utilization, and most comorbid conditions. Mean number of fills was 3.3 for BFC and 4.2 for tiotropium. During follow-up BFC patients had a reduced risk of COPD-related exacerbation compared with tiotropium patients (hazard ratio 0.78, 95% CI=[0.70, 0.87], p<0.0001); median time to exacerbation was 352 days compared with 243 days for tiotropium patients. Fewer BFC patients had at least one exacerbation (50.7% vs. 59.3%). The rate of exacerbations during follow-up was lower for BFC patients (1.2 vs. 1.5; rate ratio=0.82, 95% CI=[0.73,0.91], p=0.0004), consistent across exacerbation components, including fewer COPD-related OCS/antibiotic fills (0.93 vs. 1.12, p=0.0038), COPD-related ED visits (0.19 vs. 0.25, p=0.0141), and a non-statistically significant reduction in COPD-related hospitalizations (0.11 vs. 0.13, p=0.1649).

Conclusions: COPD patients at risk for exacerbation initiating BFC had a 22% reduced risk of exacerbation and fewer exacerbations overall compared with propensity score matched patients initiating tiotropium. The reduced exacerbation rate is consistent across different measures of exacerbation severity.

Supported by AstraZeneca LP

Effect of continued treatment with pirfenidone following a clinically meaningful decline in percent predicted forced vital capacity in patients with idiopathic pulmonary fibrosis (IPF)

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Introduction: Clinical assessment of therapeutic response in IPF is confounded by variability in the rates of disease progression. We pooled data from three Phase 3 trials to assess the potential benefit of continued treatment with pirfenidone in patients who experienced a ≥10% decline in percent predicted forced vital capacity (%FVC) during the first 6 months of treatment.

Methods: Source data included all patients randomized to treatment with pirfenidone 2403 mg/d or placebo in the Phase 3 ASCEND or CAPACITY studies (N=1247). We selected patients with a ≥10% absolute decline in %FVC by the month 3 or 6 study visit and compared the proportion of patients in the pirfenidone and placebo groups who experienced any of the following during the subsequent 6-month interval: (1) ≥10% absolute decline in %FVC or death; (2) no further decline in %FVC; or (3) death.

Results: 34 (5.5%) and 68 (10.9%) patients in the pooled pirfenidone and placebo groups, respectively, experienced a ≥10% absolute decline in %FVC between baseline and month 6 (relative difference, 49.5%). During the subsequent 6-month interval, fewer patients in the pirfenidone group compared with placebo experienced a ≥10% decline in %FVC or death (2/34 [5.9%] vs 19/68 [27.9%]). More patients in the pirfenidone group compared with placebo had no further decline in %FVC (20/34 [58.8%] vs 26/68 [38.2%]). Additionally, there were fewer deaths in the pirfenidone group (1/34 [2.9%]) compared with placebo (14/68 [20.6%]).

Conclusions: These findings suggest a potential benefit to continued treatment with pirfenidone despite an initial decline in FVC.

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