

ABSTRACTS

Positive sputum smear results after two consecutive negative smears during treatment of pulmonary tuberculosis.

Ichiki H, Watanabe A, Ueda S, Sato C, Abe M.

Kekkaku. 2012 Aug; 87(8): 537-40.

OBJECTIVES: During treatment of pulmonary tuberculosis, sputum smear may turn positive after 2 consecutive negative results. In the present study, we analyzed the infectivity in such cases.

SUBJECTS AND METHODS: The study involved 201 patients with sputum smear positive pulmonary tuberculosis who were admitted to our hospital between January 2004 and June 2009. Chart review was performed on the bacterial culture results and clinical course of patients in whom the sputum smear test turned to positive after 2 consecutive negative smears.

RESULTS: There were 37 such cases (42 events). The event occurred after the treatment of 2 weeks or longer and less than 1 month in 6 cases (7 events). The culture examination of the smear-positive sputum was negative in only 1 of these cases. There were 9 cases who turned smear positive after the treatment period of 1 month or longer and less than 2 months, and 6 of these cases showed negative results in the bacterial culture of the smear positive sputum. In these cases, the grade of smear positivity was generally low and subsequent tests yielded negative results. There were 22 cases (26 events) in which this phenomenon was observed after treatment for 2 months or longer. Subsequent bacterial culture yielded negative results in all but 1 of these cases.

DISCUSSION AND CONCLUSION: In patients whose sputum smears gave positive results after 2 consecutive negative smear tests, the bacterial load of the sputum decreased or disappeared after treatment for 1 month or longer, and bacterial discharge was almost completely absent after treatment for 2 months or longer. If the clinical condition is favorable in such cases, we may judge that they are no longer infection.

Airway responses and inflammation in subjects with asthma after four days of repeated high-single-dose allergen challenge.

Schulze J, Voss S, Zissler U, Rose MA, Zielen S, Schubert R.

Respir Res. 2012; 13: 78.

OBJECTIVES: Background: Both standard and low-dose allergen provocations are an established tool in asthma research to improve our understanding of the pathophysiological mechanism of allergic asthma. However, clinical symptoms are less likely to be induced. Therefore, we designed a protocol for repetitive high-dose bronchial allergen challenges to generate clinical symptoms and airway inflammation.

METHODS: A total of 27 patients aged 18 to 40 years with positive skin-prick tests and mild asthma underwent repetitive high-dose allergen challenges with household dust mites for four consecutive days. Pulmonary function and exhaled NO (eNO) were measured at every visit. Induced sputum was analyzed before and after the allergen challenges for cell counts, ECP, IL-5, INF- γ , IL-8, and the transcription factor Foxp3.

RESULTS: We found a significant decrease in pulmonary function, an increased use of salbutamol and the development of a late asthmatic response and bronchial hyperresponsiveness, as well as a significant induction of eNO, eosinophils, and Th-2 cytokines. Repeated provocation was feasible in the majority of patients. Two subjects had severe adverse events requiring prednisolone to cope with nocturnal asthma symptoms.

CONCLUSIONS: Repeated high-dose bronchial allergen challenges resulted in severe asthma symptoms and marked Th-2-mediated allergic airway inflammation. The high-dose challenge model is suitable only in an attenuated form in diseased volunteers for proof-of-concept studies and in clinical settings to reduce the risk of severe asthma exacerbations.

Comparison of physician-, biomarker-, and symptom-based strategies for adjustment of inhaled corticosteroid therapy in adults with asthma: the BASALT randomized controlled trial.

Calhoun WJ, Ameredes BT, King TS, Icitovic N, Bleecker ER, Castro M, et al
JAMA. 2012; 308(10): 987-97

CONTEXT: No consensus exists for adjusting inhaled corticosteroid therapy in patients with asthma. Approaches include adjustment at outpatient visits guided by physician assessment of asthma control (symptoms, rescue therapy, pulmonary function), based on exhaled nitric oxide, or on a day-to-day basis guided by symptoms.

OBJECTIVE: To determine if adjustment of inhaled corticosteroid therapy based on exhaled nitric oxide or day-to-day symptoms is superior to guideline-informed, physician assessment-based adjustment in preventing treatment failure in adults with mild to moderate asthma.

DESIGN, SETTING, AND PARTICIPANTS: A randomized, parallel, 3-group, placebo-controlled, multiply-blinded trial of 342 adults with mild to moderate asthma controlled by low-dose inhaled corticosteroid therapy (n = 114 assigned to physician assessment-based adjustment [101 completed], n = 115 to biomarker-based [exhaled nitric oxide] adjustment [92 completed], and n = 113 to symptom-based adjustment [97 completed]), the Best Adjustment Strategy for Asthma in the Long Term (BASALT) trial was conducted by the Asthma Clinical Research Network at 10 academic medical centers in the United States for 9 months between June 2007 and July 2010.

INTERVENTIONS: For physician assessment-based adjustment and biomarker-based (exhaled nitric oxide) adjustment, the dose of inhaled corticosteroids was adjusted every 6 weeks; for symptom-based adjustment, inhaled corticosteroids were taken with each albuterol rescue use.

MAIN OUTCOME MEASURE: The primary outcome was time to treatment failure.

RESULTS: There were no significant differences in time to treatment failure. The 9-month Kaplan-Meier failure rates were 22% (97.5% CI, 14%-33%; 24 events) for physician assessment-based adjustment, 20% (97.5% CI, 13%-30%; 21 events) for biomarker-based adjustment, and 15% (97.5% CI, 9%-25%; 16 events) for symptom-based adjustment. The hazard ratio for physician assessment-based adjustment vs biomarker-based adjustment was 1.2 (97.5% CI, 0.6-2.3). The hazard ratio for physician assessment-based adjustment vs symptom-based adjustment was 1.6 (97.5% CI, 0.8-3.3).

CONCLUSION: Among adults with mild to moderate persistent asthma controlled with low-dose inhaled corticosteroid therapy, the use of either biomarker-based or symptom-based adjustment of inhaled corticosteroids was not superior to physician assessment-based adjustment of inhaled corticosteroids in time to treatment failure.

The epidemiological features of blast injury of lungs caused by gas explosion.

Zhang Y, Meng WZ, Wang MJ, Ren WJ, Wang GZ, Zhang GB, Zhu MS.
Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi. 2012; 30(8): 582-3.

OBJECTIVE: To investigate the clinical epidemiological features of blast injury of lungs caused by gas explosion.

METHODS: A retrospective analysis of 132 cases of blast injury of lungs caused by gas explosion injuries in our hospital from 1990 to 2010 were made, including the information of lung injury, associated injuries, treatment and mortality.

RESULTS: 56 patients were conscious on admission, during 1 _ 5 days, 30 patients got cough, hemoptysis and other pulmonary symptoms, 7 patients had hemothorax, 11 cases combined with pneumothorax, 86 cases of patients with burns, 96 cases with pulmonary aspiration compound injury, 41 cases with abdominal organs blast injuries, 76 cases with pulmonary infection, 31 cases with shock, Seven patients died of respiratory failure, two patients died of respiratory failure.

CONCLUSION: Blast injury of lung featured with serious internal injuries, combined with many injuries. The incidence of compound injury was high, and it was difficult to diagnose. Chest X-ray was varied. The mortality was high, and the predominant causes of death were respiratory failure, shock, and sepsis. Most patients with blast injury of lung need tracheotomy and mechanical ventilation. Timely tracheotomy, mechanical ventilation were the major prognostic measures.

Development of posttraumatic empyema in patients with retained hemothorax: Results of a prospective, observational AAST study.

Dubose J, Inaba K, Okoye O, Demetriades D, Scalea T, O'Connor J; the AAST Retained Hemothorax Study Group. *J Trauma Acute Care Surg.* 2012 Sep; 73(3): 752-757.

BACKGROUND: The natural history of retained hemothorax (RH), in particular factors contributing to the subsequent development of empyema, is not well known. The intent of our study was to establish the modern incidence of empyema among patients with trauma and RH and identify the independent predictors for development of this complication.

METHODS: An American Association for the Surgery of Trauma multicenter prospective observational trial was conducted, enrolling patients with placement of a thoracostomy tube within 24 hours of trauma admission, and subsequent development of RH was confirmed on computed tomography of the chest. Demographics, interventions, and outcomes were analyzed. Logistic regression analysis was used to identify the independent predictors for the development of empyema.

RESULTS: Among 328 patients with posttraumatic RH from the 20 participating centers, overall incidence of empyema was 26.8% (n = 88). On regression analysis, the presence of rib fractures (adjusted odds ratio [OR], 2.3; 95% confidence interval [CI], 1.3-4.1; p = 0.006), Injury Severity Score of 25 or higher (adjusted OR, 2.4; 95% CI, 1.3-4.4; p = 0.005), and the need for any additional therapeutic intervention (adjusted OR, 28.8; 95% CI, 6.6-125.5; p < 0.001) were found to be independent predictors for the development of empyema for patients with posttraumatic RH. Patients with empyema also had a significantly longer adjusted intensive care unit stay (adjusted mean difference, 4.1; 95% CI, 1.3-6.9; p = 0.008) and hospital stay (adjusted mean difference, -7.9; 95% CI, -12.7 to -3.2; p = 0.01).

CONCLUSION: Among patients with trauma and posttraumatic RH, the incidence of empyema was 26.8%. Independent predictors of empyema development after posttraumatic RH included the presence of rib fractures, Injury Severity Score of 25 or higher, and the need for additional interventions to evacuate retained blood from the thorax. Our findings highlight the need to minimize the risk associated with subsequent thoracic procedures among patients with critical illness and RH, through selection of the most optimal procedure for initial evacuation.

LEVEL OF EVIDENCE: Prognostic study, level III.

Effect of Inhaled Glucocorticoids in Childhood on Adult Height

CH. William Kelly, Alice L. Sternberg, Rachel L. M. Fuhlbrigge AL, Williams P, Zeiger RS al. for the CAMP Research Group *N Engl J Med* 2012; 367: 904-912

BACKGROUND: The use of inhaled glucocorticoids for persistent asthma causes a temporary reduction in growth velocity in prepubertal children. The resulting decrease in attained height 1 to 4 years after the initiation of inhaled glucocorticoids is thought not to decrease attained adult height.

METHODS: We measured adult height in 943 of 1041 participants (90.6%) in the Childhood Asthma Management Program; adult height was determined at a mean (\pm SD) age of 24.9 \pm 2.7 years. Starting at the age of 5 to 13 years, the participants had been randomly assigned to receive 400 μ g of budesonide, 16 mg of nedocromil, or placebo daily for 4 to 6 years. We calculated differences in adult height for each active treatment group, as compared with placebo, using multiple linear regression with adjustment for demographic characteristics, asthma features, and height at trial entry.

RESULTS: Mean adult height was 1.2 cm lower (95% confidence interval [CI], -1.9 to -0.5) in the budesonide group than in the placebo group (P=0.001) and was 0.2 cm lower (95% CI, -0.9 to 0.5) in the nedocromil group than in the placebo group (P=0.61). A larger daily dose of inhaled glucocorticoid in the first 2 years was associated with a lower adult height (-0.1 cm for each microgram per kilogram of body weight) (P=0.007). The reduction in adult height in the budesonide group as compared with the placebo group was similar to that seen after 2 years of treatment (-1.3 cm; 95% CI, -1.7 to -0.9). During the first 2 years, decreased growth velocity in the budesonide group occurred primarily in prepubertal participants.

CONCLUSIONS: The initial decrease in attained height associated with the use of inhaled glucocorticoids in prepubertal children persisted as a reduction in adult height, although the decrease was not progressive or cumulative.

Pulmonary Arterial Enlargement and Acute Exacerbations of COPD

Michael JW, Washko GR, Han MK, Abbas N, Nath H, Mamary AJ, et al. for the COPDGene and ECLIPSE Study Investigators

N Engl J Med 2012; 367:913-921

BACKGROUND: Exacerbations of chronic obstructive pulmonary disease (COPD) are associated with accelerated loss of lung function and death. Identification of patients at risk for these events, particularly those requiring hospitalization, is of major importance. Severe pulmonary hypertension is an important complication of advanced COPD and predicts acute exacerbations, though pulmonary vascular abnormalities also occur early in the course of the disease. We hypothesized that a computed tomographic (CT) metric of pulmonary vascular disease (pulmonary artery enlargement, as determined by a ratio of the diameter of the pulmonary artery to the diameter of the aorta [PA: A ratio] of >1) would be associated with severe COPD exacerbations.

METHODS: We conducted a multicenter, observational trial that enrolled current and former smokers with COPD. We determined the association between a PA: A ratio of more than 1 and a history at enrollment of severe exacerbations requiring hospitalization and then examined the usefulness of the ratio as a predictor of these events in a longitudinal follow-up of this cohort, as well as in an external validation cohort. We used logistic-regression and zero-inflated negative binomial regression analyses and adjusted for known risk factors for exacerbation.

RESULTS: Multivariate logistic-regression analysis showed a significant association between a PA: A ratio of more than 1 and a history of severe exacerbations at the time of enrollment in the trial (odds ratio, 4.78; 95% confidence interval [CI], 3.43 to 6.65; $P < 0.001$). A PA: A ratio of more than 1 was also independently associated with an increased risk of future severe exacerbations in both the trial cohort (odds ratio, 3.44; 95% CI, 2.78 to 4.25; $P < 0.001$) and the external validation cohort (odds ratio, 2.80; 95% CI, 2.11 to 3.71; $P < 0.001$). In both cohorts, among all the variables analyzed, a PA: A ratio of more than 1 had the strongest association with severe exacerbations.

CONCLUSIONS: Pulmonary artery enlargement (a PA: A ratio of >1), as detected by CT, was associated with severe exacerbations of COPD.

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