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4th International Workshop on Lung Health Poster Winners

For the 4th International Workshop on Lung Health, a call for Posters was launched in May 2016. The 36 abstracts received were evaluated by the Committee for their consistency with the congress topics and the scientific value.

The accepted posters had a dedicated strolling session during the congress where the presenters had the chance to illustrate their work to the chairmen. At the end of the session the chairmen chose, among the posters presented, the best three works—the abstracts of which are given hereafter.

The winners have received a cash prize, free registration for the next congress and good visibility both through the website of the congress and the congress newsletter. The poster prizes were made possible thanks to a grants by Teva Europe.

In April/May 2017, the call for Abstracts will be open for the 5th International Workshop on Lung Health to be held in Berlin, January 18–20, 2018.

The Study of Correlation between Bronchial and Alveolar NO Level and Clinical and Biological Characteristics of Children with Asthma

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Introduction: Asthma is a common disease with various phenotypes, characterized predominantly by chronic inflammation. Exhaled nitric oxide (NO) is currently used as a biomarker of airway inflammation in patients with asthma. However, the role of bronchial and alveolar NO (FENO and CANO) measurement in asthma phenotype has not been clearly demonstrated. *Objectives:* To study the concentrations of FENO and CANO in Vietnamese children with asthma and their correlation with clinical, functional, and biological characteristics in these patients. *Methods:* It was a prospective and descriptive study. One hundred and fifty-five children with asthma and 30 healthy control subjects were included. FENO, CANO, spirometry, blood eosinophil counts, and IgE quantifying were done for each study subject. *Results:* The mean age of asthmatic children was 10 (6–15) years, with 65.3% of male. The concentration of FENO in children with asthma was 21 (1–113) ppb vs 8 (3–24) ppb in healthy controls ($p < 0.05$). The concentration of CANO in asthmatic children was 5.4 (1.0–37.1) ppb vs 2.8 (1.0–10.9) ppb in healthy subjects ($p < 0.05$). In asthmatic children with naive corticosteroid therapy, the concentrations of FENO in patients with mild severe asthma were significantly higher than who with severe asthma ($p < 0.05$). Among 44 asthma children with daily treatment, there were no significant differences of FENO and CANO between different level of asthma control groups ($p > 0.05$). There were weak correlations between FENO and FEV1 in atopic patients. In asthmatic children with corticosteroid treatment, there were no significant correlations between exhaled NO (FENO and CANO), atopy status, age of asthma onset, number of acute asthma exacerbations, level of asthma control, lung functional parameters (FEV1, FEV1/FVC, FEF25-75, and PEFR), blood eosinophil counts, and IgE levels. *Conclusion:* Exhaled NO (FENO and CANO) measuring is useful for characterizing asthma phenotypes in children over 5 years old.

Asthma Control and Medication Use during Pregnancy, is a Specialized Asthma & Pregnancy Outpatient Clinic of Added Value?

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Background/aims: Asthma is the most common chronic disease in pregnancy. Uncontrolled asthma is associated with adverse perinatal outcomes, as preterm birth and low birth weight, and increased maternal complications, as pre-eclampsia. Therefore, asthma during pregnancy needs active management. Pregnant patients with unstable asthma could benefit by outpatient consultation of a specialized multidisciplinary team. This study aims to evaluate the asthma management by our Asthma & Pregnancy outpatient

clinic. *Methods:* This retrospective cohort consists of all pregnant women referred to the Asthma & Pregnancy outpatient clinic (Haga Teaching Hospital, The Netherlands) from 2014 until 2016. At first consultation spirometric testing with reversibility, fractional exhaled nitric oxide (FeNO) measurement, asthma control questionnaire (ACQ), blood eosinophils and allergy testing were performed. Depending on asthma symptoms, medication was intensified. Education was given about medication and the importance of asthma control. Inhalation technique was observed by a pulmonary care nurse. *Results:* 56 pregnant women were referred at a mean gestational age of 20 weeks. At first consultation mean FEV1 was 94% predicted and mean ACQ was 2.1. In 84% of patients FeNO was measured (mean 24.9 ppb, range 5-158) and in 53% of patients blood eosinophils (mean 0,25*109/L, range 0-1,8). In 86% of patients there was at least one change in inhalation medication, see figure 1. In 9 patients 11 acute exacerbations occurred, 6 required hospitalization. *Conclusions:* This study confirms that pregnant women with asthma are at risk for uncontrolled asthma and acute exacerbations and often need changes in medication. Mean ACQ at first consultation was high and for 86% of the patients intensification of asthma medication was indicated. Patients were referred late in their pregnancy. In The Netherlands there are only 2 specialized "Asthma & Pregnancy" outpatient departments. We think these patients could benefit by early referral to specialized care with strict monitoring and thereby optimize asthma management during pregnancy.

Plasmacytoid Dendritic Cells Drive Acute Exacerbations of Asthma

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Background: Although acute exacerbations, mostly triggered by rhinoviruses (RVs), account for the majority of hospitalizations and life-threatening situations in asthma, there is still very little known about the pathophysiological mechanisms involved. *Objective:* We sought to investigate the role of plasmacytoid DCs (pDCs) in asthma exacerbations and unwind potential mechanisms involved. *Methods:* Patients with asthma under stable disease or acute exacerbations, and healthy individuals, were studied for pDC presence in their sputum and their association with various leukocytic populations, cytokines and disease parameters. Animal models of asthma and virus-induced asthma exacerbations were further used to dissect the functional role of pDCs in the disease process. *Results:* pDCs were markedly increased in the sputum of patients with stable asthma and acute exacerbations. Moreover, increasing pDC numbers were directly linked to the severity of type 2 inflammation, deterioration of lung function and risk for asthmatic attacks. In animal models of allergic asthma and RV-induced exacerbations, pDCs were shown to be key mediators of the immuno-inflammatory response driving asthma; they were recruited to the lung during inflammation and migrated to the lymph nodes to boost Th2-mediated effector responses. Accordingly, pDC depletion post-allergen challenge or during RV infection abrogated disease exacerbation. Central to this was interleukin 25 (IL-25) which conditioned pDCs for pro-inflammatory activation and migration. *Conclusions:* Our studies uncover a previously unsuspected role of pDCs in asthma exacerbations with major implications in disease diagnosis, prognosis and monitoring. They also propose the therapeutic targeting of pDCs and IL-25 for the treatment of asthma attacks.