

# European Respiratory Society Annual Congress 2013

Abstract Number: 7149

Publication Number: P3550

**Abstract Group:** 5.2. Monitoring Airway Disease

**Keyword 1:** Nitric oxide **Keyword 2:** Asthma - management **Keyword 3:** Airway management

**Title:** Interaction between airway calibre and exhaled NO: The allergen challenge model

Dr. Amaryllis 953 Haccuria haccuria@skynet.be MD <sup>1,2</sup>, Mr. Sébastien 954 Michiels sebastien.michiels@ulb.ac.be <sup>1</sup>, Prof. Alain 955 Michils alain.michils@erasme.ulb.ac.be MD <sup>1</sup> and Prof. Alain 956 Van Muylem avmuylem@ulb.ac.be MD <sup>1</sup>. <sup>1</sup> Pneumology Department, Erasme University Hospital, Université Libre de Bruxelles, Brussels, Belgium, B1070 and <sup>2</sup> Pneumology Department, Centre Hospitalier Régional de Namur, Namur, Belgium, B5000 .

**Body:** Background : High fractionated exhaled nitric oxide (FENO) detected in asthma patients reflects increased airway inflammation. However, FENO may be affected by airway calibre reduction, thus introducing a bias in FENO use for asthma control. Aim: to assess the impact on FENO of changes in both airway calibre and inflammation using the allergen challenge model. Methods: FEV<sub>1</sub> (forced expired volume in one second) and FENO were measured during early (EAR) and late (LAR) responses to a house dust mite challenge in 15 mild allergic asthmatics. Ventilation distribution using single breath washout test with inert gases (He and SF<sub>6</sub>) was also performed to identify the sites of airway constriction, since different constriction sites result in different FENO reductions. Results: In EAR, mean FEV<sub>1</sub> fall was 36.8%, FENO decreased by 22% (p=0.002) and SHe was greater than ΔSSF<sub>6</sub> (+189.4% and +82.2%, p=0.001). In LAR, for a FEV<sub>1</sub> fall of 31.7%, FENO decreased by 28.7% (p=0.002) with the same ΔSHe, ΔSSF<sub>6</sub> pattern (+155.8% vs +76%, p=0.001). 8 hours after EAR, whereas FEV<sub>1</sub> was still lowered (p<0.001) FENO returned to baseline (p=0.085). At 24 hours, when FEV<sub>1</sub> returned to baseline, FENO increased by 38.7% (p=0.04). Conclusion: In mild allergic asthma, changes in airway calibre significantly modulate changes in FENO levels resulting from concomitant changes in airway inflammation. Therefore, correct interpretation of FENO changes in asthma patients may require integration of changes in airway calibre occurring concomitantly. Airway constriction and inflammatory processes after allergen exposure seem to involve similar regions of the bronchial tree, mainly the conductive airways.