S-RM-6

Pseudomonas Aeruginosa Infection is Associated with Reduced Exhaled Nitric Oxide (NO) in Stable Bronchiectasia

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Exhaled NO production is raised in diseases with airway inflammation including asthma and COPD although the levels in bronchiectasis, which has intensive airway inflammation, is controversial. We have, therefore, determined exhaled and sputum NO levels in 109 stable bronchiectasis patients and 78 control subjects (71F, 58.2± 14.1; 39F, 56.7± 12.1 yrs respectively) by using a chemiluminescence analyzer. There was no significant difference in exhaled NO between bronchiectasis and control subjects (28.6± 16.6 and 26.8± 26.9 ppb; p=0.11). Bronchiectasis patients with *Pseudomonas aeruginosa* (PA) infection had a significantly lower exhaled (20.8± 10.9 and 28.4± 29.5 ppb; p=0.04), but not sputum (951.5± 834.4 and 1151.7± 1526.2 ppb; p=0.009) NO levels than their counterparts and controls Exhaled NO correlated with 24h sputum volume among PA-infected patients (r=-0.36, p=0.002). After adjustment for sputum volume and number of bronchiectatic lung lobes, PA-infected patients still had a lower exhaled NO levels than their counterparts (p=0.01). There was no correlation between exhaled NO with FEV_1, FVC and number of bronchiectatic lung lobes (p>0.05). Sputum NO levels were not different between patients and controls (p=0.64), and had no correlation with clinical parameters. Exhaled NO appears to be reduced among bronchiectasis patients with PA infection independent of other clinical parameters. The underlying mechanism for reduced exhaled NO production in PA infection should be further evaluated.

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S-RM-7

Downregulation of Endothelin (ET)-1 and Interleukin (IL)-8 Expression in Human Respiratory Mucosa by *Pseudomonas Aeruginosa* Pyocyanin (pyo) and 1-Hydroxy-phenazine (HP)

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Pseudomonas aeruginosa (PA) infection accounts for chronic infection of the lungs in 1/3 of bronchiectasis patients in Hong Kong. PA infection of the airways of patients with cystic fibrosis and bronchiectasis is associated with significant morbidity, and is virtually impossible to eradicate. Although there is undisputed severe inflammation in the airways of these patients, the pathogenetic role of PA toxins, such as PYO and 1HP, in airway inflammation has not been investigated. We have, therefore, incubated human respiratory epithelial suspension, obtained from brushing the inferior turbinate of healthy volunteers, in FAD medium containing either saline (control) or toxin (PYO or 1HP 20μg/ml) overnight at 37°C and 5% CO_2. The cell-free supernatants of control, PYO and 1HP treated FAD medium was obtained and underwent ELISA assessment for levels of ET-1 and IL-8. There was significantly higher ET-1 (8.6± 9.54, 13.0± 8.3, n=18, p=0.006) and IL-8 (3839.5± 4394.9, 4477.1± 5113.9, n=12, p=0.03) levels in the FAD medium obtained from PYO-treated cells, compared with control. 1HP-treated cell supernatants had a significantly lower IL-8 (467.7± 207.7, 657.8± 146.3, n=16, p=0.002) but not ET-1 (11.8± 8.5, 21.3± 17.0, n=14, p=0.10) levels when compared with controls. We conclude that PA products could downregulate key cytokine expression in respiratory mucosa and this could reflect an underlying active inflammation in bronchiectasis and cystic fibrosis independent of PA infection. PA infection could, via this mechanism, lead to less host inflammation and therefore less intense host-bacterial antagonism contributing to its success in chronic colonisation of the bronchiectatic airways.

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