IMPROVEMENT IN ALVEOLAR NO AND BRONCHIAL NO FLUX FOLLOWING 3 MONTHS OF TREATMENT WITH BELCOMETHASONE DIPROPIONATE

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Exhaled nitric oxide (eNO) is a non-invasive marker of airway inflammation in asthma. Alveolar NO and bronchial NO flux calculated from eNO sampled at 5,12 and 20L/min may represent inflammation from alveolar or bronchial lung zones, respectively. We compared measurements in 15 controls, 15 well-controlled and 27 sub-optimally controlled asthmatics, and examined changes monthly during 3 months treatment with inhaled beclomethasone in 9 subjects from the latter group.
RESULTS: Geometric mean (95%CI) baseline alveolar NO was 4.9ppb (4.3-5.5) in the controls, 6ppb (4.4-8.4) in the well controlled asthmatics and was significantly higher than controls in the sub-optimally controlled asthmatics 7ppb (5.6-8.6), p=0.02. Alveolar NO decreased from 8.2ppb (5.6-11.8) to 2.9ppb (1.9-4.4) post treatment (p= 0.002). Geometric mean baseline bronchial NO flux was $0.9nL \cdot s^{-1}$ (0.6-1.2) in the controls, $0.9nL \cdot s^{-1}$ (0.5-1.7) in the well controlled asthmatics and was significantly higher than controls in the sub-optimally controlled asthmatics $1.7nL \cdot s^{-1}$ (1.2-2.5), p=0.02. Bronchial NO flux decreased from $1.2nL \cdot s^{-1}$ (0.7-2.1) to $0.7nL \cdot s^{-1}$ (0.5-1.1) after treatment (p=0.03). Alveolar NO decreased (p=0.02) post 2 months of treatment, but bronchial NO flux did not decrease significantly until after 3 months treatment.
CONCLUSION: Baseline alveolar NO and bronchial NO flux are elevated in sub-optimally controlled asthma, and are responsive to steroid treatment with alveolar NO improving faster than bronchial NO flux. Such measurements may be useful for monitoring asthma treatment though further mechanistic and prospective studies are required.
Key words: Exhaled nitric oxide, asthma, alveolar NO, bronchial NO flux
Nomination for Award: Nil