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**Title:** Corticosteroid treatment selectively decreases mast cells in the smooth muscle and epithelium of asthmatic bronchi

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**Body:** Background Mast cells are important in the pathophysiology of airway inflammation and evidence suggests their sub-localisation within the airway is altered in asthma. However, little is known about the effect of corticosteroids on mast cell localisation within the bronchi. Aims and Methods We aimed to examine mast cells numbers within the smooth muscle, epithelium and submucosa in bronchial biopsies of healthy subjects (n=10) and well-characterised asthmatic patients, using either b<sub>2</sub>-agonists alone (n=10) or b<sub>2</sub>-agonists and inhaled corticosteroids (n=10). Immunohistochemical analysis of tryptase positive mast cells was performed.

Results Patients using inhaled corticosteroids (asthma+ICS) displayed significantly lower numbers of mast cells within their smooth muscle (fig 1A) and epithelium (fig 1B) compared to those not treated with inhaled corticosteroids (asthma). Submucosal mast cells were not affected by corticosteroid treatment. Numbers of smooth muscle mast cells correlated with bronchial responsiveness (rho -0.6, p=0.008) and epithelial mast cells with exhaled NO (rho 0.8, p<0.001). Conclusions We demonstrate that glucocorticosteroids differentially affect mast cell numbers within specific airway sub-locations highlighting the importance of mast cell and smooth muscle/epithelial interactions in asthma pathogenesis.