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Title: Induced sputum in children With persistent asthma: The effect to inhaled corticosteroid treatment

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Body: Aim: There are only a few studies on the effects of anti-inflammatory treatment on airway inflammation in childhood asthma. Methods: A total of 139 children 5–18 yrs of age ($10,9 \pm 3,09$ yrs) were studied. All had to have a history of asthma symptoms (cough, wheeze or decreased tolerance to exercise), during the preceding month at least. A physical examination was performed, and the children and parents were interviewed about allergic symptoms, history of the disease and the treatment. Flow-volume spirometry, blood samples for eosinophils, induced sputum and skin-pricktests were performed. Results: At presentation with acute asthma, sputum total cell counts were high: $0,88 \pm 0,46 \times 10^6/\text{ml}$ for intermittent asthma, $0,85 \pm 0,33 \times 10^6/\text{ml}$ for mild-moderate asthma, and $0,98 \pm 0,51 \times 10^6/\text{ml}$ for severe asthma. This was not significantly correlated with the disease severity. Eosinophil counts were higher in severe asthma patients ($45,46 \pm 10,37\%$) than with intermittent asthma patients ($3,09 \pm 1,61\%$) ($p < 0,01$) and with mild-moderate persistent asthma ($13,24 \pm 7,13\%$) ($p < 0,001$). There is a moderate relationship between the severity of asthma as defined by lung function, airway responsiveness or symptoms and the sputum eosinophil count. The severity of airflow obstruction (FEV1 and PEF) was moderate significantly correlated with the intensity of the eosinophil infiltrate ($r = -0,47$, respectively $r = -0,46$). After 2 and 6 months of inhaled corticosteroids treatment, children had significantly fewer exacerbations, FEV1 and PEF had improved, number of sputum eosinophils decreased. Conclusion: Treatment with inhaled corticosteroids decreases sputum eosinophils along with clinical and functional improvement.