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Title: Does eosinophil cationic protein (ECP) predict asthma outcome and response to treatment in asthmatic patients?

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Body: In order to test whether sputum Eosinophil Cationic Protein (ECP) predicts asthma outcome and response to treatment, we studied 119 mild/moderate, steroid-naive asthmatic patients. All patients underwent spirometry, methacholine test, induced sputum analysis before and after treatment, and recorded symptom score and rescue beta2-agonist use on a diary card throughout the study. In patients with high (≥75 mcg/L) sputum ECP, baseline FEV1 was lower (high-ECP: 85±17%; low-ECP: 96±14%, $p<0.01$). Sputum eosinophil percentages were higher in patients with high ECP (high-ECP: 16.3±17.1%; low-ECP: 6.1±8.3%, $p<0.01$), although the concordance between sputum eosinophils and ECP was poor ($r=0.52$, $p<0.01$). Patients were then treated with either inhaled corticosteroids (ICS, n=76) or long-acting beta2-agonist (LABA, n=43) for 3 to 6 months. In LABA-treated patients, symptom score and beta2-agonist rescue use improved regardless of baseline sputum ECP levels; after treatment, however, patients with high baseline ECP levels had greater rescue beta2-agonist use (high-ECP: 0.2±0.2; low-ECP: 0.02±0.03, $p<0.05$). In ICS-treated patients, PEF, symptom score, beta2-agonist rescue use and PD20FEV1 methacholine improved regardless of ECP levels; however, FEV1 significantly improved in ICS-treated patients with high ECP levels only, possibly because they had lower baseline FEV1 values. Thus, high sputum ECP levels may predict less asthma control, as shown by greater rescue beta2-agonist use, when treatment does not affect airway inflammation; on the other hand, high sputum ECP levels may predict the response to ICS treatment, possibly because they are associated with poorer baseline lung function.