

Is serum or sputum eosinophil cationic protein level adequate for diagnosis of mild asthma?

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Abstract

Spirometry has been used as a common diagnostic test in asthma. Most of the patients with a mild asthma have a FEV₁ within normal range. Hence, other diagnostic methods are usually used. The aim of this study was to evaluate whether eosinophil Cationic Protein (ECP) could be an accurate diagnostic marker of mild asthma. In this study diagnosis of asthma was made according to internationally accepted criteria. Asthma severity was evaluated according to frequency of symptoms and FEV₁. Adequate sputum samples were obtained in 20 untreated subjects. A control group of 12 normal subjects that showed PC₂₀ more than 8 mg/dl was also examined. Sputum was induced by inhalation of hypertonic saline. Inflammatory cells in sputum smears were assessed semi-quantitatively. ECP and IgE concentrations, eosinophil (EO) percentage and ECP/EO ratio in serum and sputum were also determined. The results revealed that Cough and dyspnea were the most frequent clinical findings. Dyspnea and wheezing were the symptoms that correlated with staging of asthma. FEV₁ was within normal range (more than 80% of predicted) in 22 (55%) subjects. Asthmatic patients showed significantly higher numbers of blood eosinophils ($4.0 \pm 3.1\%$ vs. $1.2 \pm 0.2\%$, $P=0.009$), and higher levels of serum ECP than control group ($3.1 \pm 2.6\%$ and 22.7 ± 10.8 ng/ml, respectively). Sputum ECP level in asthmatics was significantly higher than nonasthmatics (20.2 ± 29.8 ng/mL vs. 20.0 ± 24.7 ng/mL, $P=0.040$). Regression analysis showed no significant correlation between spirometric parameters and biomarkers, the only exception was significant correlation between FEF₇₅₋₉₀ and serum ECP ($r=0.28$, $P=0.041$). Regarding clinical symptoms, wheezing was significantly correlated with elevation of most of biomarkers. Since, serum and sputum ECP levels are elevated in untreated asthmatics, the ECP level could be used for accurate diagnosis of mild form of asthma in which spirometry is unremarkable. Copyright© 2009, Iranian Journal of Allergy, Asthma and Immunology. All rights reserved.

Reaxys Database Information

Author keywords

Asthma; Eosinophil cationic protein; Spirometry

Indexed Keywords

EMTREE drug terms: eosinophil cationic protein; immunoglobulin E

EMTREE medical terms: adolescent; adult; aged; article; asthma; child; clinical article; controlled study; coughing; diagnostic accuracy; disease severity; dyspnea; eosinophil count; female; forced expiratory volume; human; inflammatory cell; lead blood level; male; school child; spirometry; sputum analysis; sputum smear; wheezing

MeSH: Adolescent; Adult; Aged; Asthma; Child; Eosinophil Cationic Protein; Female; Forced Expiratory Volume; Humans; Male; Middle Aged; Sputum; Vital Capacity

Medline is the source for the MeSH terms of this document.

Chemicals and CAS Registry Numbers: immunoglobulin E, 37431-29-0; Eosinophil Cationic Protein, 3,1,27.-

ISSN: 17301002 **Source Type:** Journal **Original language:** English