

Biomarkers Of Severe Eosinophilic Asthma: The Role Of Induced Sputum Eosinophils, FeNO And Blood Eosinophils

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Background

In the past years, novel biological treatment options for severe asthma have emerged. In order to be able to offer these therapies to the suitable patients, it is mandatory to characterize these patient by detailed phenotyping. Several new agents are used in the treatment of severe eosinophilic asthma, which makes it important to demonstrate eosinophilic airway inflammation.

The purpose of this study was to evaluate if the standard blood sample eosinophilic granulocyte count corresponds to the measurement of the Fraction of exhaled Nitric Oxide (FeNO) and induced sputum eosinophils.

Method

We retrospectively evaluated blood eosinophils, FeNO and sputum eosinophils in 58 consecutive patients, where induced sputum was obtained. Results for these biomarkers were evaluated by dividing results in those in the normal range and increased values.

Relative risk ratios (RR) and odds ratio (OR) were then calculated.

Results

Correlations between FeNO and blood eosinophils and FeNO and sputum eosinophils were not statistically significant. Correlation between blood and sputum eosinophils was observed: RR of 2.45, $p = 0.01$ and OR 6.07, $p = 0.006$. Inversely there was still a 16% risk of having a positive sputum sample when the blood eosinophilic count was normal; this was the case in 7 of 45 patients. These individuals represent a group who would not be offered biological treatment for severe eosinophilic asthma, potentially beneficial to them.

Conclusion

Eosinophilic sputum count is an important biomarker in severe eosinophilic asthma and may identify patients suitable for biological treatment, who are not detected by measurement of blood eosinophils or FeNO.