

Eosinophil migration is enhanced towards IL-5 and eotaxin in COPD

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Introduction

Eosinophilic COPD is an important inflammatory phenotype, but the mechanism is unknown. In this study we examine the migration of eosinophils in different inflammatory COPD phenotypes towards IL-5 and eotaxin which was unelucidated.

Methods

Whole blood from 4 eosinophilic COPD patients, 4 non-eosinophilic COPD patients and 6 healthy controls was collected, with eosinophils isolated by ficoll-paque and dextran methods. Eosinophils were assessed for chemotactic ability. Briefly, eosinophils re-suspended at 1×10^5 cells/ml were placed on a $3\mu\text{m}$ pore membrane above solutions of IL-5 and eotaxin (50ng/ml and 10ng/ml respectively for one hour). Cells which passed through the membrane were treated with Cell-Titer-Glo solution to allow their detection by plate reader. Eosinophilic COPD was defined as patients with a peripheral blood eosinophil count of $> 2\%$ of white blood cells.

Results

Eosinophils from eosinophilic COPD patients showed significantly greater migration than both healthy controls towards IL-5 (median: 7021 cells, IQR: 6098-10013 v median: 2288 cells, IQR: 1389-2702, $p=0.0095$) and non-eosinophilic COPD patients, (median: 3219 cells, IQR: 2488-3785, $p=0.0286$). Eosinophils from eosinophilic and non-eosinophilic patients (median: 5363 cells, IQR: 4101-5420 and median: 3683, IQR: 3091-4179 respectively) showed significantly greater migration towards eotaxin than healthy controls (median: 2304, IQR: 1519-2723. $p=0.0238$, $p=0.038$ respectively) (Figure 1).

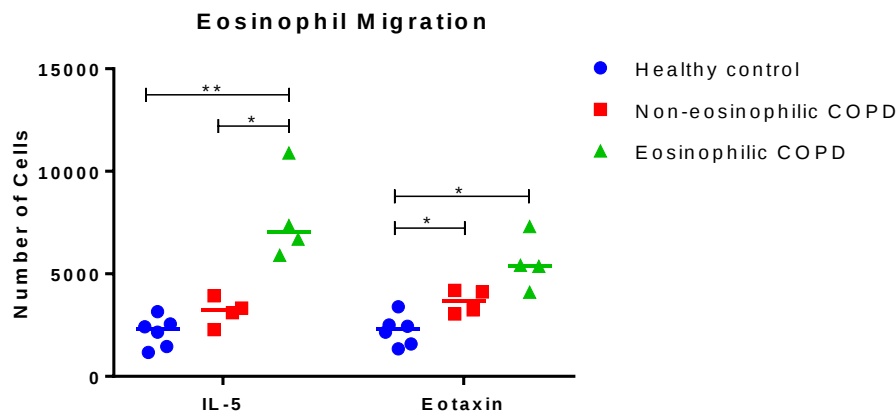


Figure 1: Eosinophil migration towards IL-5 and eotaxin

Conclusion

Eosinophils in COPD show enhanced migration towards IL-5 and eotaxin. Whether this is a mechanism underlying T2 high COPD requires further investigation.