

# Basophil Activation and serum IL-5 levels as possible monitor biomarkers in severe eosinophilic asthma patients treated with anti IL-5 drugs

Cristiano Caruso<sup>1</sup>, Stefania Colantuono<sup>1</sup>, Barbara Tolusso<sup>1</sup>, Clara Di Mario<sup>1</sup>, Antonella Pentassuglia<sup>2</sup>, Gabriele Rumi<sup>1</sup>, Elisa Gremese<sup>1</sup>, A Romano<sup>3</sup>, and Antonio Gasbarrini<sup>1</sup>

<sup>1</sup>University Hospital Agostino Gemelli

<sup>2</sup>Ospedale San Giovanni Battista SMOM

<sup>3</sup>OASI Maria SS IRCCS for Mental Retardation and Cerebral Involution

May 28, 2020

## Abstract

Background: Eosinophilic asthma (EA) is characterized by abnormal production and release of type 2 cytokines, such as interleukin-5 (IL-5), from T helper type 2 (Th2) lymphocytes and type 2 innate lymphoid cells (1). The aim of this study was to evaluate the usefulness of the basophil phenotype assessment and serum IL-5 assay in monitoring a series of severe EA patients treated with anti IL-5 drugs and correlate the results of these tests with baseline patients' characteristics and clinical response, with particular attention to systemic steroid use and asthma exacerbations. Methods: Blood samples of 19 severe asthma patients were collected at T3 and T6 for evaluation of serum levels of IL-5 and basophil phenotype assessment. Results: All patients experienced an improvement of lung function, with an increase of FEV1 from a mean value of 71.9 to 83.8% of the theoretical value (+12%). Oral corticosteroids were progressively reduced and finally stopped in 14 (73.7%) of the 19 patients after six months of follow-up. Patients who achieved a complete response to anti-IL5 treatment showed a rate of activated basophils CD3negCRTH2posCD203cpoCD125pos ( $4.78 \pm 2.26\%$ ) at T0 significantly lower than that of patients not achieving the complete response ( $34.57 \pm 14.01\%$ ,  $p=0.05$ ). Conclusions: This pilot study in EA patients shows that the determination of activated basophils, that express CD125 is related to anti IL5/IL5R $\alpha$  drug mechanism of action and subsequent immune response, proving to be a biomarker that identifies the patient's phenotype that responds to therapy and that requires the concomitant use of OCS.

## Hosted file

BAT-IL5\_21.05.20.docx available at <https://authorea.com/users/327405/articles/455000-basophil-activation-and-serum-il-5-levels-as-possible-monitor-biomarkers-in-severe-eosinophilic-asthma-patients-treated-with-anti-il-5-drugs>

## Hosted file

Figures.docx available at <https://authorea.com/users/327405/articles/455000-basophil-activation-and-serum-il-5-levels-as-possible-monitor-biomarkers-in-severe-eosinophilic-asthma-patients-treated-with-anti-il-5-drugs>

## Hosted file

Figures. supplementary.docx available at <https://authorea.com/users/327405/articles/455000-basophil-activation-and-serum-il-5-levels-as-possible-monitor-biomarkers-in-severe-eosinophilic-asthma-patients-treated-with-anti-il-5-drugs>