

INFLAMMATORY CYTOKINE LEVELS AND CHANGES DURING OMALIZUMAB TREATMENT IN CHRONIC SPONTANEOUS URTICARIA

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Abstract

Introduction: While several studies have examined the role of T cells and related cytokines in the development of chronic spontaneous urticaria (CSU), there is a limited amount of research focusing on the changes in cytokine levels during omalizumab treatment. The primary objective of this study was to investigate the inflammatory cytokine profile (including IL-4, IL-5, IL-10, IL-13, IL-17, IL-31, IL-33, and TNF α) among CSU patients undergoing to omalizumab treatment. **Materials and Methods:** Plasma levels of cytokines were measured using ELISA. Measurements were taken before CSU treatment, at the 3rd and 6th months of omalizumab treatment, and once in the control group. The severity of the patients' disease was assessed using the weekly Urticaria Activity Score(UAS7), and disease control was evaluated using the Urticaria Control Test(UCT). **Results:** Thirty-one CSU patients and 56 age- and gender-matched healthy controls were included. Plasma levels of IL-4 and IL-33 were significantly lower in patients with CSU compared to healthy controls ($p=0.001$; $p=0.038$, respectively). During omalizumab treatment, IL-4 levels showed a significant increase in the 3rd month compared to baseline ($p=0.01$), and IL-5 levels significantly decreased in the 6th month compared to both the 3rd month and baseline (6th month vs baseline; $p=0.006$, 6th month vs 3rd month; $p=0.001$). **Discussion:** One potential mechanism of action for omalizumab may involve its regulatory effects on type 2 inflammatory cytokines in CSU patients. This finding partially explains the efficacy of anti-IL-4/13 treatments in chronic spontaneous urticaria. Further investigations on drugs targeting type 2 inflammatory cytokines in CSU are warranted.

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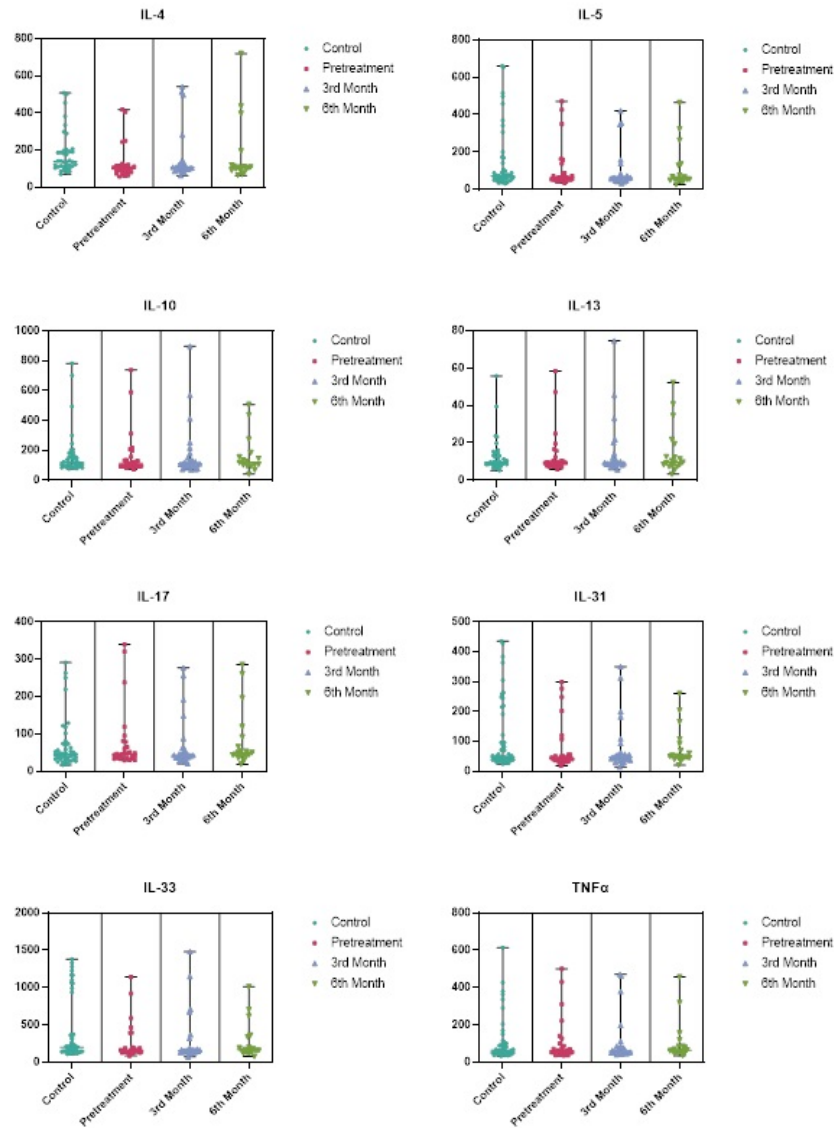


Figure 1. Distribution of cytokine levels in study groups.

*Pre-treatment IL-4 and IL-33 levels of CSU patients were significantly lower than the control group (P values <0,05).

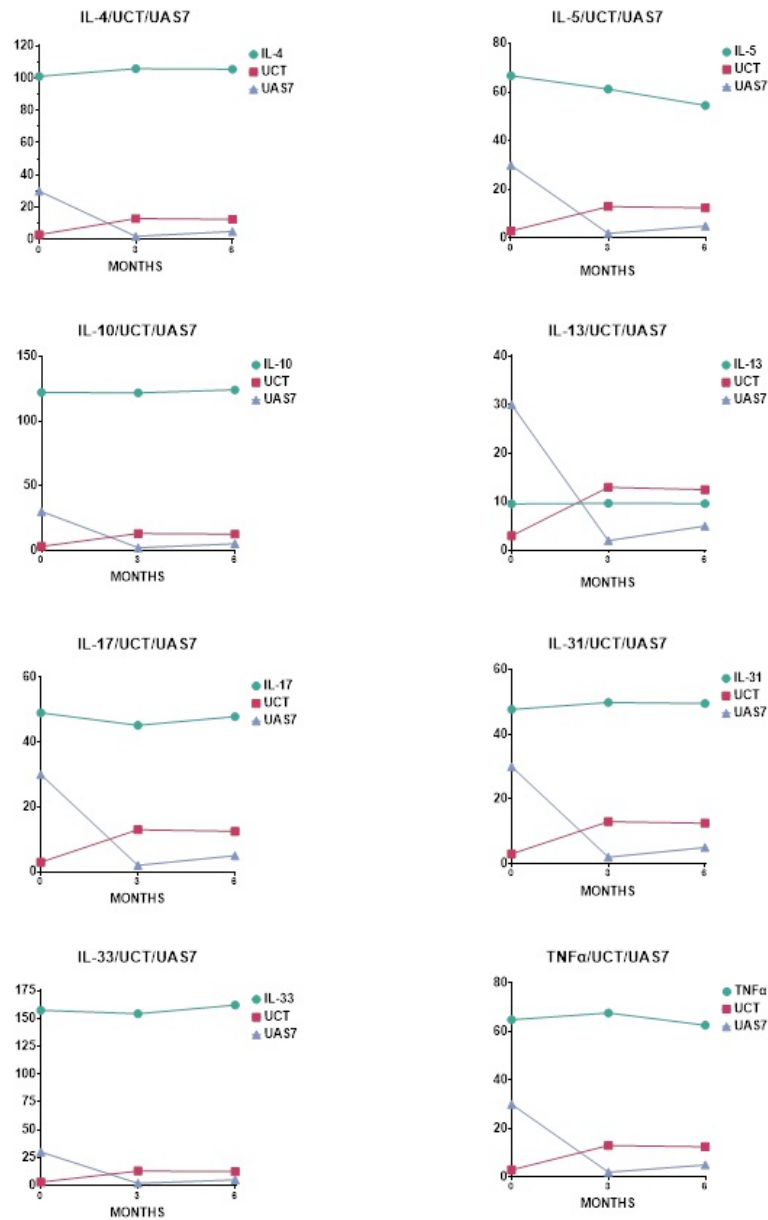


Figure 2. Changes observed in cytokine levels and clinical parameters.
*P value was <0.05 for IL-4 pretreatment vs 3rd month, IL-5 pretreatment vs 3rd month, IL-5 3rd month vs 6th month.

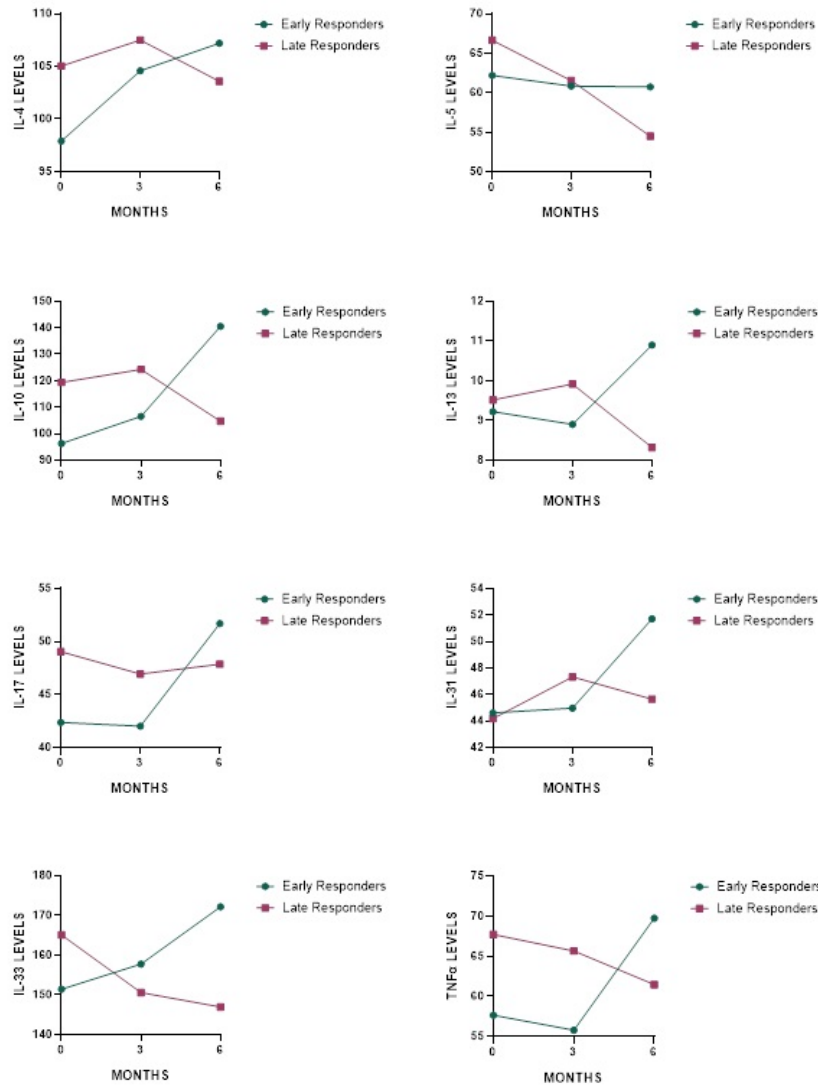


Figure 3. Changes in cytokine levels in early and late responders.
 *P values <0,05 for IL-4 pretreatment vs 3rd month in early responders, IL-5 3rd month vs 6th month in late responders, IL-5 pretreatment vs 6th month in all responders, IL-17 pretreatment vs 3rd month in late responders

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Table 1. Clinical and laboratory findings of the patient group..docx available at <https://authorea.com/users/698789/articles/686417-inflammatory-cytokine-levels-and-changes-during-omalizumab-treatment-in-chronic-spontaneous-urticaria>

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Table 2. Cytokine levels in study groups..docx available at <https://authorea.com/users/698789/articles/686417-inflammatory-cytokine-levels-and-changes-during-omalizumab-treatment-in-chronic-spontaneous-urticaria>

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Table 3. Cytokine levels in early and late responders..docx available at <https://authorea.com/users/698789/articles/686417-inflammatory-cytokine-levels-and-changes-during-omalizumab-treatment-in-chronic-spontaneous-urticaria>