



# Correlation Between Ustekinumab Concentrations And Endoscopic Improvement In Patients With Ulcerative Colitis - Results From A Prospective Observational Study

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## INTRODUCTION

Biologic therapies are the cornerstone of modern treatment for ulcerative colitis (UC), with the goal of achieving not only clinical remission but also endoscopic remission. Ustekinumab (UST), a fully human monoclonal antibody targeting interleukin 12/23, induces remission in only 30–40% of patients. One possible reason for treatment failure is insufficient drug concentration in serum or intestinal mucosa in some patients.

## AIM

To evaluate the association between UST concentrations in serum and intestinal mucosa and treatment outcomes in UC and to identify threshold concentrations predictive of treatment non-response.

## METHODS

We conducted a prospective study including 35 UC patients treated with UST. Serum and mucosal drug concentrations were measured by enzyme-linked immunosorbent assay (ELISA). Endoscopic disease

activity (endoscopic improvement defined as endoscopic Mayo score  $\leq 1$ ) was assessed at weeks 8 and 24 via endoscopy. Statistical analyses included the Mann–Whitney U test, ROC analysis, and Pearson's correlation. A p-value  $\leq 0.05$  was considered statistically significant.

## RESULTS

Median serum UST concentrations were higher among patients with endoscopic improvement at weeks 8 and 24. Statistically significant differences were observed at week 4 for early endoscopic improvement ( $p = 0.044$ ) and at weeks 8, 10, 20, and 24 for late endoscopic improvement ( $p = 0.035$ ;  $0.007$ ;  $0.038$ ;  $0.001$ , respectively) (Mann–Whitney U test). Predictive thresholds were identified at week 4 ( $\geq 20.90 \mu\text{g/mL}$  for endoscopic improvement (area under the curve (AUC)  $0.754$ ,  $p = 0.019$ , sensitivity  $70.0\%$ , specificity  $83.3\%$ ) and at week 10 for late endoscopic improvement ( $\geq 10.60 \mu\text{g/mL}$  (AUC  $0.869$ ,  $p < 0.001$ , sensitivity  $91.7\%$ , specificity  $85.7\%$ )) (ROC analysis). Serum and mucosal concentrations correlated moderately at week 8 ( $r = 0.571$ ,  $p = 0.042$ ) (Pearson's correlation).

## CONCLUSIONS

Higher serum UST concentrations are associated with an increased likelihood of both early and late endoscopic improvement in UC. Concentrations at weeks 4 and 10 demonstrated the highest predictive value for treatment response. We also demonstrated a positive association between serum and tissue concentrations at week 8 of treatment, showing a moderate positive correlation.

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