Correlation Between Th1 and Th2 Cytokine Profiles and Neutrophil-to-Lymphocyte Ratio in the Immunopathogenesis of Psoriasis

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Psoriasis is a chronic inflammatory skin disease, the immunopathogenesis of which is closely related to T-helper cell imbalance, particularly the activation of the Th1 profile. In recent years, growing attention has been directed toward the interaction between cytokine profiles and systemic inflammatory markers, including the neutrophil-to-lymphocyte ratio (NLR), which contributes to improving personalized diagnostics and therapeutic approaches.

The aim of the study was to assess Th1 and Th2 cytokine profiles and the neutrophil-to-lymphocyte ratio (NLR) in patients with psoriasis and to analyze their correlations.

According to the obtained results, IL-2 levels were significantly higher in psoriasis patients compared to both healthy individuals ($p = 0.003$) and those with allergic diseases ($p = 0.007$), indicating activation of the Th1 immune response. IL-33 levels were low in both the psoriasis and allergy groups, suggesting a non-dominant role. An increase in IFN-γ levels was observed in psoriasis patients; however, the difference was not statistically significant ($p > 0.15$).

A positive correlation was found between IL-2 and NLR, indicating its significance as a marker of systemic inflammation. No statistically significant correlation was observed between IL-33 or IFN-γ and NLR.

The study confirmed the leading role of Th1-dependent immune mechanisms in the immunopathogenesis of psoriasis. Psoriasis patients exhibited significantly elevated IL-2 levels and relatively low IL-33 concentrations, indicating a shift in the Th1/Th2 immune balance toward Th1 dominance. IL-2 may be considered a relevant biomarker of systemic inflammation. The findings support the need for further in-depth research on cytokine profiles, aiming to integrate pro-inflammatory cytokines and blood cell ratio-based indices into clinical practice.