Molecular Profiling of RA Patients Suggests a Differential Involvement of Adaptive and Innate Cell Populations in Response to Anti-TNF Treatment

Introduction

The success of anti-TNF therapies in Rheumatoid Arthritis (RA) is limited by the fact that ~30% of patients are non-responders. Several studies have focused on understanding the biology underlying response to these drugs and have identified differences in the adaptive and innate immune systems between responders and non-responders at baseline.

Materials and Methods

A total of 24 adult patients with RA were included in this study. Samples from these patients were collected at baseline and 3 months following the initiation of anti-TNF therapy. Plasma and RNA were profiled using a combination of cell-type specific molecular profiling, protein (Cell Signatures Profiling) and RNAseq approaches. The aim of this study was to understand the molecular mechanisms that affect clinical response to anti-TNF therapy.

Results

1. Clinical and Baseline Characteristics

The clinical and baseline characteristics of the patients included in this study are shown in Table 1. The study population consisted of 24 patients (14 male and 10 female), with a median age of 55 years (range 27-75). The duration of RA diagnosis was 4.2 years (range 0.5-20). The median duration of disease activity was 4.2 years (range 0.5-20).

2. Plasma Protein Profiling

The plasma protein profiling results are shown in Figure 2. The analysis revealed differences in the levels of several proteins between responders and non-responders at baseline. These proteins included TNFα, IL-1β, and IL-6, which were consistently higher in non-responders.

3. Gene Expression Profiling

The gene expression profiling results are shown in Figure 3. The analysis revealed differences in the expression levels of several genes between responders and non-responders at baseline. These genes included TNFAIP3, IL1B, and IL10, which were consistently higher in non-responders.

4. Cell Signature Profiling

The cell signature profiling results are shown in Figure 4. The analysis revealed differences in the levels of several cell types between responders and non-responders at baseline. These cell types included CD4, CD8, and B-cells, which were consistently higher in responders.

Conclusion

The results of this study suggest that the differential involvement of adaptive and innate cell populations in response to anti-TNF therapy may be an important factor in understanding the biology underlying response to these drugs. Further studies are needed to validate these findings and to develop strategies to improve the response to anti-TNF therapy in non-responders.

References


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