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THE BASELINE SOLUBLE GP130 IS ASSOCIATED WITH THE RESPONSE OF RHEUMATOID ARTHRITIS PATIENTS TO SARILUMAB

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Background: IL-6 contributes significantly to the chronic inflammatory process of rheumatoid arthritis (RA). Sarilumab (SRL), a human anti-human IL-6 receptor alpha monoclonal antibody that blocks the signaling originated by the IL-6/IL-6R complex like tocilizumab, is an effective treatment. However, predictors of the response to sarilumab are still required.

Objectives: We aimed to combine IL-6, soluble IL-6R (sIL-6R) and gp130 (sgp130) levels to identify groups of sarilumab responders.

Methods: This research is a retrospective study, a total of 32 RA patients with SRL therapy in our department from February 1 in 2018 to December 31 in 2019 were included. Serum and clinical data from 32 RA patients were collected before treatment and until the last visit. Follow-up period was up to one year after starting SRL treatment. Serum were tested for IL-6 (Human IL-6 Quantikine ELISA kit, R&D systems), sIL-6R (Human soluble IL-6R alpha Quantikine ELISA kit, R&D systems) and sgp130 (Human soluble gp130 Quantikine ELISA kit, R&D systems), using specific ELISAs according to the manufacturer’s instructions. Hierarchical cluster analysis (JMP14.3.0) was used to establish the relationship between IL-6, sIL-6R and sgp130. We evaluated the efficacy of SRL treatment on the last visit using European League Against Rheumatism (EULAR) response criteria in the groups of patients. The other statistical analyses were performed with EZR 1.41, and p Values less than 0.05 were considered significant.

Results: The median age of patients was 70.5 (IQR: 66.5-74.3) years and the median of disease duration was 7.3 (1.7-13.5) years. Nine (28.1%) patients were biologics and Jakinibs naive. the median follow-up periods were 24 (12-26) weeks. The baseline DAS28 was median 4.39 (3.77 - 5.43), and CDAI was 21.1 (11.7-29.5). When comparing responders and non-responders, there were no significant differences in any of the baseline parameters and cytokines. Four statistical significant clusters of RA patients (i.e., Group 1, Group 2, Group 3 and tocilizumab use group before SRL) were defined by serum concentrations of IL-6, sIL-6R and sgp130 at baseline. The levels of IL-6 expressed as median in Group 1 patients were 25.6 (14.4-72.2) pg/ml, in Group 2 5.9 (3.3-11.3) pg/ml, and in Group 3 70.2 (45.4-86.1) c pm/ml (p < 0.002, significant difference only between Group 2 and Group 3). The levels of sIL-6R expressed as median in Group 1 patients were 38.7 (24.8-41.9) ng/ml, in Group 2 35.7 (34.2-39.8) ng/ml (p = 0.5477). The levels of sgp130 expressed as median in Group 1 patients were 272.6 (263.0-2772) ng/ml, in Group 2 223.1 (212.0-228.0) ng/ml, and in Group 3 205.6 (192.0-207.6) ng/ml (p < 0.00003, significant difference between the three groups respectively).

There were no significant differences in any of the baseline clinical features and laboratory findings between the three groups. Out of the 8 patients in Group 1 had a good or moderate response to SRL. Conversely, the percentage of patients with no response to SRL was higher in Group 3 than in Group 1 and Group 2.

Conclusion: RA patients could be easily stratified prior to the therapeutic intervention with sgp130 related to the IL-6 signal regulation. Group 1 patients, who had the best response to SRL, had the highest level of sgp130.

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