Clinical Response to The First Biologic in Rheumatoid Arthritis Patients with Moderate Disease in a Real World Clinical Cohort

Xiuying Li[1], Angela Cesta[1], Mohammad Movahedi[1], Claire Bombardier[1,2,3] and OBRI investigators

[1] Toronto General Hospital Research Institute, University Health Network, Toronto, ON, [2] University of Toronto, Department of Medicine (DOM) and Institute of Health Policy, Management, and Evaluation (IHPME) Toronto, ON, [3] Mount Sinai Hospital, Division of Rheumatology, Toronto, ON

Objectives: While most randomized trials assess the effectiveness of biologic DMARDs (bDMARDs) in rheumatoid arthritis (RA) patients with high disease activity, in the real world or routine care, patients with moderate disease activity are often treated with bDMARDs as well. This study aims to evaluate the effectiveness of the first biologic with or without conventional synthetic DMARD (csDMARDs) in patients with moderate disease activity.

Methods: Biologic naïve patients enrolled in the Ontario Best Practices Initiative (OBRI), with moderate disease activity score (DAS28: >3.2-5.1), or high disease activity score (DAS28: >5.1) were included. Patients were required to remain on the biologic for 6 months and to have complete follow up data during this time period. Clinical response to their first biologic was measured by the change in DAS28 and by the proportion of patients who reached low disease activity (LDA) during the first 6 months of treatment. The change in DAS28 was assessed using linear regression modelling, adjusted for potential confounders (age, gender, disease duration, and physician global assessment). Multivariate logistic regression was used to compare the proportion of patients who reached LDA, adjusting for the same potential confounders.

Results: 443 patients were included. At initiation of their first bDMARD, 238 patients had a moderate DAS28 and 205 had a high DAS28. The two groups were similar with respect to age, gender, and disease duration. The mean (SD) DAS28 score was significantly lower for the moderate disease group compared to the high disease group (4.18 (0.54) vs 5.98 (0.63), $p<0.0001$). There was a significant difference between the two groups in all DAS28 components, as well as the mean (SD) physician global (4.6 (2.0) vs 6.3 (1.8), $p<0.0001$). A significant change in DAS28 was found in both the moderate [-0.89 (95% CI -1.12, -0.66)] and high [-1.86 (95% CI -2.10, -1.62)] disease groups, with greater improvement seen in the high disease group. A comparison of the change in DAS28 between the two groups was also significant (0.97 ± 0.16, $p<0.0001$). After 6 months of biologic treatment, a higher proportion of patients in the moderate group reached LDA, when compared to the high group (OR: 1.65; 95%CI: 1.03-2.65, $p=0.04$).

Conclusions: Treatment with bDMARDs is effective in patients with moderate disease activity. While patients with high disease activity showed greater improvement after 6 months of biologic treatment, patients with moderate disease activity at initiation of a bDMARD were more likely to reach a LDA state.