Background: Patient’s global assessment (PGA) is one most difficult component as a part of disease activity index for treatment of rheumatoid arthritis (RA), that often causes an obstacle to attaining clinical remission. Moreover, PGA level affects activities in daily lives.

Objectives: The influence of escalated PGA score on disease activity, daily activity, and quality of life for patient with RA was investigated, and the optimal PGA level for both disease activity and daily activities was investigated from real world data.

Methods: A total of 24,075 times of monitoring for RA was performed in the institute. Monitored items included TJC, SJC, PGA, EGA, CRP, and calculated values of DAS28, CDAI, SDAI, composite index of Boolean evaluation (Boolean), pain score with visual analog scale (PS-VAS), Health Assessment Questionnaire Disability Index (HAQ-DI), and quality of life score (QOLS) calculated from Euro-QOL questionnaire with 5th dimensions. Each measured item was calculated as mean value according to the PGA score, which was measured at the same time. The PGA score was classified by one increment from zero to ten. The mean values of DAS28, CDAI, SDAI, remission rate of these indices and Boolean remission rate, and mean values of PS-VAS, HAQ-DI, and QOLS were statistically evaluated.

HAQ-DI below 0.5 was determined as remission (HAQ remission). Sensitivity and specificity regarding attaining HAQ remission according to each level of PGA score were calculated, and cutoff index (COI) was determined with receiver operating characteristic (ROC) curve. For PS-VAS, sensitivity and specificity of Boolean remission regarding each level of PS-VAS after classification divided by one increment was calculated, and comparable level (PS-VAS remission) was determined with reference of the curve. ROC was performed according to PGA level, and COI was determined with a same manner.

Results: Number of measures counted 10428, 3099, 3110, 2346, 998, 1773, 751, 703, 655, 139, and 73 for each PGA level. PGA scores from 3 to 5, and 5 to 10 were put together for number adjusting. Mean DAS28, CDAI, and SDAI demonstrated significant increase as PGA level increased, and remission rate of the all indices including Boolean demonstrated significant decrease as PGA level increases (p<0.01%). Boolean remission rate demonstrated zero percent from two, and CDAI and SDAI remission rate demonstrated from zero from five, whereas DAS remission rate showed gradual decrease then zero percent was not shown in any level. Mean value of PS-VAS and HAQ-DI score demonstrated also significant decrease as PGA level increases, and QOLS demonstrated significant decrease as PGA level increases (p<0.01%). Increase of HAQ-DI score and decline of QOLS demonstrated more steeply from PGA level 3, whereas no significant difference demonstrated from zero to one. HAQ remission counted 15,703, whereas no HAQ remission counted 8,335. Using ROC, COI of the PGA level was 2.0, whereas sensitivity and specificity were 63.4% and 66.3%, respectively. The estimated PS-VAS remission level was 10mm. Optimal PGA level for PS-VAS remission was set as 1.0, and sensitivity and specificity regarding PS-VAS remission were 87.1% and 71.3%, respectively.

Conclusion: Increase of PGA affects daily activities and quality of life. The evident level that increases deterioration risk significantly was supposed to be from 3. Optimal level of PGA score for attaining the PS-VAS remission was 1.0, whereas the optimal PGA level for HAQ-DI remission was 1.0, despite sensitivity and specificity for the HAQ remission were lower than these for the PS-VAS remission.

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