Association of Disease Activity to Cognitive Impairment in Patients with Rheumatoid Arthritis

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Background: Intact cognitive function is important for executing several tasks on day-to-day basis in people with chronic diseases, including rheumatoid arthritis (RA). A number of studies have reported a high prevalence of cognitive impairment (CI) in patients with RA. Chronic systemic inflammation in RA may play an important role in the pathogenesis of CI, in addition to the traditional risk factors.

Objective: To determine the prevalence of CI and the association between RA disease activity and CI in patients with RA.

Methods: Siriraj Rheumatoid Arthritis (SIRA) registry was a prospective cohort study established in May 2011. A total of 214 patients who had complete data in December 2017 were included. Demographics, clinical and laboratory data related to disease activity, and functional status were collected. Depression and anxiety were evaluated by the Hospital Anxiety Depression score (HADS). Cognitive function was assessed using the Thai version of the Montreal cognitive assessment (MOCA-T). Subjects were classified as cognitively impaired if they scored less than 23, a cut-off point validated in Thai population. Univariate and backward stepwise multivariate analyses were performed to identify factors associated with CI.

Results: Most subjects (89.3%) were female with mean age (SD) of 59 (10.89) years. The median (range) of educational level and disease duration were 6(0-19), 13(0-40) years, respectively. Depression and anxiety were identified in 4.2% and 3.3%, respectively. Based on MOCA-T, the mean (SD) of total cognition score was 20.44 (4.3) out of 30 with 63% classified as CI. The mean (SD) or median (range) of cognitive domain scores of naming, attention, orientation, visuospatial/executive, language, abstraction, and delayed recalled were 2.69 (0.59) out of 3, 4.57 (1.38) out of 6, 5.75 (0.54) out of 6, 2.5 (0-5) out of 5, 1 (0-3) out of 3, 0 (0-2) out of 2, and 3 (0-5) out of 5, respectively. Patients with CI had a significantly higher proportion with old age (age > 60 years) (61% vs 37%, p = 0.001), low education (education level < 6 years) (72% vs 29%, p<0.001), and higher mean cumulative disease activity, measured by disease activity score (DAS) 28 (3.21±1.04 vs. 2.88±1.12, p = 0.033), compared to those with non-CI. Multiple logistic regression analyses identified 3 independent factors associated with CI in RA patients, including age, low education, and active disease (mean DAS28 > 2.6).

Conclusion: Cognitive impairment, especially in visuospatial/executive, language, and abstraction, is common in patients with RA. Active RA disease activity, old age, and low education level are independently associated with CI. Therefore, treat-to-target aiming at low disease activity or remission might be beneficial for preventing cognitive decline in RA patients.

Keywords: Rheumatoid arthritis, Disease activity, DAS28, Cognitive impairment, MOCA