Role of ultrasound in assessing disease activity in patients with early rheumatoid arthritis treated by two treat-to-target strategies

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Introduction
Ultrasound (US) is a sensitive tool for detecting joints and tendon inflammation in patients with rheumatoid arthritis (RA). Subclinical inflammation is often found in patients with RA in composite score remission. We hypothesize that achieving the ACR/EULAR remission, which reflects a more rigorous control of disease inflammation than the DAS28-based definition, may be associated with less subclinical inflammation detected by US.

Objectives
To determine the effect of two treat-to-target (T2T) strategies aiming at the Simplified Disease Activity Index (SDAI) remission (SDAI ≤3.3) and DAS28 remission (DAS28-CRP

Methodology
This is a sub-study of the Hong Kong Early RA Vascular Study [1]. Data from 55 patients out of the 110 early RA patients with US done were reported. These 55 patients were randomized to receive 1 year of tight-control treatment with an aim to achieve either SDAI ≤3.3 (group 1, n=21) or DAS28

Result
At baseline, SH and PD signal were found at both wrists and the MCP joints (SH: 79.9%; PD: 82.6%) with moderate grade (SH: 58.3%; PD: 65.8%). The baseline demographic, clinical and US features of group 1 and group 2 were well matched. Both groups demonstrated significant improvements in clinical and laboratory markers of inflammation. The SH-index, PD-index and GLOESS (median [IQR]: change: group 1: -8 [-22, -4], -6 [-15, -4], -8 [-22, -4]; group 2: -7 [-11, -3], -5 [-8, -2], -7 [-11, -3]) also improved in both groups to a similar extent (p=0.224, 0.297, 0.306 respectively). In view of the lack of differences in all outcomes in both groups, the results of all 55 patients were combined for a post-hoc analysis. After 1 year of treatment, 24 patients achieved SDR from month 6 to month 12. After 12 months, the SDR group had a significantly greater improvement in swollen joint count, erythrocyte sedimentation rate, pain, patient global assessment, physician global assessment and Health
Assessment Questionnaire. Significant improvements in SH-index, PD-index and GLOESS (-8 [-16, -5], -6.5[-14, -5], -8[-16, -6]) were observed in the SDR group and the non-SDR group (-6[-11, -2], -4[-10, 0], -6[-11, -3]). Nonetheless, the SDR group had a significantly greater improvement in the PD-index (p=0.017) compared to that in the non-SDR group; while the SH-index (p=0.179) and GLOESS (p=0.094) were similar between the two groups.

In early RA, a SDAI remission-driven T2T strategy led to more intensive treatment but was not associated with significantly better clinical or US outcomes than a DAS28-driven strategy. However, patients who achieved SDR had a significantly greater clinical improvement and reduction in PD index compared to those who could not achieve SDR.