The Higher Discrepancy of Correlation between Left Atrial Diameter and Volume is Associated with the Higher Recurrent Atrial Fibrillation after Radiofrequency Catheter Ablation.

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Introduction: Left atrial volume (LAV) is a predictor of recurrent atrial fibrillation (AF) in patients with radiofrequency catheter ablation (RFCA) of AF. On the other hand, LADAP (left atrial antero-posterior diameter) is not an accurate way of reflecting LAV. It can be explained by asymmetric atrial dilation. However, there has been few data about the association between the asymmetric dilation and clinical outcomes. We aimed to analyze the clinical impact of discrepant correlation between LADAP and LAV by echocardiography (TTE) and multidetected computed tomography (MDCT) in the patients with RFCA of AF.

Methods: We selected 635 consecutive patients undergone RFCA of AF. We retrospectively calculated formulaic left atrial volume (LAVF) using LADAP by TTE with a linear regression formula and collected estimates of real LAV by MDCT (LAVR). We obtained ratios of the LAVR to the LAVF (LAVR/LAVF). The Patients were divided into 5 groups based on the incremental ratio (Group 1: 0.79-0.92, Group 2: 0.93-1.03, Group 3: < 0.79, Group 4: 1.04-1.20 and Group 5: > 1.21). We compared the incidence of 3 year follow up recurrent AF between the groups.

Result: Compared with a reference group (Group1; LAVR/LAVF ; 0.79-0.92), the adjusted HR of the recurrent AF in other 4 groups showed a stepwise increasing pattern following the incremental discrepancy between LAVR and LAVF (Group 2: 33.6%, HR: 1.053, P=0.823; Group 3: 38.5%, HR: 1.240, P=0.343; Group 4: 55.3%, HR: 1.47, P=0.074, Group 5: 56.3%; HR: 1.615, P=0.028).

Conclusion: The incremental discrepancy of LAVR with LAVF could be associated with increasing incidence of recurrent AF in patients after RFCA of AF. It provides a clinical meaning of which higher discrepancy between LADAP and LAVR could be associated with higher incidence of recurrent AF after RFCA.