Role of sST2 in Predicting Recurrence of Atrial Fibrillation post Radiofrequency Catheter Ablation

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Introduction: As a major cause of atrial fibrillation (AF), atrial fibrosis is strongly associated with AF recurrence post ablation. Soluble ST2 (sST2) is known as a profibrotic biomarker. This study aims to determine the relationship between sST2 and AF recurrence post radiofrequency catheter ablation (RFCA).

Methods: AF patients referring for RFCA were consecutively included from October 2017 to December 2018. Baseline characteristics were collected, and sST2 levels were determined by ELISA before ablation. Substrate mapping was performed after circumferential pulmonary vein isolation under sinus rhythm. And substrate was modified if there are low-voltage zones and sites with abnormal electrograms. 24-hour Holter monitoring and echocardiogram were conducted regularly during follow-up. A second procedure would be recommended under recurrence.

Result: 238 patients (156 males, average age 60.9 years old) were included in the final cohort. After a medium follow-up of 14.5 months, 49 patients suffered from recurrence and received a second procedure. Pre-operative sST2 level in patients with recurrence was significantly higher than that in patients without (30.4 ng/ml vs. 19.6 ng/ml, p<0.0001). An sST2 level over 27.8 ng/ml could predict postoperative recurrence with a sensitivity of 90.9% and a specificity of 88.4%. In 49 patients undergoing secondary ablation, the level of sST2 in patients with new atrial substrate was significantly higher than that in patients without (40.0±15.8 ng/ml vs. 22.6±9.1 ng/ml, p<0.0001).

Conclusion: sST2, reflecting progressive atrial fibrosis, was independently associated with the recurrence of AF after ablation. It might play an important role in choosing treatment strategies in AF.