Impact of Coincidental Pericardial Effusion on Preprocedural Computed Tomography on Clinical Outcomes of Atrial Fibrillation Ablation

Chisashi Toya
Takeshi Sasaki
Masahito Suzuki
Kazuhito Hayasaka
Kento Yabe
Ko Akimoto
Ryo Nagasawa
Masahiko Goya
Tetsuo Sasano

Introduction: Preprocedural cardiac computed tomography (pre-CCT) prior to atrial fibrillation (AF) ablation provides electrophysiologists useful information regarding anatomy of pulmonary veins and both atria, and thrombus formation in left atrial appendage. Coincidental pericardial effusions (Co-PE) have been across on pre-CCT. This study aims to investigate the impact of Co-PE on clinical outcomes of AF ablation.

Methods: This study included 326 patients (60±10 years; 225 females, paroxysmal/non-paroxysmal AF: 217/109 patients; CHADS2 score 1.2±1.1) who underwent pre-CCT before AF ablation. Presence of Co-PE on pre-CCT, impact of Co-PE on recurrences of atrial arrhythmias after AF ablation and patient characteristics associated with Co-PE were investigated.

Result: Co-PE was identified on pre-CCT in 44 patients (13.5%). The recurrences of atrial arrhythmias (AF: 27 patients, atrial tachycardia: 32 patients) were more frequently observed in patients with Co-PE (13 patients, 30%) than those without Co-PE (46 patients, 16%) (P=0.003) during a mean follow-up period of 482±147 days. There were also significant differences in age (69±7 years in Co-PE vs. 66±10 years in non-Co-PE; P=0.004), proportion of patients with persistent AF (52% vs. 31%; P=0.004), BNP level (186±198 pg/ml vs. 87±96 pg/ml; P=0.002) and left atrial diameter (41±6 mm vs. 39±6 mm; P=0.035) between the patients with and without Co-PE. Meanwhile, no significant differences were observed in gender (P=0.238), body mass index (23.3±3.5 kg/m² in Co-PE vs. 23.8±3.5 kg/m² in non-Co-PE; P=0.400), CHADS2 score (1.5±1.2 vs. 1.2±1.1; P=0.092), eGFR (63.5±13.9 ml/min/1.73m² vs. 63.8±14.4 ml/min/1.73m²; P=0.896) and left ventricular ejection fraction (60±8.9% vs. 62±8.8%; P=0.287).

Conclusion: Co-PE on pre-CCT was significantly associated with the recurrence of atrial arrhythmias after AF ablation. Older age, patients with persistent AF, higher BNP level and larger left atrial diameter were significantly associated with presence of Co-PE. Further study will be required to elucidate the etiology of Co-PE.