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Intra-cardiac thrombus in patients undergoing ventricular tachycardia ablation. a computed tomographic scan study

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Background: Embolic event is one of the complications of VT ablation. This may be due to the presence of intra-cardiac thrombus before ablation. However, there is no clear consensus on how to rule out thrombus before the procedure.

Objective: We sought to examine the prevalence and risk factors of intra-cardiac thrombus with cardiac computed tomographic (CT) scan in patients undergoing scar-related VT ablation.

Methods: In absence of contra-indication, all patients undergoing scar-related VT ablation at our institution underwent contrast-enhanced cardiac CT within one week before ablation. 324 consecutive patients (292 male, 59±16 yo) have been included in this study. The etiology was ischemic cardiomyopathy (CMP) (n=191), arrhythmogenic right ventricular CMP (ARVC) (n=37), congenital CMP (n=11) or other CMP (n=85). LVEF was $<$40% in 154 patients (48%).

Results: Intra-cardiac thrombus was diagnosed in 29 (9%) patients: in the left atrium (n=8), in the right atrium (n=1), in the left ventricle (n=15), in the right ventricle (n=3), in right and left atrium (n=1), and in left atrium and right ventricle (n=1). Moreover in 2, a bilateral pulmonary embolism was identified. The population with thrombus was older (65±12 vs 58±16 years, p=0,005), with more permanent atrial fibrillation (AF) (28% vs 8%; p=0.005). Patients with left ventricular (LV) aneurysm were at higher risk of thrombus 50% vs 3% ($p<0.001$). The average CHADSVASC score was similar for both groups (2,5 vs 2,1; p=0.179). After matching for age and sex, only ischemic CMP and LV aneurysm were risk factors for thrombus. Because of arrhythmic storm, ablation was performed by epicardial approach only, in 5 patients with intra-ventricular thrombus and by retroaortic approach only, in 2 patients with LAA thrombus. No embolic event occurred during these procedures.

Conclusion: CT scans help eliminating intra-cardiac thrombus before VT ablation procedure. A high proportion of thrombus (9%) was identified. Whereas LV thrombus should systematically be ruled out before scar related VT ablation, in patients with AF, a LAA thrombus should also be eliminated as well as RV thrombus in patients with ARVC.