Are the results of the CASTLE-AF trial reproducible in the real life? Clinical outcomes after catheter ablation for atrial fibrillation with heart failure in a nationwide cohort study

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Background. Catheter ablation for atrial fibrillation (AF) is a validated therapy for patients with symptomatic AF to prevent recurrences. The CASTLE AF trial indicated that ablation for AF in patients with heart failure (HF) was associated with a lower rate of death from any cause or hospitalization for worsening HF than was medical therapy. The purpose of our study was to compare the incidence of these events in AF patients with HF after AF catheter ablation versus those not treated with AF ablation at a nationwide level in centers possibly less well experienced.

Methods. This French longitudinal cohort study was based on the national hospitalization PMSI (Programme de Médicalisation des Systèmes d’Information) database covering hospital care from the entire population. We included all patients, over 18 years old, with AF and HF from January 2010 to December 2015. Crude event rates were ascertained and hazard ratios (HR) were estimated using Cox proportional hazards risk model. Propensity-matched Cox regression was also used to compare event rates according to AF ablation usage status.

Results. Among the 261,449 patients identified with AF and HF, 1,270 patients were treated with AF ablation (24% female, mean age 63±10 yo) and 260,179 did not have AF ablation (45% female, mean age 79±11 yo). During follow-up (417±502 days), there were 56,981 hospitalizations with a primary diagnosis of HF and 81,393 deaths were recorded. Incidence of hospitalization for HF was significantly lower in patients with AF ablation than in those with no ablation (13.74% vs 51.11% person per year respectively, p<0.0001). Incidence of death was also significantly lower in patients with AF ablation than in those with no ablation (6.07% vs 27.42% person per year respectively, p<0.0001). These associations were confirmed in a multivariable analysis after adjustment on age and other comorbidities (HR 0.33, 95%CI 0.28-0.39, p<0.0001 for HF and HR 0.38, 95%CI 0.31-0.48, p<0.0001 for all-cause death). After 1:1 propensity score matching, AF ablation was also associated with a lower risk of hospitalization for HF (HR 0.38, 95%CI 0.31-0.47, p<0.0001) and a lower risk of death (HR 0.54, 95%CI 0.42-0.70, p<0.0001).

Conclusion. In the nationwide analysis of unselected AF patients with HF seen in hospitals, AF ablation was independently associated with a lower risk of hospitalization for HF and death. This provides ‘real world’ data consistent with those observed in recent trials with lower numbers of highly selected patients.