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Editorial Commentary

Atrial fibrillation ablation in end-stage renal Disease:...Yes, we can!

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“Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.” —Marie Curie

Atrial fibrillation (AF) ablation has made giant strides over the last two decades, achieving the status of first-line therapy for symptomatic AF [1]. Radiofrequency ablation (RFA) and Cryoballoon ablation (CBA) have remained the mainstay energy sources for pulmonary vein isolation [2]. CBA is non-inferior to RFA in patients with paroxysmal drug-refractory AF [3]. With the increasing confidence of electrophysiologists, better tools, and promising results of durable pulmonary vein isolation, catheter ablation is frequently offered to patients who are not well-represented in clinical trials [4,5]. Patients afflicted with end-stage renal disease (ESRD) comprise one such growing subset. As high as a quarter of the patients on chronic hemodialysis are comorbid with AF [6]. Furthermore, AF confers an incremental mortality risk in patients with ESRD [7]. Yet major prospective randomized-controlled trials defining the merits of AF ablation have consistently excluded patients requiring hemodialysis [1,3,8]. There have been some retrospective studies that have ascertained catheter ablation outcomes using RFA in patients with ESRD, but the consequences of CBA in this cohort remain unidentified [7,9].

In the current issue of the Indian Pacing and Electrophysiology Journal, Hayashi et al. explore CBA and RFA in patients on chronic hemodialysis [10]. In their meticulously conducted retrospective study of 44 patients with AF on chronic hemodialysis, 21 underwent RFA, and 23 were subjected to CBA.

The authors analyzed a composite endpoint including a documented recurrence of any atrial tachyarrhythmia (ATA) or a prescription of antiarrhythmic drugs. At a follow-up of one year, freedom from the composite outcome was achieved in 68.2% of patients in the CBA group than 58.4% of patients in the RFA group.

The efforts of Hayashi et al. in pursuing AF ablation in this

population and further reporting it is commendable. Large-scale clinical trials are often designed to show noninferiority and seldom superiority. This does result in excluding specific cohorts, such as the elderly, patients with significant comorbidity burden, and those in whom “the eye” test may suggest an inferior result suggesting an inherent bias.

Unsurprisingly, there is little to no incentive for including the sickest cohort of patients who are paradoxically in dire need of therapeutic options. Notwithstanding the seemingly modest sample size in this study, the demand for such data in an underrepresented population cannot be emphasized enough. Perhaps the fact that a comprehensive and thoroughly edifying 76-page guideline document of AF does not contain a single sentence about ablation in ESRD patients will drive the point home [1].

Significant challenges exist in the pharmacological management of AF in patients on chronic hemodialysis. The investigators in this study have demonstrated that ablation is safe and feasible in ESRD patients on hemodialysis for a mean duration of over a decade. The study was not limited to patients with paroxysmal AF as 19% of patients in the RFA group, and 26.1% of patients in the CBA group ($p = 0.578$) had persistent or long-standing persistent AF. It does highlight the fact that the authors were not always biased with the “look test”! Despite challenges in managing anticoagulation in ESRD patients, this study’s complications were comparable to prior RFA and CBA trials [3,8]. This finding should act as a shot of encouragement to operators considering ablation for symptomatic AF patients with ESRD, especially those intolerant towards antiarrhythmic drugs.

The significantly higher fluoroscopy times noted by Hayashi et al. in RFA (60.1 ± 41.2 minutes) over CBA (26.9 ± 12.8 minutes) is worthy of a mention as it deviates from what we know from literature [3]. The advent of mapping systems have been transformative in the way AF ablations are performed. The workflow described in this study includes contrast pulmonary venography, which likely played a role in the added fluoroscopic times, along with the need for additional ablation (linear and non-pulmonary vein trigger ablation) in most patients.

Looking beyond the authors’ excellent efforts, a fair assessment demands scrutiny of this study’s aspects. Some of the authors’ admissions include the retrospective nature of this study with the intrinsic selection bias, the small sample size, lack of long-term event monitoring for AF adjudication, and the discrepancies of antiarrhythmic use among the two groups. However, doing a prospective randomized control for AF ablation in dialysis patients is non-viable.

The conclusion of patients treated with CBA having better outcomes than those with RFA is somewhat disingenuous. The findings are promising indeed, but based on the data presented, the jury is

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still out whether CBA is better than RFA in this population. The temporal separation of most of the patients ablated with RFA (2011–2016) and those with CBA (2016–2019) is noteworthy, particularly with the recent use of steerable sheaths and contact force catheters.

In summary, Hayashi et al. have made a valuable contribution to literature with their laudable efforts in this elusive subset of patients. Both RFA and CBA are available in our arsenal, each with its specific pros and cons. It is now up to us to identify the right patient and offer the optimum procedure to improve the very sick's quality of life. Practicing day to day invasive electrophysiology has certainly taught us that although we profess clinical trials, data, and research, what we do accomplish daily is attributed to clinical judgment, instinct, and sometimes common sense!

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