Atrial fibrillation: is there evidence to support an early ablation strategy?

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This editorial refers to ‘Association between left atrial size and atrial fibrillation recurrence after single circumferential pulmonary vein isolation: a systematic review and meta-analysis of observational studies’ by J. Zhuang et al., on page 638 and ‘Prior antiarrhythmic drug use and the outcome of atrial fibrillation ablation’ by R.A. Winkle et al., on page 646

Haissaguerre et al. have found that foci from pulmonary veins trigger the initiation of atrial fibrillation (AF), and subsequently, that isolating the pulmonary veins by catheter ablation reduced the recurrence of AF. The most recent European Society of Cardiology guidelines state that left atrial ablation should be considered (Class IIa recommendation) for symptomatic patients with either paroxysmal or persistent AF who have previously failed a trial of antiarrhythmic medication.2

In accordance with the guidelines, nowadays catheter ablation is undertaken in patients with symptomatic paroxysmal AF who have failed at least one antiarrhythmic drug. This guideline and current daily practice are supported by the results of several single-centre randomized studies, multicentre prospective studies, and meta-analyses comparing antiarrhythmic drug treatment with catheter ablation, showing the lower rates of AF recurrence after ablation.3–6 However, it should be noted that most of these studies were relatively small, most of the selected patients were resistant to antiarrhythmic drugs, different ablation techniques were used (e.g. additional ablation line techniques, energy sources), the ablations were performed by highly experienced operators in specialized centres, and follow-up was relatively short. Furthermore, no data regarding the reduction of long-term cardiovascular morbidity and mortality are available for AF ablation. A large prospective worldwide trial, Catheter ABlation versus ANtiarrhythmic drug therapy for Atrial fibrillation (CABANA), is underway aiming to investigate whether successful AF ablation may result in reduced mortality.

The decision to ablate AF should be tailored to the patient, taking into consideration patient characteristics, such as symptoms, stage of atrial disease (e.g. AF type and history and left atrial size), the presence and severity of underlying cardiovascular disease, potential treatment alternatives (e.g. antiarrhythmic drugs, rate control), and patient preferences.2 These factors should outweigh a complex ablation procedure associated with possible complications,7 and the potential disappointment of failure.

To improve the results of catheter ablation, several strategies are used. One strategy could be to ablate earlier in the disease process, thereby breaking the deleterious interaction of both electrical and structural remodelling and AF. From epidemiological studies it is known that the atrial size correlates with the incidence of AF.8 Cardioversion and maintenance of sinus rhythm using antiarrhythmic drugs can decrease the atrial size.9 It has been suggested that earlier and aggressive treatment of AF may prevent remodelling and result in greater and hopefully longer-term success of maintenance of sinus rhythm. So far, data on a direct comparison of antiarrhythmic drug treatment and catheter ablation as first-line therapy in patients with symptomatic AF are scarce.6

In this context, two articles published in this issue of the journal are noteworthy. Winkle et al.10 describe a link between the number of drugs failed before ablation and the success of the procedure. The group from California retrospectively analysed 1125 patients undergoing 1504 ablations, between 2003 and 2010. After a mean follow-up duration of 2.5 ± 1.7 years, the success of ablation ranged from 49 to 80%, depending on the number of prior antiarrhythmic drugs used. Patients who failed more drugs prior to ablation were more likely to be older, female, and had larger left atria and a longer duration of AF. Multivariate analysis showed that the number of drugs was predictive for the success rate of ablation. These results can be interpreted as evidence that postponing ablation, and trying several antiarrhythmic drugs, may have unfavourable effects on atrial remodelling leading to progression of AF, leading to lower success rates of ablation. An important study limitation is, however, its retrospective design, which inherently harbours a selection bias in which clinicians...
choose certain antiarrhythmic drug strategies for their patients and decided on the timing for ablation.

Zhuang et al. present a meta-analysis of studies that reported on left atrial size and success of ablation for AF. The group from Shanghai analysed 22 studies including 3750 patients in which left atrial size was measured echocardiographically in the parasternal long-axis view. They found a mean weighted difference in the left atrial size of 1.87 mm between patients with successful ablation vs. patients with a recurrence of AF. Although this meta-analysis has limitations due to the design of the included studies, and the observed difference in left atrial size is very small compared with the accuracy of measurement, it emphasizes that left atrial enlargement, as a marker of more advanced remodelling, is associated with worse rhythm control outcome of AF ablation.

Taking into consideration the results of both studies suggesting that catheter ablation of AF earlier in the disease process may be more successful, it is conceivable that AF ablation embedded in a comprehensive rhythm control intervention is most effective and most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease. The clinical benefit of early rhythm control therapy is most beneficial when performed early during the course of disease.

While awaiting the results of large randomized AF ablation trials, expected in 2015, physicians have to rely on their clinical judgment of the patient’s individual profile and preferences to select the appropriate treatment strategy.

Conflict of interest: none declared.

References