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IM - COMMENTARY

Managing atrial fibrillation: the need for an individualized approach even in the emergency department

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How to manage patients with recent-onset atrial fibrillation (AF) in the emergency department (ED)? What strategies and what practical options should be taken into account after the initial clinical evaluation and risk stratification for stroke/thromboembolism?

In the present issue of the Journal, two interesting contributions [1, 2] consider, through opposite views, the clinical perspective of a *wait-and-see* approach for patients with recent-onset AF without hemodynamic impairment. Both articles, prompted by the publication by Pluymaekers et al. of a non-inferiority randomized clinical trial on the *wait-and-see* strategy performed in the Netherlands [3], present a series of reasons in support of the respective views, but the complexity and heterogeneity of factors involved in decision-making in this setting [4] support the need for further considerations to facilitate a balanced view of this not-simple clinical topic.

The burden of ED visits actually increased the last decade in the United States [5] and this was associated with a wide range of variability in the application of rate- or rhythm-control treatment or no treatment. [6] Very recent data from Italy [7] highlighted that while the number of patients with a visit to the ED slightly decreased as compared to more than 15 years ago, an increasing number of patients is currently managed in the ED with avoidance of hospital admission. The time course of recent-onset AF, i.e. an AF whose onset can be precisely defined, on the basis of patient symptoms as being within 48 h, has been appropriately investigated in randomized studies that evaluated spontaneous conversion (in a control or placebo arm) and in observational studies with no active intervention within the first hours [8–14]. In these studies, it was shown that conversion to sinus rhythm may occur in patients with recent-onset AF admitted to an ED, under placebo or control in 34–45% of patients within 12 h, in 55–87% of patients within 24 h and in up to 76–94% of patients within 48 h [8–14].

This wide range of variability in achievement of sinus rhythm in recent-onset AF implies that a series of variables may influence the chance of spontaneous conversion to sinus rhythm and may be characteristic of specific patient subgroups. This bulk of knowledge had two principal consequences:

- the methodology for studying any rhythm-control intervention (e.g. drugs for cardioversion) must include a placebo or control arm to give a valid assessment of efficacy;
- the management of recent-onset AF could consider a first period of observation, limited to risk stratification for thromboembolic risk, and prescription of anticoagulants, if needed, and appropriate treatments for rate control, if needed.

In the RACE 7 ACWAS trial, Pluymaekers et al. [3] reported the results of an investigator-initiated, randomized, controlled, two-arm non-inferiority trial that compared a *wait-and-see* approach (with delayed cardioversion, if needed) to the standard of care (early cardioversion) in patients with recent-onset (< 36 h) AF admitted to EDs in the Netherlands. In this study, 437 patients were enrolled and this represents a quite selected sample, including only 4.6% of the patients admitted to the EDs, according to the screening records performed in two centers. The mean age was 65 years, a bit lower than the mean age of patients enrolled in "real world" observational studies [7]. The admission was for a first episode of AF in 44% of cases and at enrollment, 40% of patients were already on anticoagulant treatment. The proposed *wait-and-see* approach included, after discharge with appropriate rate-control and anticoagulation, a new medical check in an outpatient clinic or the ED, planned

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as close as possible to 48 h after onset of symptoms, thus allowing the time to perform cardioversion within 48 h after onset of symptoms. Cardioversion was planned within 48 h in the absence of spontaneous sinus rhythm resumption and a delayed cardioversion was actually necessary in 28% of the patients randomized to the *wait-and- see* strategy.

As a matter of fact, the clinical scenario of daily practice is much more heterogeneous than the ideal setting of trials where exclusion and inclusion criteria offer the possibility to limit the effect of known or potential confounders that, conversely, need obviously to be considered in the arena of daily practice.

The probability of spontaneous cardioversion within few hours could actually be object of considerations taking into account AF duration, absence of detectable organic heart disease and patient age, in the perspective of an individualized approach that could imply a targeting of the *wait-and-see* strategy to those patients who have the highest chance to not require electrical CV at a second clinical evaluation within 36 h. As already reported [15], patients presenting with recent-onset AF, age < 60 years old, no heart diseases, and AF onset < 24 h, have the highest chance to present spontaneous cardioversion within few hours from AF onset [9, 10, 16].

However, it is noteworthy that most of these patients, also have the characteristics of low CHA_2DS_2VASc score that corresponds to a very low risk of peri-cardioversion thromboembolism, with the possibility to avoid 4 weeks of anticoagulation if cardioversion occurs within 12 h [17–19]. In settings where National Regulations do not allow financial coverage by the Health Care System of direct oral anticoagulants prescription for patients with a low CHA_2DS_2VASc, like in Italy for instance, the option of a quick access to cardioversion through active interventions (drugs or electrical shock) could be preferred, for a simplified management on an individual basis [20, 21].

As known, cardioversion per se, either spontaneous, pharmacological or electrical, carries an inherent risk of cerebral or systemic embolism, mainly related to delayed resumption of atrial mechanical function for AF-related atrial stunning. In low-risk patients with cardioversion within 12 h, the risk of peri-cardioversion thromboembolism is low, as reported by several observational studies [17, 22], thus justifying the option of avoiding 4 weeks of anticoagulation, as supported by recent American Guidelines [18].

Of note, in 40% of the cases enrolled in the *wait-and-see* paper [3], the patients were already on anticoagulation thus excluding this problematic decision-making.

Moreover, the *wait-and-see* approach could be an ideal option but for very selected patients, more frequently when the need to abstain from active interventions is further advised by the need to exclude the role of transient factors whose actual contribution to AF onset is not clear and requires some time for a precise assessment, as well as for correction (concurrent drugs, minor illness, stress, suspected infection, etc.).

Additionally, in view of the inherent risk to ensure cardioversion to sinus rhythm before the 36 h deadline, with a new hospital visit, some patients could prefer to solve the problem at the time of first hospital admission with a pharmacological or electrical cardioversion. No data are currently available on how patient preference can be linked to psychological, occupational factors that could suggest the choice of strategies with the highest chance to solve the problem linked to admission, by a fast access to electrical cardioversion, a solution widely adopted in many EDs [23]. It is noteworthy that in the trial reported by Pluymaekers et al. [3], nearly 95% of the patients of the early-cardioversion group, left the ED in sinus rhythm.

In summary, a *wait-and-see* approach provides important additional knowledge on the natural course of recent-onset AF and provides additional options for decision-making of the physicians (ED physicians and/or cardiologist according to the specific local organization) in charge of patient management. In the complex arena of EDs, the perspective of a waiting period before medical interventions should be carefully evaluated in consideration of the burden of work of the EDs and the relative complexity of organizing a second hospital access for subsequent check and delayed cardioversion, if necessary. Considering that the proportion of patients requiring delayed cardioversion was not marginal, being 28% in the *wait-and-see* arm of the study by Pluymaekers et al. [3], an individualized approach is advisable, taking into account the specific characteristics of the individual patients, the organizations of ED and the possibility and willingness to change, as well as patient preferences. In other terms, since "no patient is equal to the other" as Professor Augusto Murri stressed, an individualized approach, supported by available evidence, should be applied even in the challenging setting of ED department when dealing with the management of recent-onset AF.

"Waiting for Godot" was a comedy by Samuel Becket where an expected event that appeared to be imminent, actually never happened and the expectation led to no action. Similarly, also in the setting of the ED, where a wide spectrum of patients, in terms of age, underlying heart disease and co-morbidities require AF management, the actual significance of waiting for spontaneous AF cardioversion requires careful consideration on when and how it is reasonable to consider and apply this option.

In this perspective, the *wait-and-see* strategy should be considered in a careful balance between the pros and cons of its application (Fig. 1) and the debate on what can be its practical impact, object of the contributions of Botto et al. [1] and Capucci et al. [2], could benefit from the definition of a potential "ideal targeting" of this strategy,

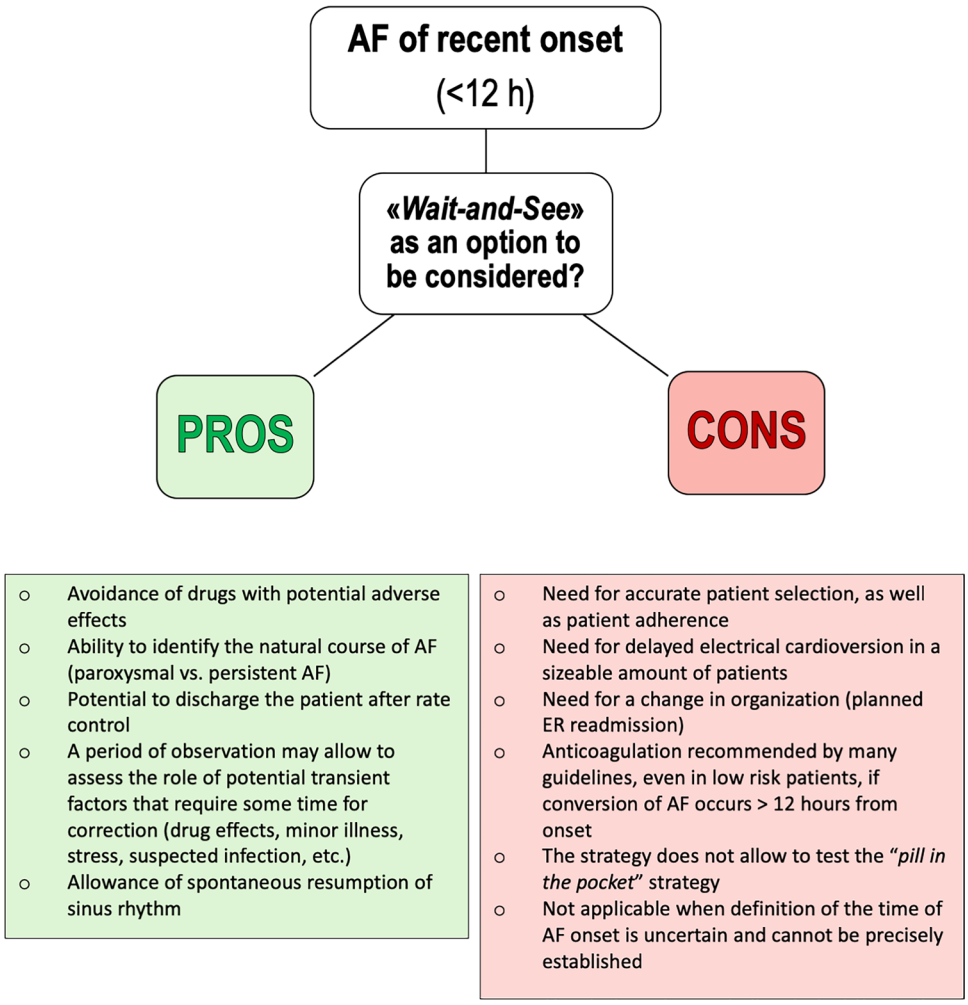

Fig. 1 Pros and cons of the wait-and-see strategy for managing recent-onset atrial fibrillation (AF) in emergency departments

whose application is anyway challenging and demanding in terms of organization and decision-making. As known, the changes in medical practices need to be considered and applied accordingly to three perspectives: the perspective of the physician, the perspective of the individual patient and the perspective of the Health and Care System with its organizational aspects [24]. All these three perspectives are conditioned by the potential application of the *wait-and-see* approach in the daily practice when managing recent-onset AF in the ED and an individualized approach appears appropriate and advisable.

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Compliance with ethical standard

Conflict of interest Professor Boriani has received small speaker's fees from Medtronic, Boston, Biotronik, Boehringer, and Bayer, outside of the submitted work. The other authors reported no conflict of interest.

Statements on human and animal rights This article does not contain any studies with human participants or animals performed by any of the authors.

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