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Editorial

Impact of hospitalization in patients with atrial fibrillation: Implications for health-care providers and clinical management

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For several years, stroke, thromboembolic events and oral anticoagulant (OAC) related major bleeding have been the most feared clinical events considered among atrial fibrillation (AF) [1]. Consequently, the most part of attention was drawn to optimization of OAC therapy to obtain a reduction of thromboembolic events keeping low the incidence of bleeding adverse events [1]. More recently, a lot of focus has been paid to other outcomes as hospitalization/rehospitalization [2], myocardial infarction [3] and death (both cardiovascular and all-cause death) [4]. The evidence that other outcomes significantly affected the clinical course of these patients, even though not directly related to AF physiopathology, increased the awareness and the need for new approaches, based on patient's holistic evaluation and multidisciplinary intervention [5].

In this issue of the *International Journal of Cardiology*, Weber and colleagues presented a study analysing temporal trends of non-valvular AF hospitalizations in Western Australia from 2000 to 2013 [6]. Interestingly, the authors both investigated age- and sex-stratified trends in total number of hospitalizations, also understanding the relative weight of admissions specifically due to performing a catheter ablation procedure, then analysed the impact of incident AF hospitalization in order to establish the role of new AF cases in determining the temporal trends. This study provided several interesting results. First of all, the authors documented a significant increase in the rate of total hospitalizations, with an age- and sex-standardised rate increased by 3.0%/year. Secondly, this increase in the rate of hospitalizations, while remaining significant for both men and women, was found to be more pronounced in men (3.4%) than in women (2.5%). Then, taking account of the age classes, while in all the age classes a significant increase was found, by the end of follow-up observation the greater increase in hospitalization rates was found for patients aged 85–94 years, then in those aged 75–84 years, both in the overall cohort that in men and women separately [6].

Moving onwards, the authors documented that the increasing use of catheter ablation for rhythm control in AF patients significantly contributed to the observed increased rate, indeed a 13.3% annual increase was found, from 9.4 to 119.4 per 1000 AF hospitalizations from 2000 to 2013. When the authors considered only the incident AF-related admission they reported that, different than the overall rate, a significant decrease was found, with an annual 0.5% decline. This decline in hospitalization rate was consistent in women, while was not significant in men; conversely only small changes were observed in age-stratified analysis [6].

The results provided by the authors fell in the previously shown evidence, that rates of hospitalization for AF patients are constantly increasing throughout time. In a paper published in 2014, Patel and colleagues already showed how the rate of hospitalization in the US from 2000 to 2010 significantly increased (+14.4% relative increase) [2]. This increase was more evident in elderly patients (≥65 years). Very importantly, in the same study, the authors reported a contemporary increase in the costs associated with the hospitalizations (+24.0% relative increase), also they underlined how the length of stay and cost of hospitalization progressively increased according to the increasing thromboembolic risk [2]. Similar data were also already retrieved from previous decades and Europe [7,8].

Also, the results of the study by Weber and colleagues extended the previous knowledge from the same area. Indeed, a previous study investigated the rates of AF hospitalization from 1993 to 2007 in Western Australia, in comparison with those related to heart failure and myocardial infarction [9]. A 7.9% of annual increase was found for AF hospitalization number, with an absolute increase of 155% in prevalence of AF hospitalizations, while prevalence of hospitalizations for myocardial infarctions showed a significantly lower increase, while those for heart failure decreased progressively [9]. In the accompanying editorial to this paper, already underlined how the constant increase in the hospitalization rates for AF was a major issue in terms of health-care associated costs and health-care providers. All the amount of evidence

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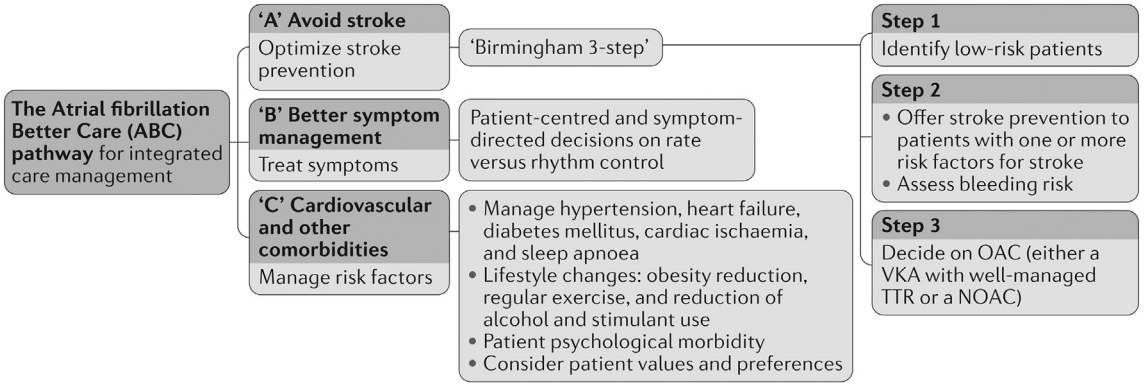

Fig. 1. The "Atrial Fibrillation Better Care" (ABC) pathway. Legend: NOAC = non-vitamin K antagonist oral anticoagulant; OAC = oral anticoagulant; TTR = time in therapeutic range; VKA = vitamin K antagonist.
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available clearly indicates that the increasing path is now substantially consistent across the last 30 years.

In this context, the paper from Weber and colleagues adds an important piece of information. Indeed, the documented increase in AF hospitalization rates contrasting with the evidence that the hospitalizations for incident AF (i.e. much likely new AF cases) decreased at the same time, points out that the repeating hospitalizations in patients with established AF is the main contributor to the burden of hospitalizations in AF. This highlights the need for a more effective clinical management of AF patients, in order to reduce the risk of hospitalization, beyond the sole stroke prevention. In the paper from Patel and colleagues, it was also noted that in the framework of increased hospitalizations also the prevalence of comorbid conditions increased together with a progressively increase in age of AF patients [2], leading to an increase in the clinical complexity of these patients, as also underlined by other cohorts [4].

Recently the "Atrial Fibrillation Better Care" (ABC) pathway has been proposed to streamline the holistic management of patients with AF [5]. The ABC pathway (Fig. 1) considers a multifaceted approach for AF clinical management, contemporarily addressing the optimization of oral anticoagulant therapy to reduce stroke and thromboembolic risk ('A' for Avoid stroke), treating patients' symptoms to improve quality of life ('B' for Better symptoms management) and managing optimally other comorbidities ('C' for Cardiovascular and other comorbidities) in order to control for other risk factors and concomitant conditions [5]. A retrospective analysis from the "Atrial Fibrillation Follow-Up Investigation of Rhythm Management" (AFFIRM) trial, modelling a clinical management resembling the ABC pathway, found out how this approach was associated with a reduced risk of major bleeding, all-cause death, cardiovascular death and, relevantly, first hospitalization, first cardiovascular hospitalization and repeated hospitalizations [10].

In summary, facing the constant increase in hospitalization rates for AF patients, paired with the increasing age, clinical complexity and health-care associated costs, new approaches that will lead to a change in the clinical management are needed. Further data are still needed to assess the best way to address the clinical complexity in AF and to establish the best pathway to convey a proper holistic management, with the final goal to improve patients' quality of life and outcomes.

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