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Atrial fibrillation in the elderly

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Atrial fibrillation (AF) is the most frequent arrhythmia. Due to population aging, AF is a growing epidemic and its importance will continue to increase in the next decades.[1] Although the prevalence of AF is high in advanced age, the number of subjects with predisposing factors for AF is even higher. Most of these factors increase the risk of atrial fibrosis, an important component of atrial arrhythmia mechanisms. In fact, the new techniques to detect atrial fibrosis are showing the strong association between atrial fibrosis and AF risk. Regarding predisposing factors for AF, interatrial block (IAB) seems to be a key factor. The diagnosis of IAB is easy to perform using the surface ECG. It is partial when the P wave duration is ≥ 120 ms, and advanced if furthermore the P wave presents a biphasic pattern in II, III and VF. IAB is very frequent in the elderly and, particularly in the case of the advanced type, is associated with AF, and AF recurrences.[2] This association has been recently named Bayés syndrome.[3,4] Moreover, IAB increases the risk of stroke,[5] and seems to be associated with dementia.[6] The anticoagulation in elderly patients at high risk of AF without documented arrhythmias is an open issue,[7] but some data presented in this special number seem to support this hypothesis.

In fact, the association of IAB with the incidence of AF has been confirmed in different settings, including general population,[8,9] centenarians,[6] patients with previous AF,[10–13] after cavotricuspid isthmus ablation,[14] patients with high CHADS2 score,[15] patients with structural heart disease,[2,16] heart failure,[17–19] and Chagas cardiomyopathy.[20] In most cases, the risk was higher in those patients with advanced IAB.[21] Although the reasons for this association are still not clear, atrial remodeling due to delayed and abnormal left atrium activation, especially in case of advanced IAB, is probably the key factor in the chain of events that lead to atrial fibrosis. This delayed activation produces an abnormal contraction against a closed mitral valve,[22] increasing left atrium pressure. The final result is damage to the atrial wall, progressive dilation and fibrosis.[7] In fact, patients with advanced IAB present a large amount of fibrosis[23] with low atrial mobility and reduced strain by speckle-tracking echo.[24,25] This is relevant in the management of patients with AF, as it has been demonstrated that the amount of fibrosis is more important than the phenotype of AF (paroxysmal *vs*. permanent).[26]

As previously mentioned, elderly patients with IAB have not only an increased risk of developing AF but also thromboembolic stroke. This association has also been demonstrated in different settings, including general population,[27] centenarians,[6] hospitalized patients,[28–30] and patients with high CHA2DS2-VASc score.[31] This association seems to be related especially to the hyper coagulation and fibrosis induced by blood stasis as a consequence of an abnormal left atria activation.[7] In fact, it is probably the milieu of left atria what favors the hyper-coagulation state, more than the presence of AF. Finally, in very elderly subjects, IAB seems to be associated to cognitive impairment, most likely due to micro-embolisms, as the rate of dementia increases gradually in subjects with a normal P wave, to those with partial IAB, advanced IAB, and AF.[6]

In patients without documented arrhythmias, anticoagulant drugs are not usually recommended to prevent stroke. However, more than ten years ago, before the arrival of the safer direct anticoagulants, Ariyarajah, *et al*.,[30] already suggested that anticoagulation could have a role in patients with IAB. The data that support this potential role are stronger in patients with high CHA_2DS_2VASc,[31] and in those of global cohort with advanced IAB,[27] in order to prevent cognitive impairment and embolic stroke.[7,32,33] This option seems particularly interesting in the elderly that present structural heart disease. The Interatrial Block and Yearly Events (BAYES) registry is focused in these patients,[34] and will contribute assess the influence of IAB as a

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predictor of AF, stroke and cognitive impairment. If the role of IAB is confirmed, the next step would be to perform a clinical trial comparing anticoagulation with placebo, to try to change the present paradigm that makes AF necessary to prescribe anticoagulation to these patients. This would answer the question if advanced aged patients with high risk of AF and no previous documented arrhythmias benefit from anticoagulation.

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