Anticoagulation for Cardioversion of Acute Onset Atrial Fibrillation

Time to Revise Guidelines?*

Demosthenes G. Katritsis, MD, PhD, Mark E. Josephson, MD

ΩΦΕΛΕΕΙΝ Η ΜΗ ΒΑΛΙΤΕΙΝ (First do no harm)
—Hippocrates (1)

The need of proper anticoagulation for cardioversion of atrial fibrillation (AF) episodes with duration ≥48 h is well established. Nonanticoagulated patients carry a risk for thromboembolism of up to 10% (2), whereas the risk in anticoagulated patients depends on the intensity of anticoagulation, with reported values ranging from 0% to 4% (2–4). The optimum management of patients who undergo cardioversion performed within 48 h after AF onset has been controversial. The 2010 European Society of Cardiology guidelines recommend intravenous heparin or weight adjusted therapeutic dose low molecular weight heparin pericardioversion, without the need for post-cardioversion oral anticoagulation, in the absence of thromboembolic risk factors (IIb-C) (5). The 2012 update of the ESC guidelines, although they refer to peri-cardioversion anticoagulation, do not provide specific recommendations on the issue (6). The American Heart Association/American College of Cardiology/Heart Rhythm Society 2014 guidelines allow, on a Class IIB-C recommendation, even no antithrombotic for cardioversion at all in patients at low thromboembolic risk (7). The choice of Class IIB-C recommendation by both American and European guidelines, is indicative of the limited, and controversial, data on the issue when these recommendations appeared. However, we now have substantially more information to guide us on an evidence-based management of these patients.

Although some earlier studies had not detected thromboembolism following cardioversion of acute AF (<48 h duration) performed without anticoagulation (8–11), there had been evidence that the likelihood of thromboembolism following cardioversion of AF lasting <48 h is not negligible, approximately 0.7% to 0.8% (12,13). In the more recent FinCV (Finnish CardioVersion) study on 5,116 cardioversions performed for AF lasting <48 h without peri- or post-procedural anticoagulation, embolic events were documented in 38 patients. Of note, 26% of them had CHA2DS2VASc score 0 to 1 (13). In this issue of JACC: Clinical Electrophysiology, Garg et al. (14) provide further useful information on a retrospective analysis of 567 cardioversions, performed in 484 patients within 48 h since the onset of AF and without therapeutic anticoagulation. Patients had a 5 times higher chance to get a thromboembolic event compared to those properly anticoagulated. However, no events were documented in post-operative patients, and in those with CHA2DS2VASc score <2. Further information can be gained by a careful look at the actual data presented by Garg et al. (14). First, in 6.7% of patients with a CHA2DS2VASc score 0, smoke was identified by the transesophageal echocardiography (TEE), thus indicating the potential thrombogenicity of the procedure regardless of underlying risk factors. Second, thromboembolism did not always occur immediately after cardioversion due to thrombus dislodgement. Third, although at Cleveland Clinic patients who were chosen for anticoagulation had a higher percentage of comorbidities such as prior stroke and heart failure, these comorbidities were not entirely absent in

*Editorials published in JACC: Clinical Electrophysiology reflect the views of the authors and do not necessarily represent the views of JACC: Clinical Electrophysiology or the American College of Cardiology.

From the Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts. Both authors have reported that they have no relationships relevant to the contents of this paper to disclose.
the non-anticoagulated group (14). However, prior stroke/transient ischemic attack is the most powerful risk factor for thromboembolism in AF, and reliably confers a stroke risk averaging 10% per year (15). In the large Danish registry on 16,274 patients subjected to cardioversion of AF of undetermined duration, thromboembolic risk stratification by the CHA2DS2-VASC score did not change the results, and even patients with scores 0 to 1 had a doubled risk of thromboembolism following cardioversion without, as opposed to, anticoagulation (2).

These data indicate that patients with acute (<48 h) AF, and even with a CHA2DS2-VASC score <2, should not be cardioverted, either with drugs or DC, without anticoagulation. We think that both peri- and post-cardioversion anticoagulation for 1 month, as thromboembolism may occur well beyond cardioversion, should be given a Ila-(B-NR) or at least a Ila-(C-LD) recommendation. This recommendation is even stronger regarding patients not subjected to TEE. A TEE, in cases of no prior adequate anticoagulation, is advisable regardless of the AF episode duration, since in AF lasting <48 h left atrial thrombi have been detected in 1.4% of patients, and dense spontaneous echo contrast in 10%, of whom 63% were receiving anticoagulant therapy (16). Previous asymptomatic episodes cannot be excluded, and subclinical episodes of AF are associated with silent cerebral infarcts (17). For pericardiocversion anticoagulation, unfractionated heparin, or even a low molecular weight heparin, although data on this issue are limited, should be used. Post-cardioversion, if the AF is nonvalvular, non-vitamin K-dependent anticoagulant agents are preferable to warfarin, as the 3 major trials suggested (18–21), and the X-Vert (eXplore the efficacy and safety of once-daily oral riVaroxaban for the prevention of cardiovascular events in patients with non-valvular atrial fibrillation scheduled for cardioversion) trial indicated (22). Of course, all patients should be considered on an individual basis, and in view of the CHA2DS2-VASC score, as well as risk factors for both thromboembolism and bleeding not considered by the CHA2DS2-VASC score, such as 65 to 74 years of age, renal and liver function, and drugs and alcohol abuse. In general, however, cardioversion with intravenous unfractionated heparin and followed by 1-month treatment with therapeutic warfarin, or a non-vitamin K-dependent anticoagulant agent for nonvalvular AF, appears to be the most prudent and safe approach, especially in patients >65 years of age. Cardioversion-related thromboembolism is an iatrogenic complication, and we must do our utmost to protect our patients from such a devastating event.

REPRINT REQUESTS AND CORRESPONDENCE: Dr. Demosthenes G. Katritsis, Division of Cardiology, Beth Israel Deaconess Medical Center, 185 Pilgrim Road, Baker 4, Boston, Massachusetts 02215. E-mail: dkatrits@bidmc.harvard.edu.

REFERENCES


**KEY WORDS** anticoagulation, atrial fibrillation, cardioversion