Management of Anticoagulation with Cardioversion for Atrial Fibrillation
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The presence of the atrial cardiomyopathy that is atrial fibrillation is well-recognized to increase the risk of a cardioembolic ischemic stroke or other systemic thromboembolism. The period around the time of a direct-current (DC) cardioversion (CV) or a pharmacological CV is recognized to be a particularly high-risk period. Historical observational data suggests that the 30-day period after CV of atrial fibrillation (AF) or atrial flutter (AFL) that has been present for greater than 48 hours in the absence of anticoagulation presents a relative risk of 2.6 times (absolute risk 1.9%) that of the average 30-day period of persistent AF/AFL in the absence of anticoagulation (absolute risk 0.5%). Furthermore, observational data also indicate that the thromboembolic risk around the time of CV of AF/AFL can be reduced (relative risk 0.26) by performing the CV under the cover of anticoagulation. Accordingly, all jurisdictions recommend that three weeks of therapeutic anticoagulation should precede cardioversion of AF/AFL that has been present for more that 48 hours and that anticoagulation should then be continued for at least four additional weeks. It is noteworthy that the 48 hour AF/AFL duration in this recommendation was empirically-derived based on the hypothetical belief that it takes longer than 48 hours to produce the left atrial clot responsible for the subsequent systemic thromboembolic event. More recently, experiments have shown that platelets are activated, the coagulation cascade is activated, and the left atrial appendage emptying velocity is reduced within hours of CV of AF/AFL. Furthermore, transesophageal echocardiography has shown that left atrial clot formation occurs frequently within hours after the onset of AF/AFL. These observations have prompted several groups to report the 30-day thromboembolic rates after cardioversion of AF/AFL of less than 48 hours in the presence of and in the absence of peri-procedural anticoagulation (the two groups not being determined randomly). In these reports, the probability of a systemic thromboembolic event in the 30-days after CV of AF/AFL of less than 48 hours duration in the absence of anticoagulation ranged from 0.7% to 1.4% while that in the presence of anticoagulation ranged from 0.13% to 0.40%. One prospective observational study (FinCV) has attempted to parse the risk of a systemic thromboembolic event after CV of AF/AFL of less than 48 hours duration in the absence of anticoagulation. In such patients, the FinCV study identified AF duration of greater than 12 hours to be the strongest predictor of a subsequent systemic thromboembolic event. Other risk factors were a $CHAD_2S_2$-VASc score of 2 or greater, female sex, and advancing age. These observations have compelled many jurisdictions (including the Canadian Cardiovascular Society) to recommend that all patients with AF/AFL of less than 48 hours duration who undergo CV who are not anticoagulated should have a quick acting anticoagulant administered as soon as possible before the CV and should then receive 4 weeks of anticoagulation after the CV. The Canadian Cardiovascular Society has further recommended that cardioversion of AF/AFL without three weeks of preceding anticoagulation (or performance of a clearing trans-esophageal echocardiogram) in patients with AF/AFL of 12-48 hours duration proceed only if the $CHADS_2$ score is less than 2.