Management of Sub-Clinical Atrial Fibrillation (SCAF)
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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. Indeed, approximately 20% of all strokes are ascribed to atrial fibrillation AF) or atrial flutter (AFL). The probability of this adverse outcome may be predicted (albeit with limited accuracy) using such predictive tools as $CHADS_2$ and CHA_2DS_2-VASc scoring systems. More recently, the duration of AF/AFL has been demonstrated to predict the probability of stroke or systemic thromboembolism. Patients with permanent AF/AFL have a higher risk than do patients with paroxysmal AF/AFL (adjusted hazard ratio 1.8) and patients with persistent AF/AFL have a higher risk than do patients with paroxysmal AF/AFL (adjusted hazard ratio 1.4). These observations have prompted the quest for determination of the minimum duration/burden of AF/AFL that imparts a risk of stroke or systemic thromboembolism and the quest for determination of the minimum duration/burden of AF/AFL that warrants use of chronic anticoagulation for prevention of stroke or systemic thromboembolism. In this regard, the shortest durations of AF/AFL are best determined by cardiac implantable electronic devices. These devices report the occurrence of episodes of atrial high rate events (AHRE). Using simultaneously recorded intracardiac electrograms from the device or using simultaneously recorded Holter electrocardiographic recordings, device reported AHRE corresponds to AF/AFL with a positive predictive value that is in the 80 to 95% range provided that the rate chosen for detection is fast enough (generally >180 bpm) and that the duration chosen is long enough (generally >5 minutes). The primary differential diagnosis is device-recorded artifact. These attributes are still in use despite the fact that use of atrial electrogram morphologies reported by the device exceed the predictive values of AHRE largely because device storage capacity may limit storage of atrial electrograms more so than annotated AHRE episodes. Device-recorded AHRE have come to be synonymous with sub-clinical atrial fibrillation (SCAF). SCAF has been found to be common in patients who have received a permanent pacemaker or ICD with an atrial lead – our most reliable estimate to date being a 13% incidence per year. SCAF of sufficient duration predicts an increased risk of the development of clinical AF/AFL (HR 5.6) and of stroke (HR 2.5). Unfortunately, the definition of "sufficient duration" remains elusive. At present it appears that that duration is greater than 6 minutes and less than 24 hours. In this duration window the risk of stroke or systemic thromboembolism is increased but to a level approximately half that of clinical AF/AFL. There is an even greater uncertainty with respect to whether or not anticoagulation therapy has a favorable risk-benefit ratio with respect to prevention of systemic thromboembolic events. Two major, international, randomized clinical trials are underway with the intent to answer the later question – ARTESiA and NOAH-AFNET 6. Meanwhile, anticoagulation of patients with SCAF is recommended only for those at high risk of stroke (variably defined).