cainide or propafenone. A short-acting beta-blocker also is helpful in lowering the ventricular rate and improving symptoms prior to cardioversion. Because patients with symptomatic AF also may have asymptomatic AF, therapeutic anticoagulation with warfarin is appropriate in patients with risk factors for stroke. FM

Advanced Age, Anticoagulation Intensity, and Risk for Intracranial Hemorrhage Among Patients Taking Warfarin for Atrial Fibrillation


Study Question: What is the risk of intracranial hemorrhage (IH) in older patients with atrial fibrillation (AF) treated with warfarin?
Methods: This retrospective case-control study compared 170 patients with AF who had an IH during treatment with warfarin to 1020 anticoagulated AF patients who did not have an IH. The international normalized ratio (INR) closest to the time of IH was determined by record review.
Results: Patients with an IH were older than control subjects (mean age 78 years vs. 75 years) and had a higher INR (median 2.7 vs. 2.3). Risk factors for IH were age ≥85 years (OR 2.5) and an INR ≥3.5 (OR 4.6). An INR <2.0 was associated with the same risk of IH as an INR of 2–3.
Conclusions: Age ≥85 years and an INR ≥3.5 are associated with an increased risk of IH in patients with AF treated with warfarin.
Perspective: Prior studies have shown that the risk of stroke increases substantially at INRs <2.0 in patients with AF treated with warfarin. For example, the risk of stroke at an INR of 1.7 is 2–3 times higher than when the INR is ≥2.0. But because of the increased risk of IH in elderly patients, the ACC/AHA/NASPE guidelines in 2001 recommended a target INR of 1.6–2.0 in patients older than 75 years of age. An important contribution of the present study is the demonstration that the risk of IH does not vary significantly between INRs of 1.5–3.5. Therefore, even in the elderly, the optimal risk:benefit ratio of anticoagulation is at an INR range of 2–3. FM

Obesity and the Risk of New-Onset Atrial Fibrillation


Study Question: Is obesity an independent risk factor for atrial fibrillation (AF)?
Methods: The subjects of this study were 5282 individuals (mean age 55 years) in the Framingham Heart Study who were at least 35 years old and who had no prior history of AF. Echocardiograms were performed upon study entry. A body mass index (BMI) <25 was defined as normal and a BMI ≥30 was defined as obese. Medical records were reviewed to identify new-onset AF during follow-up.
Results: AF occurred in 10% of individuals during a mean of 14 years of follow-up. Every 1-unit increase in BMI was associated with a 4% increase in the risk of AF, independent of multiple other demographic and clinical variables. Obesity was independently associated with a 50% increase in risk of AF. Left atrial diameter was significantly larger in obese individuals than in those with normal BMI. When left atrial diameter was included in the multivariate analysis, BMI was no longer an independent risk factor for AF.
Conclusions: Obesity is associated with an increased risk of AF. The association between obesity and AF is mediated by left atrial enlargement.
Perspective: Obesity is linked with sleep apnea, and a recent study demonstrated that sleep apnea is associated with a greater risk of AF. Therefore, the relationship between obesity and AF in the present study may be mediated in part by sleep apnea, which was not one of the variables included in the multivariate analysis. Nevertheless, this study raises the interesting question of whether weight loss may decrease the probability of recurrent AF in obese individuals being treated for AF. FM

Prevention of Iatrogenic Atrial Tachycardia After Ablation of Atrial Fibrillation. A Prospective Randomized Study Comparing Circumferential Pulmonary Vein Ablation With a Modified Approach


Study Question: Can the incidence of proarrhythmia after circumferential pulmonary vein ablation (CPVA) for atrial fibrillation (AF) be reduced by the addition of linear ablation lesions?
Methods: In this study, 560 patients (mean age 56 years) with AF (chronic in 37%) were randomly assigned to undergo either CPVA (n = 280) or CPVA plus ablation lines along the left atrial posterior wall and mitral isthmus (CPVA-M, n = 280). There was a 6-week postablation blanking period. The end points of the study were the incidence of atrial tachycardia (AT) and AF during 12 months of follow-up.
Results: Compared to CPVA, CPVA-M was associated with a significantly lower incidence of AT (10% vs. 4%). The incidence of AF during follow-up was approximately 14% with both approaches. Most ATs were macroreentrant left atrial flutters. The strongest predictors of AT were multiple gaps in the ablation lines and a history of chronic AF.
Conclusions: The incidence of proarrhythmia after CPVA is reduced by the addition of ablation lines along the left atrial roof and mitral isthmus.
Perspective: It is difficult to achieve complete conduction block in large, encircling ablation lines. Gaps in the ablation lines explain why left atrial flutters are relatively common after CPVA. Because many macroreentrant left atrial flutters utilize the mitral isthmus or the posterior left atrium, addi-
tional ablation in these regions decreases the incidence of proarrhythmia after CPVA. However, ablation along the posterior wall is associated with a risk of atrio-esophageal fistula formation. The safest way to ablate AF and minimize the incidence of recurrent AF and AT during follow-up requires further investigation. FM

Left Atrial Tachycardia Originating From the Mitral Annulus-Aorta Junction


Study Question: What are the characteristics of focal left atrial tachycardia (LAT) that arises at the mitral annulus-aorta junction (MA-AJ)?

Methods: Among 35 consecutive patients with focal LAT, a subgroup of 10 patients had the site of tachycardia origin at the MA-AJ. These 10 patients (mean age 42 years, none with structural heart disease) were the subjects of this study. Detailed electrophysiologic analysis and radiofrequency ablation were performed. In addition, the MA-AJ region of mouse embryos was analyzed by light microscopy.

Results: The tachycardias were inducible by extrastimuli and/or rapid pacing, and had a mean cycle length of 340 ms, a negative P wave in lead aVL, and positive P waves in leads III and V₁. Electrophysiologic findings were consistent with triggered activity. Earliest endocardial activation at the MA-AJ occurred a mean of 44 ms before the P wave. Radiofrequency ablation was effective in all patients, with no recurrences of LAT during a mean follow-up of 24 months. Analysis of mouse embryos demonstrated the presence of the specialized conduction system in the MA-AJ starting at 11 days of development, with regression by 15 days.

Conclusions: Focal LAT caused by triggered activity may arise at the MA-AJ, possibly because of remnants of the specialized conduction system between the mitral annulus and aorta.

Perspective: The finding of specialized conduction fibers in the MA-AJ of mouse embryos is intriguing and raises the possibility that remnants of the conduction system may be responsible for focal LAT. However, focal LAT also may occur at regions of the mitral annulus that are distant from the MA-AJ, weakening the hypothesis that there is a causal link between the specialized conduction system and focal LAT arising at the MA-AJ. FM

Sagittal Abdominal Diameter and Risk of Sudden Death in Asymptomatic Middle-Aged Men. The Paris Prospective Study I


Study Question: Is abdominal fat related to the risk of sudden death (SD)?

Methods: This prospective study enrolled 7079 asymptomatic men between the ages of 43 and 52 years. A complete clinical evaluation was performed, including measurement of body mass index (BMI) and sagittal abdominal diameter (SAD). The duration of follow-up was 23 years.

Results: The mortality rate was 29% over 23 years of follow-up; SD and myocardial infarction (MI) occurred in 1.7% and 2.7% of patients, respectively. After adjustment for other risk factors, the risk of SD increased across quintiles of SAD; the relative risk of SD in the 5th compared to the 1st SAD quintile was 2.6. No relationship existed between BMI and the risk of SD across the first 4 quintiles of BMI; the relative risk of SD in the 5th compared to the 1st BMI quintile was 3. Larger SAD was associated with an increased risk of SD (but not MI), independent of BMI and other cardiovascular risk factors.

Conclusions: Abdominal fat is a risk factor for SD, independent of BMI, smoking, blood pressure, diabetes, and plasma cholesterol concentration.

Perspective: A recent study demonstrated that obesity is associated with an increased risk of atrial fibrillation, and this study demonstrates that obesity also may predispose to fatal ventricular arrhythmias. Because the BMI includes lean body mass, the SAD is a more accurate indicator of excessive adipose. This explains why SAD was associated with SD independent of BMI. The mechanisms by which abdominal fat predisposes to SD are unclear, but may involve proarrhythmic effects of fatty acids released from adipose depots. FM

Prophylactic Use of an Implantable Cardioverter-Defibrillator After Acute Myocardial Infarction


Study Question: Does the implantable Cardioverter-defibrillator (ICD) improve survival when implanted early after myocardial infarction (MI)?

Methods: Patients with a MI 6 to 40 days previously, an ejection fraction (EF) (≤0.35), and depressed heart rate variability were randomly assigned either to ICD implantation (n = 332) or to a control group (n = 342). Their mean age was 62 years and their mean EF was 0.28. The primary end point was death from any cause. The range of follow-up was 15–48 months.

Results: During a mean follow-up of 30 months, there was no significant difference in the mortality rate between the ICD group (18.7%) and the control group (17%). Compared to the control group, the ICD group had a 58% lower arrhythmic death rate and a 75% higher nonarrhythmic death rate.

Conclusions: The ICDs have an impact on the mode of death, but they do not improve overall survival in high-risk patients with a recent MI.

Perspective: The results suggest that high-risk patients who receive an ICD soon after a MI are protected from sudden death but become more susceptible to dying from other causes.