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Chronic Atrial Fibrillation

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Atrial fibrillation is a supraventricular tachyarrhythmia characterized by the presence of uncoordinated atrial activation and deteriorating atrial mechanical function. Risk factors for atrial fibrillation include increasing age, male sex, coexisting cardiac disease, thyroid disease, febrile illness, electrolyte imbalance, cancer, and acute infections.

Consensus is that beta blockers are more effective than digoxin for controlling symptoms of chronic atrial fibrillation, but very few trials have been done. When a beta blocker alone is ineffective, current consensus supports the addition of digoxin.

Current consensus is that calcium channel blockers are more effective than digoxin for controlling heart rate, but very few randomized controlled trials have been done. When a calcium channel blocker alone is ineffective, the addition of digoxin is effective in improving exercise tolerance and reducing heart rate.

Choosing between using a beta blocker and a calcium channel blocker is dependent on individual risk factors and coexisting morbidities.

We found inconclusive evidence comparing rhythm-control versus rate-control strategies. Current consensus supports the use of either strategy, depending on individual risk factors and coexisting morbidities. Adverse effects are likely to be more common with rhythm-control strategies.

Definition

Atrial fibrillation is the most commonly encountered and sustained type of cardiac arrhythmia in clinical practice. It is a supraventricular tachyarrhythmia characterized by the presence of uncoordinated atrial activation and deteriorating atrial mechanical function. On the surface electrocardiogram (ECG), P waves are absent and are replaced by rapid fibrillatory waves that vary in size, shape, and timing, leading to an irregular ventricular response when atrioventricular conduction is intact.

Chronic atrial fibrillation is most commonly classified according to its temporal pattern. Faced with a first detected episode of atrial fibrillation, four recognized patterns of chronic disease may develop: (1) paroxysmal atrial fibrillation refers to self-terminating episodes of atrial fibrillation, usually lasting less than 48 hours (both paroxysmal and persistent atrial fibrillation may be recurrent); (2) persistent atrial fibrillation describes an episode of sustained atrial fibrillation (usually more than seven days) that does not convert to sinus rhythm without medical intervention, with the achievement of sinus rhythm by either pharmacologic or electrical cardioversion; (3) long-standing persistent atrial fibrillation pertains to atrial fibrillation with a duration of one year or longer, in which a decision has been made to implement a rhythm-control strategy; or (4) permanent atrial fibrillation describes episodes of persistent (usually more than one year) atrial fibrillation, in which cardioversion is not attempted or is unsuccessful, with atrial fibrillation accepted as the long-term rhythm for that person.

Lone atrial fibrillation is largely a diagnosis of exclusion and refers to atrial fibrillation occurring in the absence of concomitant cardiovascular disease (e.g., hypertension) or structural heart disease (normal

echocardiogram), with otherwise normal results on ECG (with the exception of atrial fibrillation) and chest radiography. This review covers only chronic atrial fibrillation (persistent and permanent).

In most cases of suspected atrial fibrillation, a 12-lead ECG is sufficient for diagnosis confirmation. However, if diagnostic uncertainty remains, such as in chronic permanent atrial fibrillation, the use of 24-hour (or even seven-day) Holter monitoring or an event recorder (e.g., Cardiomemo) may also be required. The most common presenting symptoms of chronic atrial fibrillation are palpitations, shortness of breath, fatigue, chest pain, dizziness, and stroke.

Incidence and Prevalence

Atrial fibrillation carries an overall population prevalence of 0.5 to 1 percent, and an incidence of 0.54 cases per 1,000 person-years. The prevalence of atrial fibrillation is highly age-dependent, and increases markedly with each advancing decade, from 0.5 percent at 50 to 59 years of age to almost 9 percent at 80 to 90 years of age. Data from the Framingham Heart Study suggest that the lifetime risk of developing atrial fibrillation for men and women 40 years and older is approximately one in four. This risk is similar to that reported by the Rotterdam Study investigators, who found that the lifetime risk associated with developing atrial fibrillation in men and women 55 years and older was 24 percent and 22 percent, respectively. The Screening for Atrial Fibrillation in the Elderly project reported that the baseline prevalence of atrial fibrillation in persons older than 65 years was 7.2 percent, with a higher prevalence in men (7.8 percent) and in persons 75 years and older, with an incidence of 0.69 to 1.64 percent per year, depending on the screening method.

The U.S. Census Bureau reports that the number of persons with atrial fibrillation is projected to be 12.1 million by 2050, assuming that there are no further increases in age-adjusted incidence of atrial fibrillation. These incidence data refer to cross-sectional study data, whereby most persons would have atrial fibrillation of more than seven days' duration (persistent, paroxysmal, or permanent atrial fibrillation), and do not refer to acute atrial fibrillation.

Etiology and Risk Factors

Atrial fibrillation is linked to all types of cardiac conditions, including cardiothoracic surgery, as well as to a large number of noncardiac conditions, such as thyroid disease, any febrile illness, electrolyte imbalance, cancer, and acute infections.

Prognosis

Chronic atrial fibrillation confers an enormous and significant clinical burden. It is an independent predictor of mortality, and is associated with an odds ratio for death of 1.5 for men and 1.9 in women, independent of other risk factors. It increases the risk of ischemic stroke and thromboembolism by an average of fivefold. Furthermore, the presence of chronic atrial fibrillation is linked to more severe strokes, with greater disability and a lower discharge rate to patients' homes. Chronic atrial fibrillation is a common cause (3 to 6 percent) of all medical admissions and results in longer hospital stays. In addition, chronic atrial fibrillation increases the risk of developing heart failure and adversely affects quality of life, including cognitive function.

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