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Clinical study

The natural history of atrial fibrillation: Incidence, risk factors, and prognosis in the manitoba follow-up study

MD Andrew D. Krahn ... MD T. Edward Cuddy

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Purpose

Atrial fibrillation is a common arrhythmia associated with increased cardiovascular morbidity and mortality. This study was undertaken to identify the natural history of this condition, including risk factors for its development, and outcome.

Patients and methods

The incidence of atrial fibrillation among 3,983 male air crew recruits observed continuously for 44 years was calculated based on person-years of observation. Age and 23 variables were examined to identify risk factors for atrial fibrillation. Controlling for age and 9 prognostic variables, the effect of atrial fibrillation on 8 outcomes was examined. Analysis of risk factors for atrial fibrillation and outcome after atrial fibrillation was based on a Cox proportional hazard model using time-dependent covariates.

Results

Of the 3,983 study members, 299 (7.5%) developed atrial fibrillation during 154,131 person-years of observation. The incidence rose with age from less than 0.5 per 1,000 person-years before age 50 to 9.7 per 1,000 person-years after age 70. Risk for atrial fibrillation was increased with myocardial infarction (relative risk [RR]3.62), angina (RR 2.84), and ST-T wave abnormalities in the absence of ischemic heart disease (RR 2.21). The RR for atrial fibrillation was strongest at the onset of ischemic heart disease and diminished over time. The rate of atrial fibrillation was 1.42 times increased in men with a history of hypertension. Congestive heart failure, valvular heart disease, and cardiomyopathy were important but uncommon risk factors. Atrial fibrillation independently increased the risk for stroke (RR 2.07) and congestive heart failure (RR 2.98). Total mortality rate was increased 1.31 times; cardiovascular mortality including and excluding fatal stroke were also increased (RR 1.41 and 1.37, respectively).

Conclusions

The incidence of atrial fibrillation in men increases with advancing age. Clinical cardiac abnormalities, particularly recent ischemic heart disease and hypertension, are strongly associated with increased risk for atrial fibrillation. Atrial fibrillation increases morbidity and mortality, but the magnitude of the increase may be less than previously reported.

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