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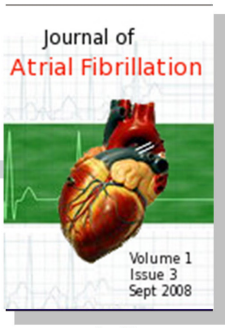

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Physical Activity and Incidence of Atrial Fibrillation in Older Adults: The Cardiovascular Health Study

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Introduction

Retrospective case-control studies and case series of younger athletes and middle-aged adults have suggested an adverse association between physical activity and development of atrial fibrillation. However, these studies have evaluated subjects engaged in either vigorous exertion or endurance training. On the other hand, habitual physical activity might be expected through salutatory effects on blood pressure, vascular compliance, coronary disease, and heart failure to reduce the incidence of atrial fibrillation in the general population. The aim of this study was to assess the effect of habitual light to moderate physical activity on the incidence of atrial fibrillation among older adults.

Methods

IThe authors evaluated 5446 patients (58% female) = 65 years of age (72.8 ± 5.6 years) who were followed prospectively in The Cardiovascular Health Study, which was a National Heart, Lung, and Blood Institute sponsored prospective cohort study of determinants of cardiovascular risk among older subjects. Various measures of physical activity were assessed. Usual leisure-time activity (kcal/week) was assessed at baseline and at the third and seventh annual visits by use of a modified Minnesota Leisure-Time Activities questionnaire. This evaluates the frequency and duration of 15 different activities during the prior 2 weeks. The findings were quantified in quintiles. Usual exercise intensity was defined as no exercise or low, medium, or high intensity exercise. Finally, information on blocks walked (quintiles) and usual pace walked (< 2, 2-3, >3 mph) was obtained. Cases of atrial fibrillation were identified on the basis of either annual ECGs obtained on study participants or from hospital discharge diagnoses.

Our Experience

WDuring 12 years of follow-up, 1061 new cases of atrial fibrillation were documented, yielding an incidence rate of 22.4 cases per 1000 person-years. After adjustment for age and gender, both leisure-time activity and exercise intensity were associated with lower incidence of atrial fibrillation. Compared with the lowest quintile, individuals in quintiles 3,4, and 5 for leisure-time activity had 25%, 22%, and 36% lower risk, respectively of developing atrial fibrillation ($p < 0.001$). For exercise intensity, a U-shaped curve was observed.

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Compared with no regular exercise, patients engaged in moderate intensity exercise had a 28% lower risk of atrial fibrillation; however, those engaged in high-intensity exercise faired no better than individuals with a lifestyle of either no exercise or only low intensity exercise. A protective effect against atrial fibrillation was also observed in individuals who walked longer distances and at a brisker pace.

The authors repeated the analysis after excluding 1150 patients with a significant co-morbidity that could affect physical activity, such as claudication, angina, limited vision, and abnormal FEV1. However, the findings of the study were not significantly altered. In a novel analysis, the authors also calculated the proportion of new atrial fibrillation cases attributable to the lack of moderate physical activity (leisure-time activity below the median of 616 kcal/week, walking fewer than 12 blocks a week, or walking at a pace less than 2 mph). Overall, 26% (95% CI: 7-43%) of new atrial fibrillation cases were attributable to a lack of moderate level physical activity.

Conclusions

Atrial fibrillation continues to be an important clinical problem. In this study, 1 in 5 adults = 65 years of age developed atrial fibrillation during a 12-year follow-up period. This is an underestimate of the true incidence as many cases of paroxysmal atrial fibrillation (especially if asymptomatic) were likely missed based on the study design. The finding that engagement in only moderate leisure-time activity and regular walking at a moderate distance and pace may attenuate this risk in a quarter of the population is particularly impressive. These data highlight the need for public health policies that encourage participation in regular physical activity as part of our society's day-to-day lifestyle.

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