

Prevalence of atrial fibrillation in a primary health care centre in Fars province, Islamic Republic of Iran

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معدل انتشار الرجفان الأذيني في مراكز الرعاية الصحية الأولية في مقاطعة فارس في إيران

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الخلاصة: توضح هذه الدراسة معدل انتشار الرجفان الأذيني في مركز الرعاية الصحية الأولية في مقاطعة فارس في إيران. فقد تم تحري جميع المرضى المتحولين البالغين عمر خمسين سنة أو أكثر والذين زاروا مركز الرعاية الصحية الأولية في الفترة من نيسان/أبريل وتشرين الأول/أكتوبر من عام 2001 لكشف الرجفان الأذيني باستخدام التخطيط المعياري ذي الاتجاهات الاثني عشر. لقد كان العمر الوسطي للمشاركين في الدراسة 64.0 ± 8.9 سنة. ومن بين هؤلاء المشاركين الذين يبلغ تعدادهم 463 والذين تراوحت أعمارهم بين خمسين و79 عاماً كان لدى 13 منهم (2.8%) رجفان أذيني (العمر الوسطي لديهم 74 عاماً)، وكان معظمهم من النساء (10 من بين 230) مقابل الرجال (3 من بين 233). وبخلاف الدراسات السابقة التي أجريت في البلدان النامية فإن معدل الانتشار يزداد بمقدار ثلاثة أضعاف مرور عقْد من العمر، فقد ازداد زيادة ملحوظة من 0.6% في سنوات العمر 50-59 ليصبح 6.4% في سنوات العمر 70-79. ومع ازدياد التشيخ في بعض البلدان النامية فإن الرجفان الأذيني وما يسببه من سكتات دماغية قد يصبح من المشكلات الصحية البالغة الأهمية.

ABSTRACT This study determined the prevalence of atrial fibrillation at a primary health care centre in Fars province of the Islamic Republic of Iran. All ambulatory people aged ≥ 50 years visiting the centre between April and October 2001 were screened for atrial fibrillation using a standard 12-lead ECG. The mean \pm SD age of participants was 64.0 ± 8.9 years. Of 463 participants aged 50–79 years, 13 (2.8%) had atrial fibrillation (median age 74 years), significantly more women (10/230) than men (3/233). Unlike previous studies in industrialized countries, the prevalence tripled with each decade of life and increased significantly from 0.6% in the 50–59 years to 6.4% in the 70–79 years age group. With increasing longevity in some developing countries, atrial fibrillation and consequently stroke may become major health problems.

Prévalence de la fibrillation auriculaire dans un centre de soins de santé primaires de la province de Fars (République islamique d'Iran)

RESUME Cette étude a permis de déterminer la prévalence de la fibrillation auriculaire dans un centre de soins de santé primaires de la province de Fars (République islamique d'Iran). Tous les patients ambulatoires âgés de 50 ans ou plus qui ont consulté au centre entre avril et octobre 2001 ont subi un examen à la recherche d'une fibrillation en réalisant un ECG standard à 12 dérivations. L'âge moyen des participants était de 64.0 ± 8.9 ans. Sur les 463 participants âgés de 50-79 ans, 13 (2,8 %) avaient une fibrillation auriculaire (âge médian 74 ans) ; il y avait un nombre significativement plus important de femmes (10/230) que d'hommes (3/233). Contrairement aux études précédentes réalisées dans les pays industrialisés, la prévalence triplait à chaque décennie de vie et augmentait de manière significative, de 0,6 % dans le groupe d'âge des 50-59 ans à 6,4 % dans celui des 70-79 ans. Compte tenu de l'accroissement de la longévité dans certains pays en développement, la fibrillation auriculaire et donc les accidents vasculaires cérébraux peuvent devenir des problèmes de santé majeurs.

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Introduction

First described almost 100 years ago, atrial fibrillation is now the most common clinically important sustained cardiac arrhythmia [1,2]. Atrial fibrillation is associated with a substantial morbidity [2,3] and is a major health care burden for many countries. The arrhythmia is the complete absence of coordinated atrial systole, characterized on the electrocardiogram (ECG) by the absence of 'P' waves before each QRS complex and the presence of rapid, irregular 'F' waves that vary in size, shape and timing. Atrial fibrillation is a potent predisposing factor for ischaemic stroke, and is associated with a 5-fold increase in risk [4,5]. Those with rheumatic heart disease and atrial fibrillation have an even higher (17-fold) increased risk of stroke [1]. It may also be an independent risk factor for death, with a relative risk of around 1.5 for men and 1.9 for women after adjustment for known risk factors [6].

The prevalence of atrial fibrillation reported in various studies, mostly conducted in industrialized countries, doubles with each decade of life and ranges from 0.05% among persons aged 25–35 years to 13.7% in those aged 80 years or older [7,8]. Nevertheless, little information is available about the prevalence of the disorder in developing countries. This study was conducted to determine the prevalence of atrial fibrillation in people aged 50 years and older attending a primary health care centre in Fars province in the south of the Islamic Republic of Iran.

Methods

Two general practitioners who practise in a primary health care centre affiliated to the National Iranian Oil Company (NIOC) health care system were assigned to screen

patients for atrial fibrillation between April and October 2001. This centre sees about 400 patients a day in its 8 general practice clinics. The patients are employees of NIOC and their family members. They therefore range in age from children to old people. Around 70%–80% of the attendees are from urban areas and the remaining patients come from suburban/rural regions. Participants were selected from those who attended the centre for either a medical problem or routine check-up through simple random sampling; each patient attending the health care centre was assigned to 1 of 8 general practice clinics at random. The assignment was done by computer program, so that each doctor saw almost equal number of patients in each working day. Regardless of their presenting signs and symptoms, all ambulatory persons aged ≥ 50 years who were seen by each of the 2 general practitioners were included in the study. The patients were informed of the study objectives, the time needed to complete it and the procedure in detail. None of them refused to participate.

The diagnosis of atrial fibrillation (complete absence of coordinated atrial systole, characterized by the absence of 'P' waves before each QRS complex and the presence of rapid, irregular 'F' waves that vary in size, shape and timing) was made after recording a single standard resting 12-lead surface ECG (Fukuda Cardisuny 501B-III, Japan) with a 1-minute rhythm strip.

For analysis, the participants were categorized into 50–59, 60–69, 70–79 and ≥ 80 years age groups. Data were analysed using *SPSS*, version 10.

Results

Between April and October 2001, 480 Caucasian patients were entered into the study.

As only 17 participants were aged ≥ 80 years, further analysis of prevalence was not performed on this age group. The age distribution of the remaining 463 individuals (233 males, 230 females) is shown in Table 1. The mean \pm SD age was 64.0 ± 8.9 years.

Overall, 13 patients were found to have atrial fibrillation, a prevalence of 2.8% (95% confidence interval 1.3%–4.3%). The prevalence increased significantly (χ^2 for trend = 9.608, $P < 0.002$) from 0.6% (SE = 0.6) in patients aged 50–59 years to 1.4% (SE = 1.0) and 6.4% (SE = 2.0) in the 70–79 year age group (Figure 1). The median age (25th percentile, 75th percentile) for those who had atrial fibrillation was 74.0 (68.5, 76.5) years. Of the 13 patients with atrial fibrillation, women ($n = 10$) were affected significantly more than men ($n = 3$) (Pearson's $\chi^2 = 3.972$, $df = 1$, $P < 0.05$).

Discussion

The epidemiology of atrial fibrillation in this health centre in the south of the Islamic Republic of Iran is different from that of industrialized countries. In contrast to previous studies that found higher rates of atrial fibrillation among men [1,2,5], we found

the prevalence was higher in women (10/13) than men (3/13) ($P < 0.05$).

Nowadays, atrial fibrillation is more often treated as a sign of an underlying disease than a disease entity in its own right. The most important underlying cardiac disorders consist of heart failure, coronary artery disease, hypertensive cardiovascular disease and valvular heart diseases [9,10]. Mitral stenosis is important in the etiology of atrial fibrillation [11]. Mitral stenosis mostly results from rheumatic fever, a disease that is currently not frequent in industrialized countries, owing to better treatment with antibiotics and increased health standards [10]. In developing countries, however, where rheumatic fever is still a health problem, mitral stenosis is much more frequent. Since mitral stenosis affects females twice as often as males [10], in developing countries the sex ratio of patients with atrial fibrillation would be reversed, and women might be expected to develop atrial fibrillation much more often than men.

Like previous studies, mostly conducted in industrialized countries, we observed that the prevalence of atrial fibrillation increases with age [5]. The median age of 74 years in our patients is in keeping with that reported in other studies [4,5]. Go et al. [4] reported a prevalence of 1.8% in patients aged 60–69 years and 4.9% in 70–79 years, compared with 1.4% and 6.5% respectively in our study. Comparing our results with these, we found no statistically significant difference between the reported prevalences over the age range 60 to 80 years. However, unlike previous reports that show a 2-fold increase in the prevalence of atrial fibrillation with each decade of life [2,5], in our population this trend was much steeper and instead increased 3-fold with each decade over the age range studied. This accelerated trend may be due to ethnic

Table 1 Age and sex distribution of participants and prevalence of atrial fibrillation

Age group (years)	No. of participants		Total	No. (%) with atrial fibrillation
	Male	Female		
50–59	89	74	163	1 (0.6)
60–69	60	83	143	2 (1.4)
70–79	84	73	157	10 (6.4)
Total	233	230	463	13 (2.8)

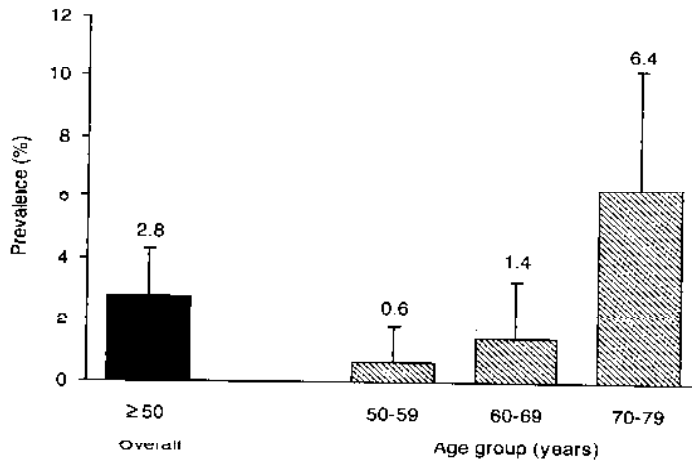


Figure 1 Prevalence of atrial fibrillation by age group (error bars represent 95% confidence interval)

differences and/or to the underlying causes in our population. In industrialized countries, ischaemic heart disease is the most important cause [9], whereas in developing countries, though it was not studied here, valvular heart disease, particularly mitral stenosis, seems to be the cause of atrial fibrillation in the majority of cases.

This study suffers from some limitations. Estimates of the prevalence of atrial fibrillation vary according to the characteristics of the population studied and the way atrial fibrillation is ascertained. In the current study, the diagnosis of atrial fibrillation was made on a single ECG. Hence, we might miss some people with non-sustained atrial fibrillation. Moreover, given the small sample size used in this study as

compared with those conducted in industrialized countries, the statistical power of the current research is low. Likewise, the small number of cases with atrial fibrillation diagnosed in this study, particularly when they were categorized into age groups, means that we were only able to derive a rough estimate of the prevalence rates. Nevertheless, the results obtained from this work were statistically significant and the steep trend of increasing prevalence of atrial fibrillation at older ages is noteworthy. With improved health standards and increasing longevity in some developing countries [12,13], atrial fibrillation and consequently stroke may become increasingly important health problems.

References

1. Narayan SM, Cain ME, Smith JM. Atrial fibrillation. *Lancet*, 1997, 350:943-50.
2. Kannel WB et al. Prevalence, incidence, prognosis, and predisposing conditions for atrial fibrillation: population-based estimates. *American journal of cardiology*, 1998, 82(8A):2N-9N.
3. Benjamin EJ et al. Impact of atrial fibrillation on the risk of death: the Framingham

- Heart Study. *Circulation*, 1998, 98:946–52.
4. Go AS et al. Prevalence of diagnosed atrial fibrillation in adults: national implications for rhythm management and stroke prevention: the anticoagulation and risk factors in atrial fibrillation (ATRIA) study. *Journal of the American Medical Association*, 2001, 285:2370–5.
 5. Nyder KM, Benjamin EJ. Epidemiology and significance of atrial fibrillation. *American journal of cardiology*, 1999, 84:131R–8R.
 6. Falk RH. Atrial fibrillation. *New England journal of medicine*, 2001, 344:1067–78.
 7. Atrial Fibrillation Investigators. Risk factors for stroke and efficacy of anti-thrombotic therapy in atrial fibrillation: analysis of pooled data from five randomized trials. *Archives of internal medicine*, 1994, 154:1449–57.
 8. Furberg CD et al. Prevalence of atrial fibrillation in elderly subjects (the Cardiovascular Health Study). *American journal of cardiology*, 1994, 74:236–41.
 9. Evers S et al. Epidemiologie und Ursachen von Vorhofflimmern [The epidemiology and causes of atrial fibrillation]. *Herzschrittmachertherapie und Elektrophysiologie*, 2001, 12:59–67.
 10. Braunwald E. Valvular heart disease. In: Braunwald E et al., eds. *Harrison's principles of internal medicine*, 15th ed. New York, McGraw-Hill, 2001:1343–6.
 11. Moreyra AE et al. Factors associated with atrial fibrillation in patients with mitral stenosis: a cardiac catheterization study. *American heart journal*, 1998, 135:138–45.
 12. Tucker KL, Buranapin S. Nutrition and aging in developing countries. *Journal of nutrition*, 2001, 131:2417S–23S.
 13. Shrestha LB. Population aging in developing countries. *Health affairs (Millwood)*, 2000, 19:204–12.