

# A prospective survey of acute hospital admissions with atrial fibrillation in Karachi, Pakistan

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## ABSTRACT

**Background:** There are established differences in cardiovascular disease in different racial groups. Worldwide, the literature regarding the clinical epidemiology of atrial fibrillation (AF) in non-white populations is scarce.

**Objectives:** To document the clinical epidemiology of AF among hospital admissions to two teaching hospitals in Karachi, Pakistan, over a two-month period and to describe the clinical features and management of these patients.

**Subjects:** 3,766 acute medical admissions, of whom 245 (6.5%) had AF.

**Results:** Of 245 patients with AF, clinical notes of 24 were lost in the system. Of the remaining 221 patients with AF (107 males; mean age 66 years), 22% were Afghani Muslims, 3% Indians, 1% white and the rest were Pakistani with unknown country of origin. The most common associated medical conditions were hypertension (54%), valvular heart disease (54%) and ischaemic heart disease (IHD, 47%). The most common presenting complaints in female patients were palpitations (51%) and anxiety (35%). In males, the most common symptoms were palpitations (46%), chest pain (35%) and anxiety (27%). Among male patients, 100% had an electrocardiogram (ECG), 93% an X-ray, 89% echocardiography and 49% thyroid function testing. Direct current (DC) cardioversion was attempted in 8%. Of the male admissions with AF, 64% were taking aspirin, while 75% were anticoagulated in hospital and 40% of patients were discharged on anticoagulants with cessation documented in 14%. Beta blockers and amiodarone were prescribed in 74% and 19% of male cases respectively. In females, 100% had an ECG, 76% chest X-rays and 81% had echocardiography proposed. Thyroid function tests were done in 46% of cases, and DC cardioversion was attempted in 11%. Of the female AF patients, 70% were anticoagulated in hospital and 48% went home on anticoagulants. Cessation of warfarin was documented in 27% of female patients, and beta blockers and amiodarone were prescribed in 80% and 26% respectively.

**Conclusion:** Among acute medical admissions to hospital in Pakistan the prevalence of AF was 6.5%. Consistent with previous similar surveys in mainly Western (Caucasian) populations, standard investigations in this cohort were inadequate and there was underuse of anticoagulation (with a high cessation rate).

**KEYWORDS** Atrial fibrillation, hospital admissions, Pakistan

**DECLARATION OF INTERESTS** No conflict of interests declared.

## INTRODUCTION

There are well-established differences in cardiovascular disease in different racial groups. Worldwide, the literature regarding the clinical epidemiology of atrial fibrillation (AF) in non-white populations is scarce. Based on white Caucasian populations, AF is often cited as the most common sustained cardiac arrhythmia, with an increasing prevalence and incidence,<sup>1</sup> whereby the lifetime risk of developing this arrhythmia is one in four for adults aged above 40 years.<sup>2,3</sup>

Published data on AF in South Asians are limited. In a survey of patients from six general practices in west Birmingham, UK, with a combined Indo-Asian practice population of 14,670, 12 Indo-Asian patients (six male, mean age 67 years, range 42–95 years) with known AF were identified, suggesting a prevalence of AF in Indo-

Asians aged over 50 years of only 0.6%.<sup>4</sup> A hospital-based survey of admissions with AF from a multiracial population in Kuala Lumpur, Malaysia, identified six patients of Indian origin among the 40 subjects with AF (the latter representing 2.8% of all acute medical admissions).<sup>5</sup>

The aim of the present survey was to document the clinical epidemiology of AF among hospital admissions to two teaching hospitals in Karachi, Pakistan, over a two-month period and to describe the clinical features and management of these patients.

## METHODS

We conducted a prospective survey of acute medical admissions to two busy city centre general hospitals in Karachi, Pakistan, at Aga Khan University Hospital and the National Institute of Cardiovascular Diseases,

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**TABLE 1** Patient demography among admissions with atrial fibrillation

	Female	Male
n	114*	107
<b>Age breakdown (n)</b>		
19	1	0
20–29	2	1
30–39	7	4
40–49	13	15
50–59	20	26
60–69	48	24
70–79	17	30
80–89	3	4
90–100	3	3
<b>Associated medical conditions (%)</b>		
Ischaemic heart disease	36	59
Valvular heart disease	73	34
Sick sinus syndrome	22	20
Cardiomyopathy	4	4
Thyrotoxicosis	18	11
Infection	28	12
Stroke	14	7
Congestive heart failure	32	22
Hypertension	54	55
Diabetes	24	24
Alcohol use	0	4
<b>Management in hospital (%)</b>		
Beta blockers	80	74
Amiodarone	26	19
Aspirin	86	64
Warfarin	70	75
Digoxin	83	80
Calcium channel blocker	54	56
Cardioverted	11	8
Of those cardioverted, % in sinus rhythm at discharge	67	76
<b>Investigations (%)</b>		
Electrocardiogram	100	100
Thyroid function test	46	49
Echocardiogram	81	89
Dilated left atrium	29	29

\*24 records were lost from a total female cohort of 138.

over a period of eight weeks between April and June 2003. Both hospitals are major referral centres for acute admissions.

During the study period acute admissions were screened for AF. Subjects were included if they had AF on their admission electrocardiogram (ECG) or developed AF

within 48 hours of admission. Medical notes were examined for demographic data and information on medical history, smoking status, alcohol history and previous documentation of AF. Atrial fibrillation was defined as chronic if it was documented on ECGs on at least two prior occasions. Paroxysmal AF was defined as the presence of AF previously documented on 24-hour Holter monitoring (ten or more beats), or previous documented episodes of AF with documented reversion to sinus rhythm between episodes. First presentations of AF were also noted. The clinical course of these patients during their inpatient stay was also recorded, as was inpatient mortality and morbidity. We recorded the associated medical conditions, the presenting complaints, the medications administered and the investigations made. A note was also made of the patients' social histories and the main outcome of their treatment (discharge in sinus rhythm or not, and death).

## RESULTS

Over the study period there were 3,766 acute medical admissions, of whom 245 patients (6.5%) had AF. Of these 245 patients, clinical notes of 24 were lost in the hospital records system. Of the remaining 221 patients with AF (107 males), 22% were Afghani Muslims, 3% Indians, 1% Caucasian and the rest were of unknown origin. The clinical demography of this cohort is summarised in Table 1. The mean age for female patients was 66 years and that for males was 54 years. The youngest patient was 19 years old and the oldest 100 years. Of note, 19% of patients were under the age of 49 years, 53% were aged 50–69 years and 27% were 70–100 years of age.

Of the cohort, 25% had chronic AF, 48% had paroxysmal AF and for 27% it was their first presentation to the hospital's accident and emergency (A&E) department with AF. It was not feasible to record the ethnic diversity of all patients presenting to the A&E department (if it was not obvious on clinical inspection) for political reasons, as few wanted to admit that they had migrated from another country, such as Afghanistan, India or Bangladesh.

### Associated medical conditions

The most common associated medical conditions were hypertension (54%) and valvular heart disease (54%), followed by ischaemic heart disease (IHD, 47%) and congestive heart failure (27%) (Table 1). Cerebrovascular disease was only found in 11% of patients and diabetes in 24%. Alcohol consumption was only recorded in 2%; these patients were all males. Smoking was noted in 60% of the male patients and not mentioned for any of the females, probably due to the fact that smoking among women is a social taboo in Pakistan and none would admit to it. Only four males presented with AF were attributed to chronic alcohol abuse. Of note, valvular heart disease was highly prevalent (73%) among female patients.

## PRESENTING SYMPTOMS

Most of the patients had presented with two or more symptoms, with palpitations as the most common (48%), followed by shortness of breath in 36% and anxiety and apprehension in 31%. Three per cent of the patients had presented with stroke, and chest pain was present in 38%. Notably, 14% of subjects were asymptomatic. Other modes of presentation included fever (20%), dizziness (12%), sweating (6%), syncope (6%) and fatigue (5%). Of all the AF admissions, 6% died during their stay at the hospital due to associated IHD, uncontrolled diabetes and malignancy.

## INVESTIGATIONS

In the whole cohort, an ECG was performed in all the patients, an echocardiogram in 84% (dilated left atrium found in 29%), thyroid function was checked in 47% and 84% of patients had a chest X-ray.

## MANAGEMENT

Only a small proportion of patients were on no form of medication (11%) on admission, while 77% were on beta blockers, 81% on digoxin and 22% on amiodarone. None of the patients who had prior AF as a chronic condition were on warfarin. Of the AF subjects, 9% were cardioverted and, of these, 71% were in sinus rhythm at discharge (76% of males, 67% of females).

Of the admissions with AF, 75% were taking aspirin, while 75% of males and 70% of females were anticoagulated with warfarin during their hospital stay (Table 2). Overall, 40% of males and 48% of females were discharged on anticoagulants, with cessation documented in 14% and 27% respectively. The main reasons for stopping warfarin were as follows: high international normalised ratio (INR), pregnancy, high blood pressure and peptic ulcer. The rest of the patients not discharged on warfarin had no documentation of why this was so. It was not possible to assess whether all the eligible patients for warfarin treatment were on it or not, because systematic stroke risk assessment for warfarin use was not performed.

## DISCUSSION

In this small survey among acute medical admissions to two hospitals in Pakistan the prevalence of AF was 6.5%. Consistent with previous similar surveys in mainly Western (Caucasian) populations, standard investigations in this Pakistani cohort were inadequate and anticoagulation was underused, with a high cessation rate.

There have been small surveys on the prevalence of AF in non-white patients from developing countries.<sup>6,7</sup> In a prospective survey of 1,435 acute medical admissions to Kuala Lumpur General Hospital over a four-week study

**TABLE 2** Use of antithrombotic therapy among admissions with atrial fibrillation

	Females (%)	Males (%)
Warfarin started in hospital	70	75
Discharged on warfarin	48	40
Warfarin stopped	27	14
<b>Reasons for warfarin cessation*</b>		
INR high	25	26
High blood pressure	32	33
Peptic ulcer	35	66
Pregnant	13	0

\* Reasons for warfarin cessation among those in whom warfarin was stopped (females n = 31; males n = 15). Some patients had more than one reason.

period,<sup>5</sup> 40 subjects had AF (2.8%, mean age 65 years). Of these, 18 were Malay, 16 Chinese and 6 Indian, and 21 were newly diagnosed cases. The principal associated medical conditions were IHD (42.5%), hypertension (40%) and heart failure (40%). Similar to the present report, investigations were underused, with chest X-rays and echocardiography performed in only 62.5% of patients and thyroid function checked in 15%. There was also underuse of anticoagulation, medication for ventricular rate control and cardioversion to sinus rhythm. In a series from Africa, Maru reported a survey of 136 Ethiopian outpatients with AF.<sup>8</sup> In this series, the mean age was 41 years and associated medical conditions were rheumatic heart disease (66%), hypertension (10%), cardiomyopathy (9%) and IHD (7%). In keeping with much of the epidemiological observations, heart failure was present in approximately one-third of AF patients.

These data can be compared to information on series from Western countries that included subjects from non-white ethnic groups. For example, Zarifis et al. reported a prospective survey of all acute medical admissions over six months in a British multiracial hospital population.<sup>9</sup> Of 7,451 such admissions, 245 had AF (3.3%, mean age 74.4 years). Of these, 213 were Caucasian, 10 black/Afro-Caribbean (4.1%) and 22 Indo-Asian (9%). However, there was a higher relative proportion of Indo-Asians with AF who required hospital admission, perhaps due to concurrent IHD (or its complications), which could make such patients more unwell. Nonetheless, acute hospital admissions with AF in the British series were overall less prevalent (3.3% vs 6.5% in Pakistan) but older (mean age 74 years, vs 66 years in Pakistan).

Stroke prevention is central to the management of AF.<sup>10</sup> In the present survey, only 44% of subjects were discharged on warfarin, with a high rate of discontinuation. In the survey from Malaysia, Freestone et al. reported that only 16% of those with previously diagnosed AF were on warfarin, with a further three on aspirin.<sup>5</sup>

Records of contraindications to warfarin were unreliable, being identified in only 25% in the present survey. This suboptimal application of thromboprophylaxis by clinicians would also need to consider the patients' perspectives of anticoagulation use for stroke prevention in AF. Indeed, there are significant differences between different ethnic groups in terms of their knowledge of the risks, actions and benefits of warfarin as well as of AF itself.<sup>11</sup> Indo-Asians appeared to be the least aware of the stroke and thromboembolic associations of AF;<sup>11</sup> most patients in the whole cohort were aware of warfarin being used to prevent blood clots (65%) or stroke (66%), but Indo-Asians and Afro-Caribbeans were less so. Only a minority of Indo-Asians and Afro-Caribbeans with AF felt that their doctor had given them enough information about their warfarin therapy, and many from these ethnic groups felt that they were 'careless about taking their warfarin'.<sup>11</sup> Finally, access to anticoagulation monitoring (and associated costs) may be an issue, especially in developing countries.

### Limitations

This study was entirely dependent upon the case records prepared by the medical team who saw each patient. However, every consecutive patient (apart from the 24 notes that were lost in the system) was included.

This simple survey was performed for a short period of time (two months), to identify the pattern of causes and presentation of AF in Indo-Asians. The cardiac causes were well documented, but other risk factors such as congenital heart defects, alcohol consumption and smoking were not. Also, this was a hospital-based study, and some patients in Pakistan may have attended private clinics due to healthcare costs for in-hospital stays and investigations. There is therefore the possibility that the patient numbers attending the hospital may be an under-representation of the disease prevalence, which cannot be applied to the rest of the general population in Pakistan. Indeed, our previous general practice survey had suggested that only a third of patients with AF had ever presented to hospital, suggesting that hospital-centered surveys may even misrepresent the true picture of the clinical epidemiology of AF.<sup>12</sup>

### CONCLUSION

Among acute medical admissions to two hospitals in Karachi, Pakistan, the prevalence of AF was 6.5%. Consistent with previous similar surveys in mainly Western (Caucasian) populations, standard investigations in this cohort were inadequate and there was underuse of anticoagulation with a high cessation rate.

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