Etiological Profile of Atrial Fibrillation (AF) In Nepalgunj Medical College: A Hospital Based Study

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ABSTRACT

Introduction: Atrial fibrillation (AF) is the commonest cardiac arrhythmia encountered in clinical practice. The hall mark sign of atrial fibrillation is an irregular rhythm in ECG with no obvious P wave. In Western countries, Coronary Artery Disease (CAD) is the commonest cause of AF. Plenty of data and studies are available regarding the epidemiology and etiology of AF in the Western Population but similar studies and data in Nepal are scarce. This study was therefore conducted with an objective to establish the etiological profile of atrial fibrillation patients in mid western Nepal. **Materials and Methods:** This was a hospital based study, carried out in the Department of Internal Medicine, Nepalgunj Medical College Teaching Hospital, Nepalgunj, for a duration of 1 year from 14th September 2013 to 13th September 2014. A total of 74 consecutive cases diagnosed as AF were included in the study on the basis of inclusion and exclusion criteria. **Results:** A total of 74 consecutive patients were included in the study. The mean age of the subjects was 39.2 years. The majority of the subjects were below 50 years of age (70.27%). There were only 2 subjects below 19 and 3 patients above 70 years of age. Out of the 74 patients 52(70.2%) were from the age group of below 50 years of age. In western countries the incidence is higher in the elder population. Rheumatic heart disease was the most common etiology in this study with a total of 29 (39.2%) cases. CAD in our study was seen in 12 patients (16.2%). Overall structural heart disease was seen in 64(86.5%) cases and in the rest of the cases echocardiography was normal. **Conclusion:** This study has shown that the etiological profile of AF is different in patients attending our hospital situated in mid-western Nepal from western countries. Unlike the western countries AF is more common in the younger age group and the most common etiology in Nepal is RHD, whereas in western countries it is CAD.

Key words: Atrial Fibrillation (AF), Rheumatic heart disease (RHD), Coronary Artery Disease (CAD)

INTRODUCTION

Atrial fibrillation (AF) is the commonest cardiac arrhythmia encountered in clinical practice[1]. It is characterized by irregular, disorganized and chaotic electrical activity of the atrium. It is an important cause of morbidity and mortality not only in the western world but in Nepal as well. AF is found in 0.4% adults below 60 years of age. Incidence of AF appears to double with each decade. In the 9th decade the incidence is thought to be as high as 8-10%[2]. Clinically, it is recognized by irregularly irregular pulse with varying rates ranging from normal to 200 and a pulse deficit of more than 10 beats per minute. The hall mark sign of atrial fibrillation is an irregular rhythm in ECG with no obvious P wave. Established risk factors for AF include cardiac conditions, such as systolic and diastolic heart failure, valvular heart disease, and myocardial infarction, and cardiovascular risk factors, such as hypertension, diabetes mellitus, obesity, and cigarette smoking[3,4]. In Western countries, CAD is the commonest cause of AF[5]. Atrial fibrillation has been classified by American Heart Association/ American college of cardiology/European Society of cardiology into first detected episode, recurrent (two or more episode), paroxysmal (terminates within 7 days), persistent (persist for more than 7 days) and permanent (sustained for more than 1 year or has failed cardio version)[6,7].

Clinical presentation can vary from being asymptomatic, to atrial fibrillation (AF) with rapid ventricular response to cardiogenic shock or devastating cerebrovascular accident (CVA). Although up to 90% of AF episodes may not cause symptoms, many patients experience a wide variety of symptoms, including palpitations, dyspnea, fatigue, dizziness, angina, and decompensated heart failure. In addition, AF can be associated with hemodynamic dysfunction, tachycardia-induced cardiomyopathy and systemic thromboembolism[8].

Plenty of data and studies are available regarding the etiology of AF in the western population but similar studies and data in Nepal is scarce. Only a few studies have been done and most of them have been conducted in eastern and central Nepal. This study was therefore conducted with an objective to establish the etiological profile of atrial fibrillation patients in mid western Nepal.

MATERIALS AND METHODS

This was an observational study which was carried out at the Department of Internal Medicine, Nepalgunj Medical College Teaching Hospital, Nepalgunj, for a duration of 1 year from 14th September 2013 to 13th September 2014. A total of 74 consecutive cases diagnosed as AF were included in the study on the basis of inclusion and exclusion criteria. The diagnosis of

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AF was made on the basis of history, clinical examination, examination of previous ECGs and confirmation with 12 leads ECG.

Inclusion criteria
1. Patients who give informed consent
2. History of atrial fibrillation on the basis of previous documentation and clinical examination
3. Irregularly irregular pulse rate
4. ECG findings: Absence of well-defined P waves, irregularly irregular rhythm and absence of isoelectric basline.

Exclusion criteria
1. Patients who do not give consent.
2. ECG findings: evidence of other arrhythmias (atrial flutter, heart blocks, ventricular arrhythmias, junctional arrhythmias)

All the confirmed cases were thoroughly evaluated for the possible etiology by history, clinical examination, Trans Thoracic Echocardiography, Thyroid function test, serum electrolytes, chest xrays, Haemogram , liver function tests, renal function tests at other relevant laboratory investigations. Patients were considered as having structural heart disease if any abnormality was detected in the trans-thoracic echocardiography. Data analysis was done using Microsoft Excel 2013.

RESULTS
A total of 74 consecutive patients were included in the study. The age distribution was as follows. The mean age of the subjects was 39.2 years. The majority of the subjects were below 50 years of age (70.27%). There were only 2 subjects below 19 and 3 patients above 70 years of age.

Age group (years)	Number of Subjects	Percentage
<19	2	2.7%
19-29	20	27.0%
30-39	18	24.3%
40-49	12	16.2%
50-59	10	13.5%
60-70	9	12.2%
>70	3	4.1%

Table I: Age distribution

Sex	No. of patients	Percentage
Female	33	44.6%
Male	41	55.4%

Table II: Sex distribution

Etiology	No. of cases	Percentage
RHD : Pure Mitral Valve Disease	19	25.6%
RHD : Mitral + Aortic Valve Disease	10	13.5%
Non Rheumatic Valvular Heart Disease	6	8.2%
Coronary Artery Disease	12	16.2%
Hypertensive Heart Disease	7	9.5%
Cardiomyopathy	5	6.7%
Hyperthyroidism	3	4.1%
COPD With COR Pulmonale	5	6.7%
COPD Without COR Pulmonale	3	4.0%
ONLY Diabetes Mellitus	1	1.4%
UNKNOWN (LONE AF)	3	4.1%

Table III: Etiology of Atrial Fibrillation

DISCUSSION

This study showed a different pattern of etiology in patients of AF compared to the western countries. Out of the 74 patients, 52 (70.2%) were from the age group of below 50 years of age, whereas in western countries the incidence is higher in the elderly (>60years) population[2,9,10]. However this data is similar to the data reported by MP Gautam et al[11] in their study of AF in patients from central Nepal, which showed that most of the subjects were comparatively of a younger age group than reported in most of the studies in the western population. Our study also has shown a similar result in the mid-western Nepalese population. 41(55.4%) patients were male and 33 (44.6%) were female which is similar to The Framingham Heart study[2].

Rheumatic heart disease was the most prevalent etiology in the study with a total of 29 (39.2%) cases. This data is similar to the study done by MP Gautam et al which also showed RHD as the commonest etiology.[11]Similar findings were also reported by A Vora[12] and also by M Dhakal et al[13] in their study which showed RHD as the most prevalent etiology in India. These data are different from the data done in the western population, where the commonest etiology in most of studies was CAD[2,9,10]. CAD in our study was seen in 12 patients (16.2%) and was the second most common etiology after RHD. Pure mitral valve disease was seen in 19 (25.6%) patients.

Overall 64 (86.5%) cases had abnormal echocardiograms and were labelled as having structural heart disease. COPD was seen in 8 cases and all of the patient were over 60 years of age. Echocardiography showed dilated right ventricle and atrium in 5 cases and therefore they were included in the structural heart disease group and 3 patients had normal echocardiography. Cardiomyopathy was seen in 5 cases and all had dilated ventricle with reduced ejection fraction (<50%). Diabetes was present in 12 cases but it was associated with structural heart disease except in 1 case in which no other etiology was detected. Hypertensive heart disease was seen in 7 cases and non-rheumatic valvular disease was seen in 6 cases. Hyperthyroidism was detected in 3 patients. No etiology could be found in 3 patients and these patients were labeled as lone AF.

CONCLUSION

This study has shown that the etiological profile of patients with AF in mid-western Nepal which is different from that of western countries[2,9,10], is similar to that of central Nepal[11] and also of India[12,13]. Unlike the western countries where CAD is the commonest etiology of AF and AF is more prevalent in the elder age group, in mid western Nepal RHD is the most common cause. RHD is primarily a disease of the young[5] and this would explain the higher prevalence of AF in younger age group in Nepal compared to western countries. The risk factors for RHD are overcrowding, poor hygiene and sanitation and therefore it is considered as a disease of the developing nations[14,15]. This might have contributed to the high prevalence of AF in RHD and in younger age groups in Nepal, as it is a developing nation and the data of studies done in other developing nations like India also show a similar pattern[12,13].

As data regarding epidemiology and etiology of AF in the Nepalese population is scarce, this study showed us the difference in the profile of the patients in Nepal from the western countries. This could help us in the management of AF and the underlying pathology by keeping an open mind about the common causes in our region. However more detailed epidemiologic studies are required to improve the understanding of the burden of AF in Nepal.

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