Characteristics of Atrial Fibrillation Based On Age, Sex, and Etiology

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A B S T R A C T

Introduction: Atrial fibrillation (AF) is one type of arrhythmia that occurs frequently to patients in the last decade. AF patients have five times higher risk to stroke and death, and they also have two times higher risk compared to others. A correct selection of governance in AF could result in better prognosis of the patients. The aim of this study was to explain AF of the outpatients in Department of Cardiology of Dr. Soetomo General Hospital Surabaya in February 2018, so that it can detect early AF and prevent further advanced complications.

Methods: This research was descriptive method design. The population and sample of this study included all of the patients who had AF and came to out-patient care in Department of Cardiology of Dr. Soetomo General Hospital Surabaya in February 2018. This research was real-time total sampling and was analyzed descriptively.

Results: In this study, 60 samples which were suitable to the criteria were gained with the numbers of 25 males (41.7%) and 35 females (58.3%). AF attacked more patients in age 51-60 years old (31.7%). The most common etiology of AF is rheumatic heart disease (60%).

Conclusion: Most of AF patients in this study were 51-60 years old, female, and were caused by rheumatic heart disease. With the lack information, it still needed further studies with more complete data for better accuracy.

A R T I C L E   I N F O

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Introduction

Heart disease has the highest mortality. Atrial fibrillation (AF) is the most common arrhythmia that affects patients in the last decade. The prevalence of this disease is increasing rapidly and is often associated with serious diseases such as heart failure, dementia, stroke, etc.[1] Research in Europe shows that AF prevalence varies from age and sex. As much as 0.12%-0.16%. AF is in those who are less than 49 years old, 3.7%-4.2% in those aged 60-70 years old, and at 10%-17% in those aged 80 years old or more. In addition, AF is more common in men, with a male to female ratio of 1.2:1. AF events range between 0.21 and 0.41 per 1,000 people/year. Although the prevalence is relatively lower in Asia than in the west, the prognostic impact on stroke and death caused by AF in Asia is comparable to that in the west.[2]

AF is a typical supraventricular tachyarrhythmia with uncoordinated atrial activation which has a negative effect on the mechanical function of the atrium. On an EKG, the characteristic of AF is that there is no consistency of P waves, and is replaced by vibrational waves (fibrillation) which have variations in amplitude, shape, and duration.[3] Although untreated AF has two times higher risk of death in heart disease and has five times higher risk of stroke, many patients do not realize that AF is a serious condition.[4]

Greater prevalence of AF is found in elderly people, male, and in hospitalized patients with clinical conditions such as high blood pressure (hypertension), heart failure, coronary artery disease, heart valve disease, diabetes mellitus, and chronic kidney disease. AF has various symptoms. Starting from shortness of breath, palpitations, chest pain, and others. Thus, early detection of AF is needed so that the patients can get treatment quickly and prevent complications that will later be obtained. The increased prevalence of AF in addition to being associated with aging and conditions that support AF can also detect silent AF better. Improved detection and governance of AF is expected to reduce morbidity and mortality due to cardiovascular disease.[5] The things mentioned above form the background of the author to examine the description of AF of outpatients in Department of Cardiology of Dr. Soetomo General Hospital Surabaya in February 2018, so that it can detect early AF and prevent further advanced complications.

Methods

This study was a descriptive study. This study was performed in February using real total sampling. The population and sample studied were all patients with AF who came to the outpatient clinic in Heart Disease Installation at Dr. Soetomo General Hospital Surabaya in February 2018. The variables used in this study were age, sex, and etiology of patients with AF. This study obtained data from medical records of patients who came in February on the same day as the patient visited.

This study received ethical approval from Research and Development Department of Dr. Soetomo General Hospital Surabaya. Data collected were age, sex, and ethiology of AF. The data were entered into Microsoft Office Excel and statistically analyzed by SPSS IBM 20.

Results

In this study, a total of 60 patients were diagnosed with AF.

Table 1. Characteristics of atrial fibrillation patients.

Variable	Frequency	Percentage
Age Category		
≤ 20 years old	1	1.7%
21-30 years old	2	3.3%
31-40 years old	6	10.0%
41-50 years old	17	28.3%
51-60 years old	19	31.7%
61-70 years old	11	18.3%
>70 years old	4	6.7%
Gender		
Male	25	41.7%
Female	35	58.3%
Etiology		
Coronary Artery Disease	3	5.0%
Rheumatic Heart Disease	36	60.0%
Hypertension	9	15.0%
Others	12	20.0%

Table 1 shows the characteristics of AF patients seen by age, sex and etiology. The incidence of AF in this study was greatest in groups with the age range of 51-60 years old (31.7%). The average patient with AF in this study was 52.7 ± 12.5 years old. The youngest age was 20 years old, while the oldest age was 80 years old. The sex of AF patients in February 2018 was mostly women, as many as 35 people (58.3%). In this study. the comparison of male and female AF patients was 1:1.4. The etiology of AF were rheumatic heart disease (60%), other diseases (20%), hypertension (15%), and coronary heart disease (5%) as the smallest causes for AF in this study.

Other etiologies for AF were Atrial Septal Defect, atherosclerosis, and Lone AF. As many as 10 cases of AF arose without the underlying cause (Lone AF). Whereas the etiology of non-heart disease was not found in this study.

Discussion

AF has been found in the last decade and has caused a variety of comorbidities. In this study, AF was found in the age range of 51-60 years old. This results of this study are in line with Safrina's (2014) study which showed that of 45 atrial fibrillation patients in Dr. Soetomo General Hospital Surabaya in 2013, it obtained the largest age group of patients in the age range of 40-59 years old as many as 22 patients (48.9%) and the age most affected by AF at the age of <25 years old, as many as 2 people (4.4%).[6] Similar results were also found in the study at Mamata General

Hospital in India, where the highest age distribution of patients with atrial fibrillation was the 50-60 years old age group of 16 people (32.65%).[7] Different results were obtained in the research conducted at Regional Hospital of East Belitung. This study showed that the highest age distribution was the age group of 60-75 years old with a total of 25 people (36.2%).[8] A research performed at Bharatpur Chitwan in Nepal also showed different things, that the highest age group with AF ranged from 30-39 years old (24.26%).[9] The results of the research by Dharmawan, *et al.* (2017) were different because the number of samples studied was different and the duration of the study used was 2014-2016 inpatient care at East Belitung Hospital.[8] Research by Gautam, *et al.* (2012) was also different because most patients who came were young adults.[9] Increased age can lead to atrophy of the heart muscle, which interferes with the conduction and contraction of the atrium and triggers the remodeling and dilatation of the atrium. Increasing age can also increase the risk of developing AF with other underlying cardiovascular diseases.[10] Nevertheless, this is not reflected in Indonesia, because the average life expectancy in Indonesia is not more than 70 years.[11]

This study shows that the sex of patients who had AF in Dr. Soetomo hospital in February 2018 was dominated by women, with a percentage of 58.3%. This research is in line with the research conducted by Gautam, *et al.* (2012) in Bharatpur Chitwan in Nepal which showed that the incidence of AF is more common in women, which was 74 people (54.41%).[9] The research which was also conducted at Dr. Soetomo General Hospital Surabaya in January 2013-December 2013 obtained 45 patients with 28 women (62.2%).[6] A research in one of the tertiary hospitals in India from January 2015 to June 2016 found that the incidence of AF was dominated by women, with a percentage of 60%.[12] Nevertheless, this research is not in line with the research conducted by Adeyana, *et al.* (2017), Berisso MZ, *et al.* (2014), and Friberg, *et al.* (2013) which showed that men dominated the occurrence of AF.[13-15]

Men dominate the occurrence of AF because in men, the expression of excessive ion channel repolarization can accelerate atrial repolarization and the mechanism of in and out of the ion causes the diameter of the male left atrium to be greater than that of women, so the risk of AFis high in men.[16] Nevertheless, in women symptomatic symptoms are more visible, because women have a faster heart rhythm. Canadian Registry of Atrial Fibrillation (CARAF) states that women experience recurrence of AF more often, although there is no difference in EKG.[17]

In this study, of the 60 etiologies of AF, it was found that rheumatic heart disease was the biggest cause of AF in 36 cases (60%). This study is in line with the research in Bharatpur Chitwan Cardiology Department in Nepal in 2010 which explained that rheumatic heart disease was the most etiology of AF at 33.09%, unknown AF at 23.52%, idiopathic (Lone AF) at 21.32%, coronary heart disease at 16.18%, and hypertension at 8.82%.[9] This study is also in line with a research in one of the tertiary hospitals in India

from January 2015 to June 2016 where the highest etiology of AF was rheumatic heart disease (40%), CAD (21.8%), and hypertension (12.7%).[12]

However, this study is not in line with a research in 2 tertiary hospitals in Lithuania in November 2013-May 2014, showing that of 515 patients. the highest etiology was hypertension (85.8%), heart failure (77.9%), and heart disease coronary (51.8%). Sex, age, and etiology of AF can increase patient's alertness to detect early onset AF later in life. Thus, patients can quickly go to the nearest doctor if they have AF symptoms and these risk factors.[18]

In rheumatic heart disease, the valve muscle is damaged which can cause ventricular filling to be disrupted. This causes the diameter of the left atrium to expand and produce a fast and irregular ectopic wave.[19] As age increases, the cell's density and elasticity decrease along the valve. Collagen synthesis also decreases, thus the heart valves are easily degraded.[20] Patients with AF have a five-fold and twice the risk of stroke and death.[14] Although untreated AF has two times higher risk of death in heart disease and has five times higher risk of stroke, many patients do not realize that AF is a serious condition.[4]

Conclusion

Characteristics of most AF patients in this study were 51-60 years old, female, and were caused by rheumatic heart disease. Further studies are needed to evaluate risk factor approach strategies.

CONFLICT OF INTEREST

The author stated there is no conflict of interest in this study.

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