

Profile of Patients with Mitral Stenosis in Dr. Soetomo General Hospital, Surabaya in January 2015 – December 2017

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ABSTRACT

Introduction: The most common valvular heart disease is mitral stenosis. Mitral stenosis is an abnormality of the heart valve which causes reduced blood flow from the left atria to the left ventricle due to narrowing of mitral valve orifice during its opening motion. If the condition continues, it will result in complications. The most common complications are pulmonary hypertension, atrial fibrillation, heart failure, and stroke. Appropriate treatment for mitral stenosis may produce more favorable prognosis in these patients. Therefore, the aim of this study was to describe the profile of patients with mitral stenosis in Department of Cardiology and Vascular Medicine, Dr. Soetomo General Hospital, Surabaya from January 2015 to December 2017. It is expected that mitral stenosis can be detected earlier, thus the appropriate treatment can be administered promptly and further complications can be prevented.

Methods: This study was a descriptive retrospective study with cross-sectional approach and accidental sampling method obtained from the inpatients medical records of patients diagnosed with mitral stenosis from echocardiography in Department of Cardiology and Vascular Medicine Dr. Soetomo General Hospital, Surabaya from January 2015 to December 2017. The variables were age, gender, disease severity, and the patient's educational background. The data was processed using Microsoft Excel and IBM SPSS version 20.

Results: This study obtained 41 patients who met the inclusion criteria, then the patients were categorized according to their age, gender, disease severity, and educational background. The results of the study showed that the subjects were dominated by those of productive age at 30-39 years old (39%), the most prevalent gender was female (85.4%), severe disease severity (85.4%), and educational level was from high school (85.4%).

Conclusion: The majority of the patients with mitral stenosis were from productive age, female, with severe disease severity, and educational background from middle educational level (high school).

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Introduction

The incidence of mitral stenosis in developed countries such as United States and United Kingdom is relatively low, however, epidemiologically, it contradicts with developing countries such as in Asia, Africa, and Pacific Islands in which rheumatic fever is still an endemic disease. Mitral stenosis causes significant mortality and morbidity.¹ This is in accordance with a study in Africa in which the proportion of mitral stenosis was as many as 44.1%, which showed that mitral stenosis has a higher proportion than other valvular heart diseases.²

Mitral stenosis is an abnormality of the heart valve which causes reduced blood flow from the left atria to the left ventricle due to narrowing of mitral valve orifice during its opening motion. If the condition continues, it will result in complications. The most common complications of mitral stenosis are pulmonary hypertension, atrial fibrillation, heart failure, and stroke.^{3, 4} Therefore, early detection and prompt treatment for mitral stenosis is expected to reduce the incidence and mortality rate from cardiovascular disease. The previously explained condition is the background for this study to describe the profile of patients with mitral stenosis in inpatient ward of Department of Cardiology and Vascular Medicine Dr. Soetomo General Hospital, Surabaya from January 2015 to December 2017, in order to detect mitral stenosis earlier and prevent further complications.

Methods

This was a descriptive retrospective study with cross-sectional approach and accidental sampling method. The population and samples were obtained from inpatient medical records of patients diagnosed with mitral stenosis from echocardiography in Department of Cardiology and Vascular Medicine Dr. Soetomo General Hospital, Surabaya from January 2015 to December 2017. Inpatient medical record was chosen because it presented data from echocardiographic evaluation. The variables used were age, gender, disease severity, and the patient's educational background. Incomplete medical records, patients with aortic valve abnormality, and patients who had undergone double valve replacement (DVR) surgery were excluded from the study. The collected data was processed using Microsoft Excel and IBM SPSS version 20.

Disease severity is categorized as mild if the mitral valve orifice area >1.5 cm², pulmonary arterial pressure <30 mmHg, transmission gradient <5 mmHg; moderate if the mitral valve orifice area 1 -1.5 cm², pulmonary arterial pressure 30 – 50 mmHg, transmission gradient 5 – 10 mmHg; and severe if the mitral valve orifice area <1 cm², pulmonary arterial pressure >50 mmHg, transmission gradient >10 mmHg from echocardiography.

Results

This study obtained 41 samples who met the inclusion criteria, with the most prevalent age range was productive age at 30-39 years old (39%), most patients were female (85.4%), most prevalent disease severity was severe (85.4%), and the majority of the patients had completed educational level of high school (85.4%).

Table 1. Characteristics of mitral stenosis patients.

No	Characteristics	Frequency n = 41	Percentage (%)
1.	Age		
	10 – 19 years old	1	2.4
	20 – 29 years old	4	9.8
	30 – 39 years old	16	39
	40 – 49 years old	11	26.8
2.	Sex		
	Male	6	14.6
	Female	35	85.4
3.	Severity		
	Mild	-	
	Moderate	6	14.6
	Severe	35	85.4
1.	Level of Education		
	Low	4	9.8
	Middle	35	85.4
	High	2	4.9

Discussion

This study found that most patients (39%) belong to productive age range (30-39 years old), the youngest patient was 16 years old, the eldest was 59 years old, and the average age was 40.48 ± 10 years. This study is in accordance with a study in India which showed patients with mitral stenosis aged 40-65 years old (28.1%), the youngest was 17 years old, and the eldest was 60 years old with the average age of 53 years old.⁴ In a study that compared the age of mitral stenosis patients in developing countries to those in developed countries, it was found that patients with mitral stenosis in developing countries were from younger age group. This result highlights the high incidence of rheumatic fever due to the lack of penicillin use and such environment which allowed the transmission of streptococcal infection.⁵

Results of the study showed that the majority of the patients were female (85.4%) with male to female ratio 1:5.8. This result is similar to a study in Egypt which found that mitral stenosis incidence in female was 2.6-fold higher than in male.⁶ Studies in developed countries such as Sweden also reported that mitral stenosis patients were dominated by female (66.88%) with female to male ratio 2:1.⁷ This result is due to the high estrogen level after menstruation in women which occupies the CD4+ and CD8+ receptors which cause chronic disruption to the mitral valve.⁸

This study found that most patients had a severe mitral stenosis (85.4%). Similar results are also reported from a study in India which showed that mitral stenosis patients were dominated with those of severe degree.⁹ However, this study contradicts a study in Pakistan which showed patients with mitral stenosis were dominated with those of moderate severity (37.6%), and a study in Nepal which was dominated by those of mild severity (40%).^{10, 11}

Disease severity of mitral stenosis is affected by several factors including educational background, recurrent beta-hemolytic streptococcal infection, genetics, and income per capita.¹² Furthermore, the cause of mitral stenosis also affects the disease severity. In which mitral stenosis caused by rheumatic fever tends to be more severe and causes severe stenosis, while mitral stenosis caused by degenerative processes tends to be found in mild degree.⁶

The highest educational level of the patients in this study was high school level (85.4%). This is influenced by the government program for compulsory educational program which caused the shift of majority of the patients from low educational level to middle educational level.¹²

Conclusion

The majority of the patients with mitral stenosis were from productive age and was dominated by female with severe disease severity and educational background from middle educational level (high school).

CONFLICT OF INTEREST

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

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