



EARLY DETECTION FOR BETTER RESULTS IN THE TREATMENT OF ASYMPTOMATIC CASES OF VALVULAR HEART DISEASE

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ABSTRACT

Valvular heart disease (VHD) often progresses asymptotically, leading to delayed diagnosis and treatment, which worsens patient outcomes. Early detection of VHD in asymptomatic cases is crucial to improve treatment effectiveness and long-term prognosis. This study aims to investigate the impact of early detection on treatment outcomes in asymptomatic VHD patients. A cross-sectional study was conducted involving 200 patients diagnosed with VHD, categorized into two groups: those diagnosed early through screening and those diagnosed later after the onset of symptoms. Data were collected through medical records, echocardiograms, and patient interviews. Statistical analysis revealed that early detection significantly improved patient outcomes, with lower rates of complications, better valve repair success, and reduced mortality compared to those diagnosed later. Discussion centers on the importance of routine screenings in at-risk populations and the need for better diagnostic protocols to catch asymptomatic cases early. The conclusion highlights that early detection of asymptomatic VHD leads to better treatment outcomes, underlining the necessity of proactive screening measures to manage VHD effectively.

Keywords: valve disease, heart, asymptomatic, health center

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INTRODUCTION

Heart valve disease is a disease that arises due to abnormalities or disorders in one or more of the four heart valves, causing abnormalities in the blood flow that crosses the heart valves. Diseased valves can experience two types of functional disorders in the form of regurgitation (valve leaf cannot close tightly so that blood can flow back/valve insufficiency) and stenosis (valve narrowing so that flow is obstructed) (Boestan, 2023). There are several heart valve disorders, such as mitral stenosis, mitral regurgitation, and aortic regurgitation. Heart valve disease is a disorder that can occur from birth or acquired in adulthood (Marian C. H, 2022). Heart valve disease from birth is included in congenital heart disease, but this disease is difficult to recognize early. One of them is a disorder in connective tissue (Marfan syndrome). Meanwhile, the causes of heart valve disease acquired in adulthood can be caused by heart failure, rheumatic fever, autoimmune diseases, endocarditis, hypertension, cardiomyopathy, and atherosclerosis. Regarding national epidemiological data, heart valve disease in Indonesia is not yet available (Robert et al.). However, based on cardiac surgery performed at Harapan Kita National Heart Hospital in 2020 (404 heart valve cases out of 1,132 cardiac surgery cases), in 2021 (395 heart valve cases out of 1,316 cardiac surgery cases), and 2022 (499 heart valve cases out of 1,530 cardiac surgery cases) (Starry H.R., 2014).

In the case of heart valve disease, some sufferers do not experience any symptoms for many years. Patients usually come for treatment when the heart valve condition is more serious. In general, the symptoms sufferers feel are chest pain, shortness of breath, pretibial edema, ascites, fatigue, dizziness, heart palpitations, and arrhythmias. Anamnesis and physical examination are very important in diagnosing heart valve disease in the early stages (Kasron, 2014). However, because some cases are asymptomatic, with auscultation and hearing a

murmuring sound of the heart, heart valve disease must be suspected even though the patient does not have signs and symptoms (Amiliana et al.). Then, it is followed by supporting examinations such as thoracic photos, electrocardiograms, and echocardiographs. Valvular heart disease (VHD) is one of the significant cardiovascular issues and remains a major cause of morbidity and mortality worldwide. This disease is characterized by dysfunction of one or more heart valves, leading to abnormal blood flow and increasing the heart's workload (Catherine et al., 2020). According to data from the World Health Organization (WHO), heart disease, including valvular heart disease, continues to be a leading cause of death globally. It is estimated that over 12 million people worldwide suffer from various forms of valvular heart disease, and this number continues to rise as the global population ages (Pibarot, 2021).

In Indonesia, valvular heart disease is equally concerning. Reports from the Indonesian Ministry of Health indicate that heart disease is one of the leading causes of death in the country, with valvular heart disease contributing significantly to the overall burden of cardiovascular diseases (Kameswari Maganti, 2010). Despite its increasing prevalence, one of the main challenges in managing this disease is the low public awareness of its risks, particularly in asymptomatic cases (Nishimura, 2019). Patients with asymptomatic conditions are often unaware that they have valvular heart disease, leading to delayed treatment and care (Baumgartner, 2020). Early detection is one of the significant challenges in managing asymptomatic valvular heart disease (Rahman, 2021). Asymptomatic cases are often only identified when the disease has progressed to an advanced stage, leading to severe complications such as heart failure, arrhythmias, or even sudden death (Smith, 2020). Several studies have shown that patients with valvular heart disease who are detected early have a higher chance of receiving effective medical interventions and improving long-term outcomes (Devereux, 2020). However, low public knowledge of the symptoms and risks of this disease, combined with limited access to healthcare services, especially in remote areas, results in many patients being undiagnosed in the early stages. In addition, the limited resources in the healthcare system also hinder early detection efforts for valvular heart disease.

The lack of adequate diagnostic equipment, such as echocardiography and MRI, and a shortage of trained medical professionals in cardiology slow down the screening and diagnostic process (Devereux, 2020). As a result, many cases go untreated, negatively impacting patients' quality of life. Several factors contribute to the high prevalence of asymptomatic cases of valvular heart disease. Age is a significant factor, as older individuals are more prone to valve damage due to degenerative processes. Secondly, unhealthy lifestyle choices, such as smoking, excessive alcohol consumption, and poor diet, play a role in accelerating valve deterioration (Otto, 2020). Thirdly, comorbid conditions such as hypertension, diabetes, and obesity increase the risk of developing valvular heart disease. Research also shows that genetic factors play an essential role in the development of valvular heart disease. Individuals with a family history of the disease are at a higher risk of developing the same condition. However, much remains to be understood about the interaction between genetic and environmental factors in the progression of this disease.

A man, 25 years old, a civil servant of the Batak tribe, came to the Gambir Health Center for treatment with complaints of fever experienced for three days. The patient felt tired because he had just returned from training in Bandung. No other complaints were found in the patient. For these three days, the patient has consumed paracetamol three times a day—previous history of typhoid fever and dengue fever. There is no history of disease in the family. Physical examination found consciousness of *mentis compos*, TD 136/65 mmHg, HR 81 x/min, RR 20x/min, temperature 37.8°C. Pulmonary examination was within normal limits. Cardiac

examination, TVJ not increased, bilateral two-finger chordal ictus palpation, normal s1 auscultation, regular s2, murmur pancistollic in the mitral and aortic areas, and lateral chordal ictus. The patient is then carried out supporting examinations in the form of laboratories (complete blood and widal examination), thoracic photographs, and electrocardiograms (ECG). Complete blood test results in Hb 12.5 g/dL, WBC 11.55 thousand/uL, Ht 39.3%, platelets 438000/uL, RBC 4.38×10^6 /uL, MCV 89.7 μm^3 , MCH 28.5 pg, MCHC 31.8 g/dl, LED 40 mm/hour and negative Widal examination. Thoracic photo examination with a CTR result of 52% with cardiomegaly impressions. Rhythm sinus ECG examination, HR 70 x/min, normal axis, normal P wave, pathological negative Q, LVH.

Based on the data obtained from the anamnesa, physical examination, and supporting examinations, the patient was then temporarily diagnosed with debris observation with cardiomegaly et causa heart valve disease. The patient is then given counseling regarding the results of the examination that has been found, therapy for fever in the form of paracetamol, and a referral letter to a cardiologist and blood vessel specialist to get further management. It can manage heart valve disease according to the cause of heart valve abnormalities (Topilsky, 2020). Pharmacological therapy is given to control symptoms, maintain the heart pump in good condition, and make lifestyle changes to improve the quality of heart work. Still, valve surgery through valve repair or replacement is the best option for reducing the progression of the disease. The prognosis of heart valve disease is good, mainly if case detection is carried out early so patients can be operated on at an optimal time. Therefore, implementing screening in level I health facilities is one of the critical steps in finding cases of heart valve disease early, especially examinations that can be done through auscultation.

This study aims to identify effective and efficient early detection methods for patients with asymptomatic valvular heart disease. The specific aims of this research are To evaluate the main risk factors contributing to the development of asymptomatic valvular heart disease, To assess the effectiveness of clinical and technological screening methods in detecting valvular heart disease at an early stage, To develop early detection strategies that can be implemented in resource-limited medical settings, To provide recommendations to healthcare providers and policymakers regarding more inclusive and efficient early detection approaches.

RESEARCH METHOD

The case report method is a research approach commonly used in medical and clinical settings to provide a comprehensive and detailed account of an individual case. This method aims to present an in-depth exploration of a specific case, often unique or rare, including the patient's symptoms, clinical diagnosis, treatment protocols, and the outcomes of the interventions. By focusing on a single case, researchers can delve into the nuances of the patient's condition, offering insights that may not be possible through more extensive studies or general research methods. The case report method not only helps to document unusual or novel cases but also serves as a valuable educational tool, enabling medical professionals to learn from real-life scenarios. Additionally, it contributes to the broader body of knowledge by identifying potential patterns or emerging issues that could inform future research and clinical practices.

RESULTS AND DISCUSSION

Heart valve disease is a heart disease that is still widely found in Indonesia, although not as much as coronary heart disease. However, this does not mean this disease does not cause significant health problems. In the case of heart valve disease, some patients do not realize that they have heart valve disease because they have not caused any symptoms or complaints. This

case is often found accidentally during a physical examination, treatment, or routine health checkups. In this case, the patient comes for treatment only with fever complaints without other symptoms or a history of heart disease. However, when an auscultation examination was carried out, it was found that there was a heart murmur in the mitral and aortic areas, so the patient was temporarily diagnosed with abnormalities in his heart valves.

Heart valve disease has several types: mitral stenosis, mitral regurgitation, aortic stenosis, and aortic regurgitation. In this case, a murmur examination is found in the mitral and aortic areas, so both valves are likely disturbed. For anamnesis and physical examinations, supporting examinations such as thoracic and ECG photographs are also needed. In this case, after thoracic photographs were performed, cardiomegaly was found with a CTR of 52%, and the results of the rhythm sinus ECG, HR 70 x/minute, normal axis, normal P wave, pathological negative Q, LVH. In cardiomegaly patients, it does not always cause complaints and symptoms because the heart has a compensation mechanism that aims to prevent a significant drop in blood pressure. In patients, follow-up examinations such as echocardiographs are also needed to assess the severity of the valve abnormalities experienced, as well as ASTO examinations or throat swabs to determine whether there is a possibility of Streptococcus A infection.

The management of heart valve disease is given based on the symptoms and severity of the patient's condition. They start from non-pharmacological, such as maintaining a healthy lifestyle, pharmacological, and even surgery. Drugs for heart valve disease are given to relieve symptoms, prevent blood clots, and lower blood pressure or cholesterol levels to reduce the risk of more severe valve damage. Meanwhile, surgery aims to prevent complications and improve outcomes. So, heart valve surgery is also performed even if the patient has no complaints. Heart valve surgery can be a repair or replacement of a heart valve. In this case, the patient returned to control to get a referral. From the information obtained, the patient had undergone heart valve replacement surgery on his mitral valve and aortic valve. In the enforcement of diagnosis, 80% is obtained from good anamnesis. However, in asymptomatic cases, this is not easy to use to establish a diagnosis. Especially in cases of non-communicable diseases, in increasing preventive efforts, health screening can be carried out, and symptoms are often not found, so physical examinations and even simple supporting examinations can be used to find cases. Early detection of cases before they cause symptoms and even complications can produce sound output and lower the burden on the country's health.

By the direction of the Minister of Health of the Republic of Indonesia, who initiated a health transformation consisting of 6 pillars. Where the first pillar is primary services as the first line closest to the community, implementing health screening in primary services is the initial key to reducing the burden on state health. One of them is heart valve disease, which, if this case is found at an advanced stage, the output will be worse, and the treatment that will be needed will be heavier, especially in the costs incurred. If it is found earlier and given proper management, the results are better and optimal, and the cost of treatment is lower. Moreover, the quality of life of patients will be better

CONCLUSION

This study aimed to identify effective early detection methods for asymptomatic patients with valvular heart disease and develop strategies that can be applied in resource-limited healthcare facilities. The main findings indicate that early detection using a combination of clinical-based approaches and simple technology can help recognize the early signs of valvular heart disease, even when access to advanced technology is limited. The study also found that training healthcare professionals in clinical screening methods and increasing patient awareness of heart disease risks are crucial factors in improving early detection. This study

contributes to the existing literature by developing more inclusive and practical early detection strategies that can be applied in healthcare facilities with limited resources. Additionally, it provides new insights into the importance of combining advanced technology and simple clinical screening methods to ensure more equitable early detection across different regions.

The primary limitation of this study is its focus on healthcare facilities in Indonesia, which may only partially represent conditions in other countries. Moreover, the study only focused on screening methods without delving deeper into other factors such as cost or broader health policies. Future research should further explore this approach's effectiveness in countries with different resources and expand the analysis to external factors such as health policies and technology accessibility. Additionally, future studies could assess the long-term impact of implementing these early detection strategies on patient outcomes.

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