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Research Article

Prevalence of different type of valvular heart disease and other cardiac pathologies of the heart in high risk patients with suspicion of heart failure. A retrospective cohort study.

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Abstract

Background: Valvular heart disease and other cardiac pathologies are associated with impending heart failure. An early diagnosis of these can help prevent the disabling ad disastrous effects and improve the prognosis.

Aim: The prevalence of various pathologies associated with heart failure is not known. This study helps in recognizing various pathologies that can lead to heart failure, which if diagnosed early can improve the patient's outcome.

Materials and Methods:

A total of 4560 patients were included in the study. All the patients were aged greater than 15 years. Patients with suspicion of heart failure on symptoms were ordered echocardiography. Transthoracic echo was done using echocardiography ultrasound machine using the British Society of Echocardiography guidelines. Echocardiography was done by registered sonologists. Echocardiograph were later read by cardiologists. Data was collected on Excel sheet.

Echocardiographic results

Of 9 690 patients, were admitted to the hospital during the year 2013 to year 2017 with the suspicion of heart failure based on symptoms echocardiogram was ordered. Among these 2448 patients had normal echocardiographic findings were as 4560 had valvular disease. Among the valvular disease patients 2951(64.71%) were females and 1609(35.2%) were males. Among these 2950(64.6%) had mild valvular disease 959(21.0%) had moderate valvular disease and 651(14.2) patients had severe valvular disease. Mitral stenosis occurred in 1200(26.3%) patients, mitral regurgitation in 2953(64.7%) patients, tricuspid stenosis in 40 (0.008%)patients ,tricuspid regurgitation in 1592(34.8%) patients, aortic stenosis in 81 (0.017%) patients and aortic regurgitation in 1957(42.9%) patients. Ischemic cardiomyopathy was present in 24 patients, dilated cardiomyopathy in 14 patients, rheumatic heart disease in 23 patients, ventricular septum defect in 5 patients , Atrial septum defect in 2 patients , Apical aneurysm formation in 4 patients, Uremic cardiomyopathy on 3 patients, Grade 1 diastolic dysfunction in 2200 patients, Grade 3 diastolic dysfunction in 400 patients, Bicuspid aortic valve in 5 patients and restrictive cardiomyopathy in two patients, 1100 patients had a thin rim of pericardial effusion and were ordered Thyroid function tests.

Conclusion: In the community heart failure is a common cause of death. Various pathologies of the heart are predictors of the outcome and hence early diagnosis can help in proper treatment and increased survival.

Key Words: electrocardiographic; cardiac pathologies ; cardiotoxic; heart failure

Introduction

Twenty six million people around the globe have heart failure (HF) [1]. Whereas in United States 2.7 million people tend to have it [2]. Valve heart disease can decrease morbidity and mortality for an individual [3, 4]. Nkomo stated that valve heart disease occurs in 1.8% of healthy individuals referred for echocardiography [5]. Patients with heart failure have high prevalence of valve disease [6,7]. Rheumatic heart disease

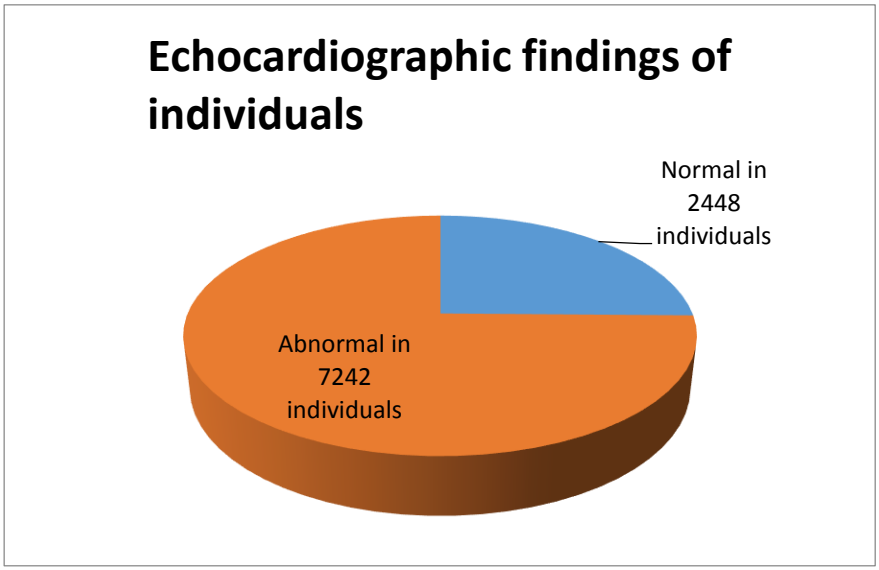
(RHD) is also a cause of Heart failure. The prevalence of RHD is 33 million and mortality is 275, 000 deaths annually [8].RHD can lead to atrial fibrillation and heart failure. Cardiomyopathy is a condition affecting the heart muscle [9]. It is divided into dilated cardiomyopathy, hypertrophic cardiomyopathy, or restrictive cardiomyopathy.

Materials and Methods:

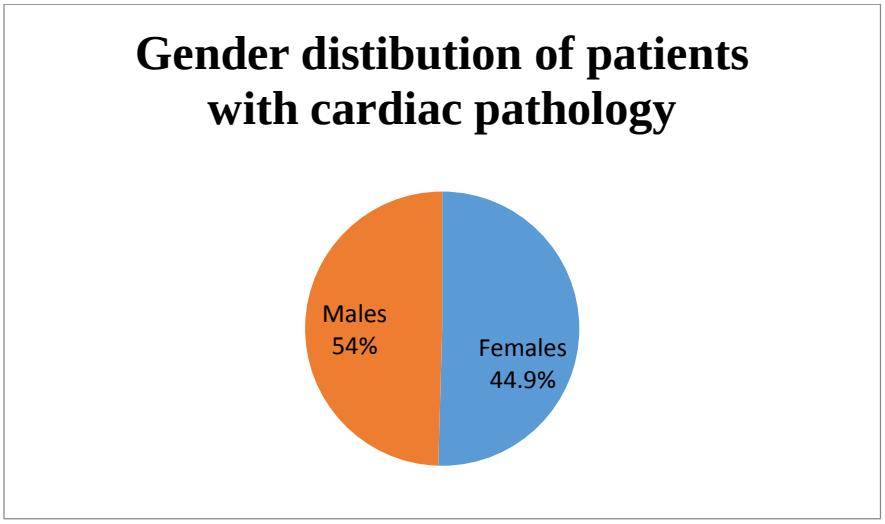
A total of 4560 patients were included in the study. All the patients were aged greater than 15 years. Patients with suspicion of heart failure on symptoms were ordered echocardiography. Transthoracic echo was done using echocardiography ultrasound machine using the British Society of Echocardiography guidelines. Echocardiography was done by registered sonologists. Echocardiograph were later read by cardiologists. Data was collected on Excel sheet.

Echocardiographic results

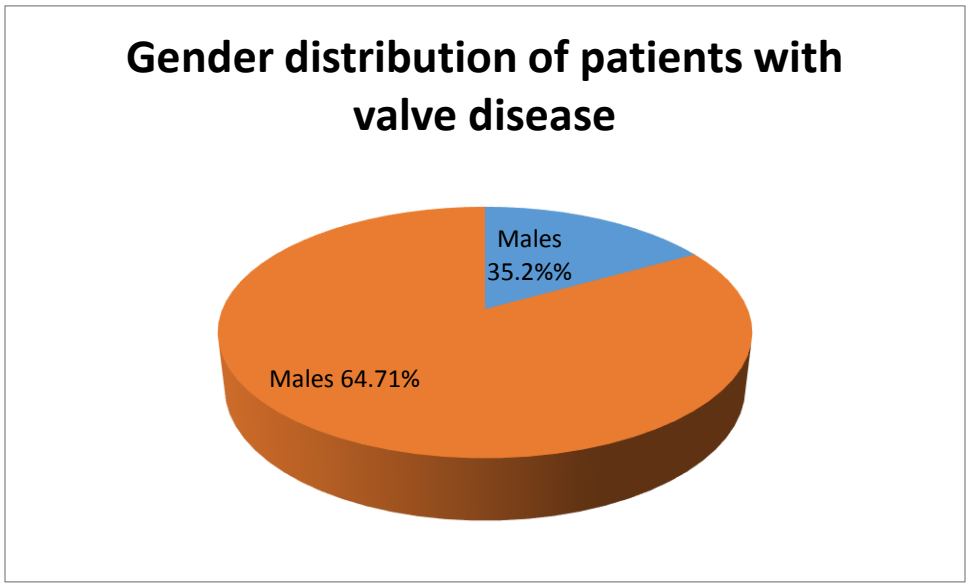
Of 9 690 patients, were admitted to the hospital during the year 2013 to year 2017 with the suspicion of heart failure based on symptoms echocardiogram was ordered. Among these 2448 patients had normal echocardiographic findings and 7242 patients had cardiac pathology as shown in figure 1.



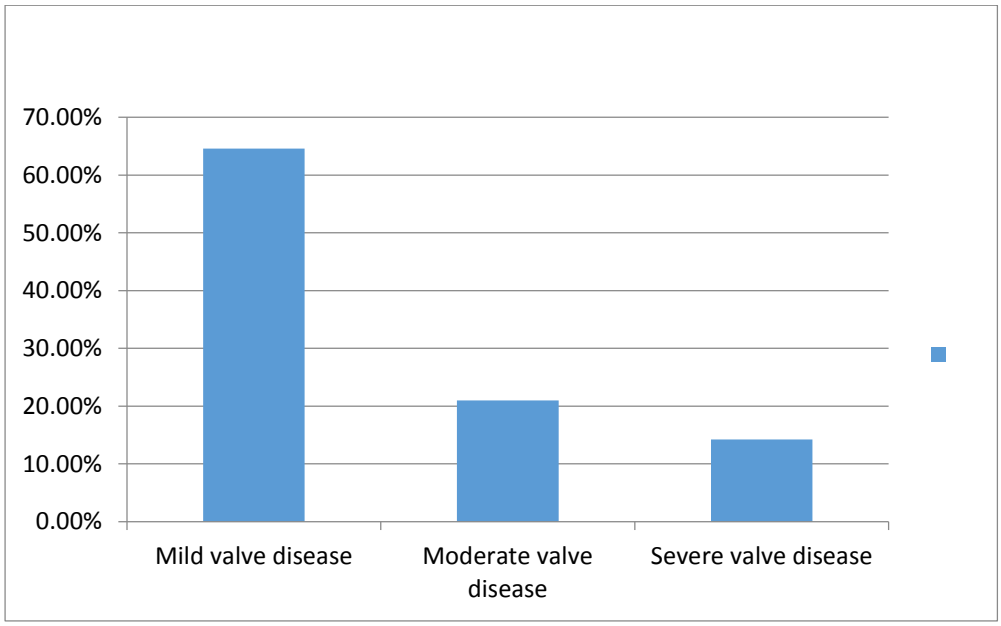
The gender distribution of patients with cardiac pathology was 3988(55.0%) males and 3254% (44.9%) females. The gender distribution is given in figure 2



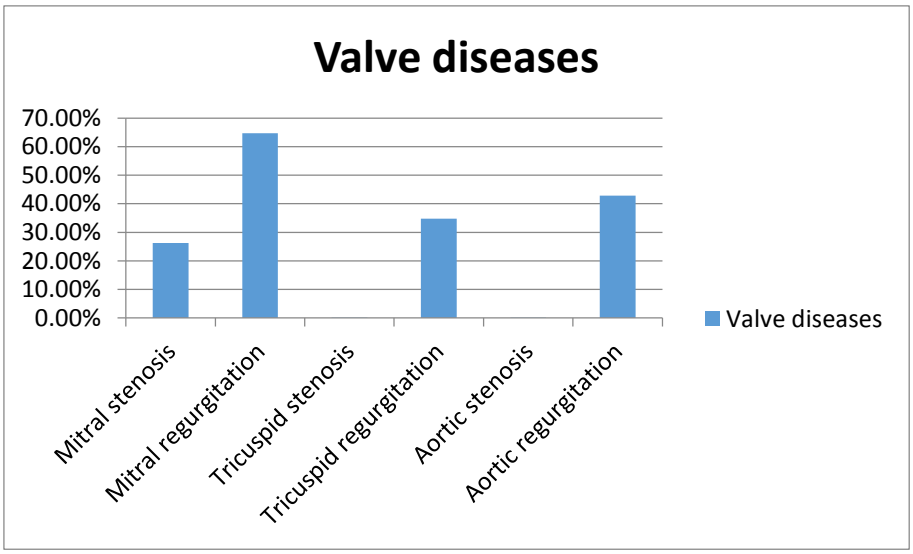
Whereas 4565 had valve disease. Among the valve disease patients 2951(64.71%) were females and 1609(35.2%) were males as shown in figure 3.



Among these 2950(64.6%) had mild valve disease 959(21.0%) had moderate valve disease and 651(14.2) patients had severe valve disease as shown in figure 4.



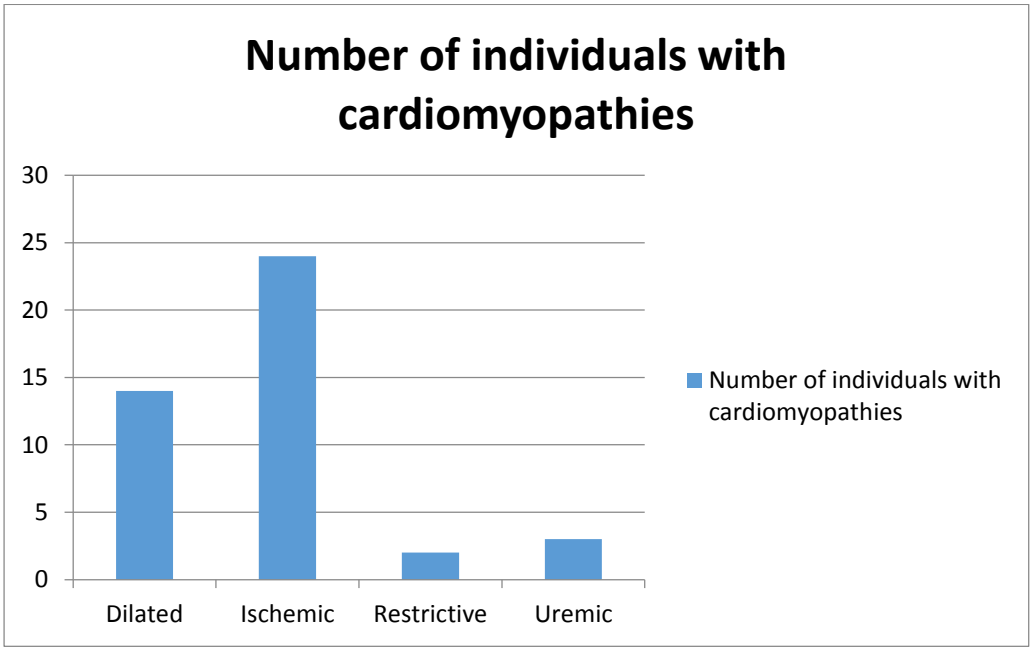
Mitral stenosis occurred in 1200(26.3%) patients, mitral regurgitation in 2953(64.7%) patients, tricuspid stenosis in 40 (0.008%)patients ,tricuspid regurgitation in 1592(34.8%) patients, aortic stenosis in 81 (0.017%) patients and aortic regurgitation in 1957(42.9%) patients and Bicuspid aortic valve in 5 patients as shown in Figure 5



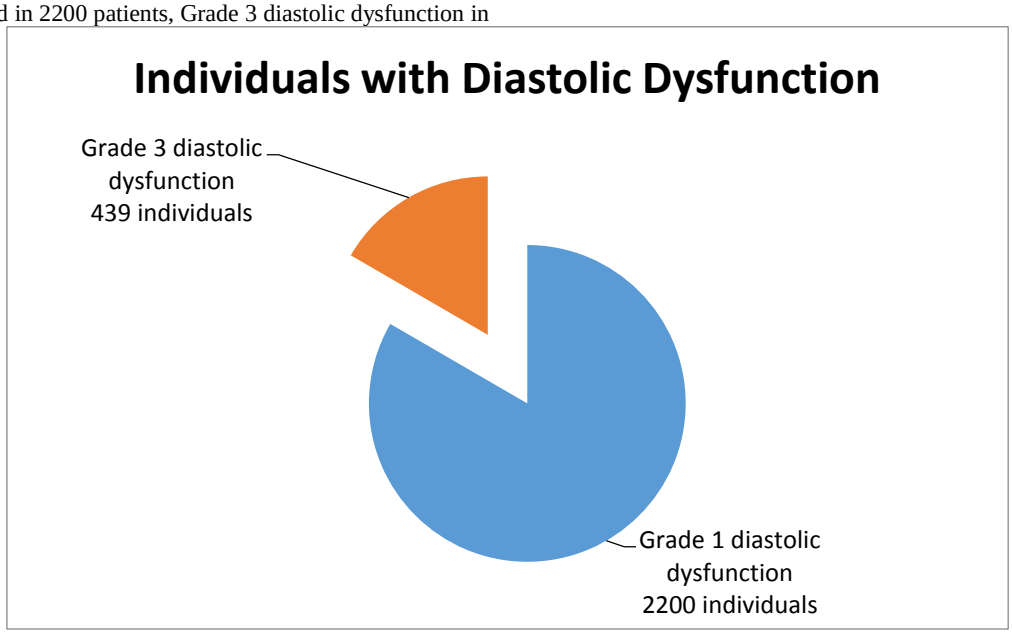
Gender distribution of each valve disease is shown in Table 1

Valve disease	Number of Total individuals	Males	Females
Mitral regurgitation	2953	1471	1482
Mitral stenosis	1200	441	759
Tricuspid stenosis	40	24	16
Tricuspid regurgitation	1592	799	791
Aortic stenosis	81	40	41
Aortic regurgitation	1957	458	1499

Ischemic cardiomyopathy was present in 24 patients, dilated cardiomyopathy in 14 patients, restrictive cardiomyopathy in two patients and Uremic cardiomyopathy on 3 patients as shown in Figure 6



Rheumatic heart disease was found in 23 patients, ventricular septum defect in 5 patients, Atrial septum defect in 2 patients. Grade 1 diastolic dysfunction was found in 2200 patients, Grade 3 diastolic dysfunction in 439 patients as shown in Figure7. 1100 patients had a thin rim of pericardial effusion.



Discussion

The incidence of heart failure (HF) continues to increase despite advances to control it [10]. Berry stated that quarter of patients admitted with heart failure have valve disease [11]. The prevalence of valve disease tends to get greater with age, much of the elderly patients have moderate aortic or mitral valve disease [12]. Echocardiography is the ideal measure of valve disease, assessing its severity as well [13]. Our study shows 4560 patients had valve disease with 979 patients greater than 80 years of age with 803 having aortic and 745 having mitral valve calcification and 55 having both. Alcohol consumption can cause increase in blood pressure, and cardiomyopathy which in turn can lead to heart failure [14-16]., Nkomo that mitral regurgitation (MR) and aortic stenosis (AS) make up a major part of valve disease affecting the males and females equally ,while our results indicate that men had more valve disease as compared to women. Mitral stenosis (MS)occurs with rheumatic heart disease and its prevalence is decreasing but in our studies it affected 1200 individuals [17-19] .Aortic stenosis causes a decreased ejection fraction and decreased ventricular function and hence heart failure, our study had 81 patients with AS [20]. Left-sided valve diseases: degenerative AS, MR and AR are fairly more common, these are in concordance to our study [21, 22]. Left-sided Valve disease progress with age with aortic stenosis occurring as a result of degenerative calcification which is in concordance to our study [23-26]. AR was more common in men, whereas MS was more common in women, these findings were consistent with our study [27,28]. Uremic cardiomyopathy can cause left ventricular hypertrophy, our study included 3 patients with uremic cardiomyopathy contributing to heart failure [29,30] Rheumatic heart disease is common in developing countries [31,32]. In our study 23 patients had rheumatic heart disease. Other causes of heart failure are cardiomyopathies [33, 34]. Our results included Ischemic cardiomyopathy was present in 24 patients, dilated cardiomyopathy in 14 patients and restrictive cardiomyopathy in two patients. The incidence of Aortic regurgitation is lower than that of Aortic stenosis in Bicuspid aortic valve. Michelena stated that only 3% of patients having abnormal bicuspid aortic valve had aortic regurgitation .It was consistent with our study, there were five patients with bicuspid aortic valve, with 4 having aortic stenosis, and one having aortic regurgitation with all of them being males [35,-37].

Conclusion

Heart failure is a disease hampering patient's daily life and prognosis. Different conditions should be kept in mind by physicians while dealing with patients of heart failure, all the causes, risks should be properly identified and evaluated so that the patient can be adequately managed and proper behavioral, pharmacological and surgical treatment can be given to patient hence in morbidity and mortality and increasing survival but more research involving appropriate treatment strategies remains vital.

There is no conflict of interest.

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