

Demographic Profile of a Group of Confirmed Adult Rheumatic Heart Disease Patients as Seen in the Jos University Teaching Hospital

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Received Date: 09 May 2024

Revised Date: 11 June 2024

Accepted Date: 20 June 2024

Published Date: 26 June 2024

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Int J Cardiol Res Rev. 2024; Vol 1, Iss 1

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Abstract

Introduction: Most studies on Rheumatic Heart Disease (RHD) is amongst children and young adult. Adults cardiologist are faced with the chronic complications of these group of individuals. A group of confirmed adult with RHD were statistically described.

Methodology and Subjects: A retrospective review of echocardiographic confirm adult cases were reviewed. Descriptive demographic parameters of age, sex, indication for echo- test and systolic functional state were scrutinized.

Results: From record of 1619 echocardiography test, 28 (1.7%) were confirmed to have definite RHD. Of the group with mean age of 33 years only 14% were male. 39% were initially suspected (indications of test) to have RHD. 42% were seen to have ejection fraction (EF) of less than 45%. EF was not related with age of individuals.

Conclusions The group distribution did not show normal distribution, Frequency of confirmed diagnosis of RHD was low with significantly low positive predictive value of initial clinical impressions in the subjects.

Keywords

Descriptive demography, Adult confirmed/definite RHD.

INTRODUCTION

A simple statistical study of confirmed cases of Rheumatic heart disease could help in the understanding of this disease in the adult population. Rheumatic heart disease (RHD) is an acquired preventable disease affecting mainly the lower socio-economic group in the less developed world [1]. It is acquired in childhood without gender predilection. And if not managed well affects the heart valves. In adulthood RHD cause a devastating heart disease requiring surgical intervention, most especially in the female [1,2]. Its prevalence is more in women of childbearing age [3,4]. Due to the hemodynamic changes in pregnancy that can worsen an asymptomatic case. Mild forms of the disease could be well tolerated.⁴ The World Health Organization and the World Heart Federation have called for a 25% reduction in mortality because of cardiovascular causes, including RHD, by 2025 [2].

In the seventy-first world health assembly WHA71.14 agenda item 12.8 on the 26 may 2018, Rheumatic fever and rheumatic heart disease was a topic of deliberation. This Reaffirming

resolutions: WHA66.10 (2013) Prevention and Control of Non-communicable Diseases; WHA68.7 (2015) Global action plan on antimicrobial resistance; WHA69.2 (2016) Committing to implementation of the Global Strategy for Women's, Children's and Adolescents' Health; and WHA69.25 (2016) Addressing the global shortage of medicines and vaccines, and the safety and efficacy of children's medicine; and the 2015 African Union Addis Ababa Communiqué on Eradication of Rheumatic Heart Disease in Africa [2]; Noting with concern that rheumatic heart disease is a significant, preventable cause of morbidity and mortality for people in all WHO regions which, even with incomplete data, is known to affect at least 33 million individuals and cause over 300 000 deaths annually, especially among vulnerable and marginalized groups including children, adolescents, pregnant women and poor and indigenous populations [3].

RHD has been found to be the most common cause of heart failure below the age of 25yrs, Adult cardiologist find it challenging because of the permanent valve structural changes seen in this preventable disease.

Citation: Chundusu CM, Kumtap Y, Gomerep VS, Sawa FI, Ola TS, et al. Demographic Profile of a Group of Confirmed Adult Rheumatic Heart Disease Patients as Seen in the Jos University Teaching Hospital. Int J Cardiol Res Rev. 2024;1(1):1-3. DOI: 10.52106/3066-3431.1004.

In a review in south Africa, RHD accounted for 71-84% of antenatal heart disease of which 8-28% were unmasked by the hemodynamic stresses of pregnancy [5-7]. In a study in Senegal, 92% of hospitalized pregnant woman had RHD with a mortality of 34% [6]. Diagnosis of RHD in adult is mainly done by an echocardiography test. Findings are essentially the same as seen in children.

Methodology

In a retrospective review of echocardiography test of 1619 patient records done in the Jos University Teaching Hospital over a 6-month period, 28 confirmed cases of RHD were analyzed considering age, sex, indication for test and systolic dysfunction. Results were expressed in proportions, percentages, charts and tables. Demographic characteristics were obtained and analyzed. Demographic parameters were obtained by a free online application *MetaCalculator.com*. Statistical demography calculator.

RESULTS

A frequency of confirmed/definite adults RHD was 1.7%. The population was made of 4 males (14%) male. The average age of all subjects was 33.6 years. Twelve 12 (42.8%) had systolic dysfunction ejection fraction less than 45%. Eleven 11 (39%) were initially thought to have RHD and confirmed. The age distribution was skewed. The age and ejection fraction did not having any relationship.

Figure 1: Demographic value of categorical variables.

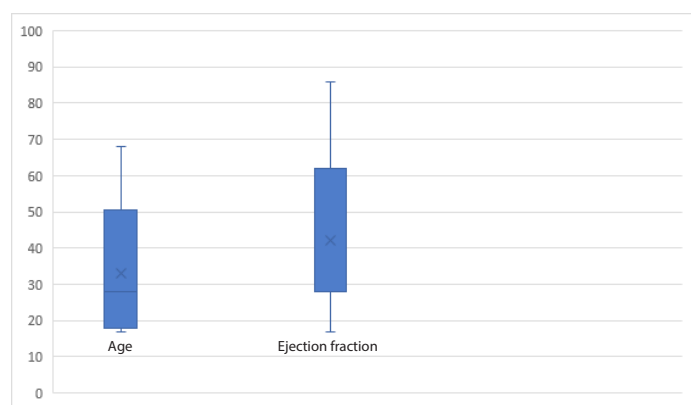
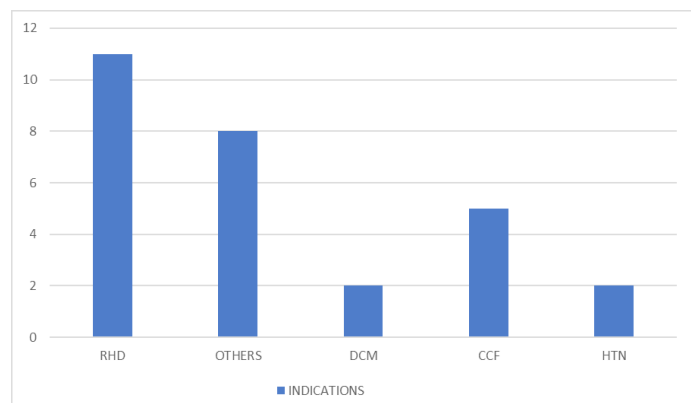


Figure 2: Initial diagnosis before echocardiography test.



RHD: Rheumatic Heart Disease, DCM: Dilated cardiomyopathy, CCF: Congestive cardiac failure, HTN: Hypertension.

Figure 3: 2x2 table confirmed RHD relating initial diagnosis.

	CONFIRM	UN-CONFIRM	
(YES)	11	7	18
(NO)	17	1584	1601
	28	1591	1619

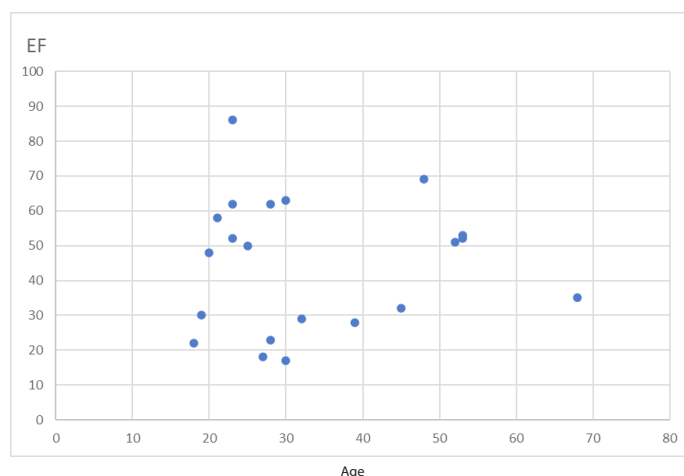
Sensitivity TP/TP+FN 35%

Specificity TN/TN + FP. 99%

Positive predictive value TP/TP+FP. 61%

Negative predictive value TN/TN+FN. 99%

Figure 4: Scattered diagram age and EF.



EF: Ejection Fraction.

DISCUSSION

With respect to the reviews of prevalence of RHD of 7.5 % -17.1% [1,8,9], the finding of a hospital frequency of 1.7% in this study was not surprising. The study was done in adults with a mean age of 33 years unlike the reviewed studies where school children and young adult constitute the majority [8-10]. The spread in age is wide and the data is skewed with a variance of 199. The demographic profile of the studied population is far from a normal distribution. A prevalence of 1.7% in this study could also be explained by the various ways which adult RHD presents, stroke, arrhythmias, congestive cardiac failure, cardiomyopathy are other ways this disease manifest. Subclinical cases may not present to the hospital at all. Diagnosis of RHD could be definite or borderline from the guideline [10]. The record here was likely to have been that of definite because it was a retrospective study where defined features were identified. The borderline RHD cases could have been regarded as some other disease entities.

Acute Rheumatic fever (ARF), a component of RHD that commonly occurs in children 5 – 15yr were not likely to have been captured in this adult study in which minimum age was 18yrs [11]. ARF could be present without cardiac involvement and cardiac involvement resembles a lot of other disease entities. In adulthood the male sex typically have mild forms and do not present to hospital until they are incapacitated [12]. The risk of hemodynamic instability is high in pregnancy subjecting adult female with RHD have higher chances of complication of adult RHD [13].

The prevalence of RHD in children by sex is equal but in adulthood female dominate because of pregnancy [14,15]. The findings in the study reiterate this fact. In most endemic areas heart failure/disease in young adult female is almost always a case of RHD [16].

Over 50% of confirmed cases in this study were initially diagnosed

as having other disease processes. The fact that RHD could be subclinical, worsen by pregnancy and present atypically were responsible. In making diagnosis of adult RHD Sensitivity was poor while specificity was very high. The low prevalence rate renders the positive predictive value low while the negative predictive value high [17].

Heart disease in most cases is assessed based on contractility or systolic function [18]. Recent classification of heart failure considers preservation or reduction of (EF) ejection fraction. Ejection fraction of less than 45% is considered reduced and 45% or greater is referred to as preserved EF. In adulthood degenerative diseases like hypertension, diabetes mellitus etc age has a significant role in determining severity of systolic function, it appears not to be so in adult RHD.

CONCLUSION

The demographic age distribution of the adults with confirmed RHD could not be described as a normally distributed population. Younger age predominates so did female sex. Age appeared not to affect systolic heart function. Low frequency of adult RHD makes it hard to predict RHD and sensitivity of initial impression before echocardiography was low.

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