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A Prospective Observational Study on the Prevalence of Dilatation Cardiomyopathy in Chronic Alcohol use in A Tertiary Care Hospital

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Abstract
Chronic alcoholism is prevalent in Western societies. However, the concerning aspect is that it is also escalating to epidemic levels in developing nations, including our own. The primary issue with chronic alcoholism is that numerous consequences on bodily systems are typically irreversible. Considering the comprehensive effects of alcohol on the heart, numerous studies unequivocally demonstrate that any potential benefits are minor, temporary, and uncertain, while the detrimental effects are undeniably significant. Study data were obtained from the Department of General Medicine at Sri Muthukumaran Medical College and Research Institute, Chennai, Tamil Nadu, from April 2024 to March 2025. The inclusion criteria consist of patients with normal weight, aged 21 to 50 years, who are attending the medical outpatient department. Exclusion criteria include patients having a history of ischemic heart disease, ECG alterations indicative of ischemic heart disease, and patients with specific medical conditions. Systemic hypertension Diabetes mellitus Bronchial Asthma Renal disease, significant nutritional problems, hepatic disease, hypercalcemic conditions Hypercholesterolemia, thyroid disorders, and other endocrine abnormalities. In this investigation of seventy instances of chronic alcoholism, twelve instances of dilated cardiomyopathy were observed. While there are various causes of dilated cardiomyopathy, specific factors are excluded from consideration (notably, peripartum dilated cardiomyopathy is irrelevant to this study as it only involves males). Patients with ischemic heart disease are excluded from this study. The findings of this study approximately align with the Seychelles research conducted by Victoria Hospital. The prevalence in this study was 20%. The prevalence rate is significantly elevated compared to the incidence of alcoholic dilated cardiomyopathy in the general population, which is twenty per one hundred thousand.

INTRODUCTION

Chronic alcoholism is prevalent in Western societies. However, it is concerning that this issue is also increasing at epidemic levels in developing nations, including our own. The primary issue associated with chronic alcoholism is that numerous effects on bodily systems tend to be irreversible. This study primarily focuses on the occurrence of dilated cardiomyopathy in individuals with chronic alcohol use, characterized by an enlargement of all four heart chambers and the development of congestive cardiac failure[1,10].

Nonetheless, the hypercontractility observed in the heart muscle during initial stages is typically reversible. Furthermore, it is believed that small daily doses of alcohol, when combined with a proper diet, can be advantageous for heart health. This practice may reduce the risk of cardiovascular mortality, potentially by lowering the occurrence of coronary artery and heart disease through its effects on HDL cholesterol and alterations in the clotting mechanism (23). Controlling or regularizing daily alcohol intake in individuals presents significant challenges. Furthermore, even low doses of alcohol, when consumed over extended periods, have been shown to notably elevate cardiovascular morbidity. This is evidenced by factors such as depressed myocardial contractility, increased cardiac oxygen consumption, a higher incidence of arrhythmias, and alterations in blood pressure, typically resulting in an increase.

When examining the comprehensive impacts of alcohol on the heart, numerous studies distinctly demonstrate that any potential benefits are minimal, transient, and questionable, while the negative consequences are undeniably significant. This study aims to emphasize a singular aspect of the detrimental effects of alcohol, specifically its impact on the cardiac muscle[12,17].

Aim and Objectives: The Aim of this study is to find the prevalence of dilated cardiomyopathy in chronic alcoholics and to analyse the number of cases by alcoholic etiology.

MATERIALS AND METHODS

Patients who visited the Department of Medicine at Sri Muthukumaran Medical College and Hospital in Chennai between April 2024 and March 2025 provided the data. The inclusion criteria consist of normal weight individuals aged 21 to 50 years who are attending the medicine outpatient department. Exclusion criteria include patients with a history of ischemic heart disease, ECG changes indicative of ischemic heart disease, and patients with specific medical conditions. Systemic hypertension refers to elevated blood pressure within the systemic circulation, which can lead to various cardiovascular complications if left unmanaged. Diabetes mellitus and bronchial asthma Renal disease, gross nutritional disorders, liver disease, hypercalcemic states Hypercholesterolemia, thyroid disease, and other endocrine disorders.

Statistical analysis was conducted utilizing the Statistical Package for the Social Sciences (SPSS). Various statistical methods were employed as deemed appropriate. Quantitative data were analyzed using mean ± standard deviation, while categorical variables were assessed through frequency counts. An independent t-test was conducted on all continuous variables. Normal distribution of the data was assessed prior to conducting any t-test. The Chi-Square test was employed to assess group differences in categorical variables. In logistic regression models, age was adjusted to estimate the independent effects of hypertension, ischemic heart disease, and diabetes mellitus. A p-value less than 0.05 was deemed significant[18,21].

RESULTS AND DISCUSSIONS

General Examination

Signs	Present in	%
Obesity	42	60%
Undernourishment	None	0%
Anemia	None	0%
Jaundice	None	0%
Clubbing	None	0%
Cycosis	7	10%
Cutaneous stigmata of chronic alcoholism	15	20%
Elevated JVP	6	9%

It is to be noted that from the above tables that certain findings such as hypertension, shock, anemia, jaundice etc. are not present in this study. This is because cases are selected to avoid unnecessary influence of extraneous forces over the out come of study.

Systemic Examination

Signs	Present in	%
Apical Impulse (Down and Outward Shift)	12	17%
Auscultatory Signs of MR/TR	10	14%
S3/S4 Gallop	6	9%
Hepatomegaly		
a)Tender	6	9%
b)Non Tender	6	21%
Basal rales	14	20%
Small Volume pulse	10	14%
Hypertension	0	0%

It is to be noted from above table that certain findings like non tender hepatomegaly and basal crepts are non specific. As non tender hypatomegaly in alcoholics may be due to fatty infiltration of liver and basal crepts may be due to respiratory infection apart from cardiac failure. Patients with hypertension are

already excluded in this study because of unnecessary bias.

Type of Tachyarrhythmias	Present in	%
Ventricular ectopics	2	3%
Atrial Fibrillation	4	6%

Type of block	No. of cases	%
First degree block	1	1.5%
Complete heart block	1	1.5%
LBBB	2	3%
LAHB	1	1.5%

CHEST X RAY

Findings	Present in	%
Cardiomyopathy	12	17%
Pulmonary hypertension	6	9%
Alveolar edema	2	3%

It is to be noted from the above table that pulmonary hypertension and alveolar edema are present in patients with cardiac failure and particularly alveolar edema in patients with severe heart failure.

ECHO/Doppler

Findings	Present in	%
Enlargement of all 4 chambers	12	17%
Increased end systolic volume	8	11%
Ejection fraction < 50	8	11%
Thrombus in chambers	1	1.5%
Mitral and tricuspid regurgitation	10	14%

Above table gives information that although 12 patients are known to have DCM only 8 patients have cardiac failure as evidenced by their echocardiogram finding, increased end systolic volume and ejection fraction <50%. One patient had thrombus in left ventricle.

There were twelve cases of dilated cardiomyopathy that were identified in this study that included seventy patients of persistent alcoholism. In spite of the fact that there are a great number of different circumstances that can cause dilated cardiomyopathy, there are some factors that preclude those causes from occurring. For example, peripartum dilated cardiomyopathy would not be a factor in this study because only males are included. The participants in this study do not include those who suffer from ischemic heart disease. Patients who are receiving long-term drug therapy (any medicine) and who have been exposed to toxins are not being taken, which means that the issue of drug factor is also eliminated.

The presence of glycogen storage diseases is highly improbable in this study because these diseases are usually exclusively observed in the pediatric age range, whereas all of the patients in this study are over the age of thirty. Because none of the patients exhibited any indications or symptoms of muscle weakness, the possibility of muscular dystrophies has been eliminated. In addition, dilated cardiomyopathy can be caused by infections, particularly viral infections. The only way to differentiate between these two is by an endomyocardial biopsy. On the other hand, infections that cause myocarditis are more prevalent in younger age groups, and the course of the disease is typically sudden, with rapid progression to cardiac failure. On the other hand, alcoholic cardiomyopathy has a typical insidious onset, with slow progression of cardiac failure, which is typically very difficult to control with drugs. Granulomas and connective tissue disease are two of the reasons of dilated cardiomyopathy that have been excluded from consideration. This is because both of these conditions share the characteristic of having systemic signs. Deficiency conditions and metabolic disorders such as hypothyroidism and hyperthyroidism are also included in this category. Now, there are only two people remaining with. On the other hand, there are the familial and idiopathic varieties. They are extremely uncommon, and it is quite challenging to demonstrate that they have a role in the etiology of the disease.

According to this study of chronic alcoholism, the prevalence of dilated cardiomyopathy is 17%. This finding is roughly comparable to the findings of the study conducted in the Seychelles by the Victoria Hospital in Seychelles, which is the largest study of its kind ever conducted anywhere in the world (it gives a prevalence of 20% among chronic alcoholics). When it comes to mitral regurgitation and tricuspid regurgitation murmurs that are caused by ventricular dilatation, Schlant R. made the observation that these murmurs are present in 75% of individuals who have dilated cardiomyopathy. It is also roughly correlated with the findings of our investigation. In fact, it is well recognized that arrhythmias and conduction blockages are also known to occur rather frequently in acute alcoholic intoxication. We refer to this condition as Holiday heart syndrome. In most cases, these patients will not exhibit any signs of structural heart disease.
The condition known as dilated cardiomyopathy can lead to a number of different arrhythmias. Ten percent of chronic drinkers are shown to have conduction abnormalities, according to Faudal h.cheng et al. for example. According to our research, it is approximately 7%.

CONCLUSION

The primary objective of this research is to shed light on the prevalence of dilated cardiomyopathy in individuals who have not stopped drinking alcohol. According to the findings of this research, dilated cardiomyopathy was observed in twelve patients out of seventy chronic alcoholics. This represents a prevalence of seventeen percent. There is a close

correlation between the findings of this study and the victoria hospital study that was undertaken in the Seychelles. According to this survey, the prevalence was twenty percent. If we compare this prevalence rate to the prevalence of alcoholic dilated cardiomyopathy in the normal population, which is twenty per one lakh, we can see that this prevalence rate is significantly higher. The reason for this is that the individuals that were selected were chronic drinkers who exhibited symptoms that were related to the cardiovascular system.

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