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Original article:

Study of Echocardiographic Abnormalities in Chronic Alcoholic patients

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Abstract:

Introduction: Ethanol is most commonly abused drug worldwide. It has been shown to produce toxic effects in almost each and every organ system in the body . Acutely, it is seen that ethanol decreases myocardial contractility and due to ethanol peripheral vasodilation occurs, which results in mild decrease of blood pressure and increase of cardiac output.

Material and methods: The present study type was a prospective type of study. Registration of patients was done from September 2017 to August 2019. Registration was done when patient got admitted in Medicine department. On registration the patients having exclusion criteria were not taken for the study. Objective of the study was to assess impact of alcohol with varying duration and in different age groups on Cardiovascular system.

Results: In present study among 60 patients having normal study on 2D ECHO 36 had duration less than 10 years and 24 had more than 10 years, 26 having grade 1 DD 22 had duration more than 10 years and 4 had less than 10 years, 8 patients having ejection fraction < 40% 4 had duration less than 10 years and 4 had more than 10 years, 2 had inferoseptal wall hypokinesia had duration more than 10 years, 2 having severe PAH had duration less than 10 years, and 2 having grade 2 DD had duration more than 10 years. P value was 0.001 shows statistical significance.

Conclusion: This study confirms that many echocardiography changes occur prior to symptomatic cardiac disorders established to be caused by chronic alcohol intake such as alcoholic cardiomyopathy. which probably are early indictors of ongoing effects of alcohol and are reversible during the early stages detected by non invasive investigations like echocardiography that later proceeds to alcoholic dilated cardiomyopathy.

Introduction:

Ethanol is most commonly abused drug worldwide. It has been shown to produce toxic effects in almost each and every organ system in the body [(1)]. Acutely, it is seen that ethanol decreases myocardial contractility and due to ethanol peripheral vasodilation occurs, which results in mild decrease of blood pressure and increase of cardiac output. After alcohol intake there is also increase in exercise induced cardiac oxygen consumption. All these acute effects have importance for the average healthy drinkers but can be problematic when persisting cardiac disease is present [(2)]

Echocardiography changes like left ventricular dimensions, left ventricular mass, left atrial dimension and septal plus left ventricular wall thickness have been observed in persons with prolonged exposure to alcohol. [(3)] If stopped early alcoholic effects of heart can be stalled and even reversed . Alcoholic heart disease is reversible condition during the early stages detected by non-invasive investigations like electrocardiography an and echocardiography

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Material and methods:

The present study type was a prospective type of study.

Study area: Dr D Y Patil Hospital and Research center, Pimpri, Pune. A Tertiary care hospital.

Study setting: Medicine Outpatient department of tertiary care hospital.

Registration of patients was done from September 2017 to August 2019. Registration was done when patient got admitted in Medicine department. On registration the patients having exclusion criteria were not taken for the study. Objective of the study was to assess impact of alcohol with varying duration and in different age groups on Cardiovascular system. At registration, the basic information was enrolled especially with respect to clinical findings, sociodemographic factors, and all other investigations. Thus all patients enrolled were followed up in Medicine department till they were discharged. The data collected was analysed .

Data was collected by using a pre designed questionnaire which consisted of standard questions related to clinical condition, socio demographic factors, addiction among family members, and so on, were interviewed. In addition, questions related to past and present medical history and health seeking behaviour were also studied.

Observations and results:-

Table 1: Age (years) distribution among the study population

Age (years)	Frequency	Percentage
20 to 40	34	34%
41 to 60	56	56%
>60	10	10%
Total	100	100%

Average age in years was 48.9 $\pm$10.03.

Table 2: Addiction among the study population

Addiction	Frequency	Percentage
Alcohol	100	100%
Cigarette smoking	34	34%
Tobacco chewing	32	32%

As a person had one or more than one addiction hence the total exceeds 100

Table 3: Duration of alcohol consumption (years) among the study population

Duration of alcohol consumption in years	Frequency	Percentage
$\leq$10	46	46%
>10	54	54%
Total	100	100%

Average duration of alcohol consumption in years was 15.92+9.68.

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Table 4: Echocardiographic changes among the study population

ECHO changes	Frequency	Percentage
Inferoseptal wall hypokinesia	2	2%
Severe PAH	2	2%
Ejection fraction (<40%)	8	8%
Grade 1 DD	26	26%
Grade 2 DD	2	2%
Normal study	60	60%
Total	100	100%

Table 5 : Echocardiographic changes

ECHO changes/ duration of alcohol consumption	**≤10years**	**>10 years**	**Total**
Inferoseptal wall hypokinesia	0	2	2
Severe PAH	2	0	2
Ejection fraction (<40%)	4	4	8
Grade 1 DD	4	22	26
Grade 2 DD	0	2	2
Normal study	36	24	60
Total	46	54	100

Discussion:

Present study showed that all were alcoholic, followed by 34% were cigarette smoker and 32% were tobacco chewer. As a person had one or more than one addiction hence the total exceeds 100.Present study showed that majority 54% had duration more than 10 years and 46% had less than 10 years. Average duration of alcohol consumption in years was 15.92+9.68. Study by Attar H. D et al [(2)] showed that majority 68% had duration more than 8 years. Same results are seen in present study. In present study majority 60% had normal study on 2D ECHO, 26% had grade 1 DD, 8% had ejection fraction<40% and 2% each had inferoseptal wall hypokinesia, severe PAH and grade 2 DD respectively.

Study by Attar H. D et al [(2)] showed that on 2D ECHO abnormality 8% had abnormal ejection fraction, 11% had increased wall thickness.

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Study by Mahela et al [3,4] showed that 15% had increased wall thickness, 12.5% had decreased ejection fraction.
In present study among 60 patients having normal study on 2D ECHO 36 had duration less than 10 years and 24 had more than 10 years, 26 having grade 1 DD 22 had duration more than 10 years and 4 had less than 10 years, 8 patients having ejection fraction < 40% 4 had duration less than 10 years and 4 had more than 10 years, 2 had inferoseptal wall hypokinesia had duration more than 10 years, 2 having severe PAH had duration less than 10 years, and 2 having grade 2 DD had duration more than 10 years. P value was 0.001 shows statistical significance.
Study by Attar H. D et al [2] showed that echocardiographic abnormalities were observed in 21.87% patients with duration of alcohol consumption between 5-8 years, 44.11% abnormalities with more than 8 years duration of alcohol consumption.[4]

Excessive and Chronic alcohol consumption is one of the main reasons of lifestyle- diseases. Alcohol being main etiology of a myocardial dysfunction called clinically as alcoholic cardiomyopathy (ACM). Additional addictions like smoking may also affect it.(5) The prevalence of alcoholic cardiomyopathy is in a range of 23% to 47% DCM (Dilated Cardiomyopathy). Clinically, alcoholic cardiomyopathy leads to increased ventricular dilation, left ventricular mass, ventricular dysfunction, and ventricular wall thinning. Patients shows high BP, decrease in immune system and progressive heart failure. This condition has a bad prognosis diagnosed by the presence of HTN, Heart failure, arrhythmias, stroke. The etiopathogenesis of ACM is not know well yet, but variable and mostly involving the generation of oxidative stress, inter-related pathologic mechanisms, myocyte apoptosis, dysfunction in fatty acids metabolism and transport, impaired mitochondrial bioenergetics and. To Diagnose ACM clinical features are to be excluded. It's two-step diagnosis processing which includes cardiac imaging and second is laboratory tests. Cardiac imaging is done to characterize myocardial abnormalities and laboratory tests like liver function tests, carbohydrate-deficient transferrin tests, and ECG abnormalities leads for detection of excess alcohol consumption leading to cardiac abnormalities. (6) Challenges of management of ACM have increased as there are no STG's available for ACM. The principal treatment option is absolute abstinence from alcohol can relieve the symptoms and even reverse the cardiac dysfunctions occurred. For patients with severe cardiac abnormalities pharmacotherapy and ICD therapy are advised. Cardiac transplantation is lastly advised.

Conclusion:

This study confirms that many echocardiography changes occur prior to symptomatic cardiac disorders established to be caused by chronic alcohol intake such as alcoholic cardiomyopathy. which probably are early indictors of ongoing effects of alcohol and are reversible during the early stages detected by non invasive investigations like echocardiography that later proceeds to alcoholic dilated cardiomyopathy

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