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Study Of Cardiovascular Functions In Chronic Alcoholics

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ABSTRACT

BACKGROUND :

Alcohol is most commonly abused drug worldwide. Alcohol use has also been shown to have numerous effects on the cardiovascular system other than heart failure.It has been associated with arrhythmia(eg.atrial fibrillation ,ectopics),hypertension and sudden death [1] .

METHODS:

This is a hospital based cross-sectional study carried out in 100 chronic alcoholics admiited at Dr.PSIMS&RF, Chinnoutapalli ,tertiary care, teaching hospital in South India for a period of 2 years.Their cardiovascular function is evaluated by Electrocardiogram and Echocardiogram.

RESULTS:

Out of 100 patients, In the study group 94% were males and 6% were females.Maximum incidence of Alcoholics was seen between 3 rd to 6 th Decade of life.Mean age was 43.1 ±11.9 years .

Most common abnormality observed was sinus tachycardia(10%) followed by Qt prolongation (7%),LVH and AF(5%),VPC(4%),NSC and RBBB(3%),APC(2%). Most common echo abnormality was Increased LAD size(14%),increased RVSP (12%),Increased thickness in IVS and Posterior wall(11%),EDD,EDS,EF,FS abnormality was observed in 10% patients. Other findings like MR,TR,PAH seen in 1%,TR,PAH in 5%,MR IN 4 % population,remaining 90 % are normal. In Echo final impression of LVH Seen in 11% and DCM was seen in 10%Population. Prevalance of cardiovascular abnormalities In patients with chronic alcoholism was ECG 39 % ECH0 21%

CONCLUSIONS: Early screening by means of ECHO and ECG can be useful in preventing the progression to irreversible changes.Alcohol de-addiction and counseling should be encouraged.

KEY WORDS -ALCOHOL,ARRYTHMIAS,ECG,ECHO.

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INTRODUCTION:

Alcohol is generic name for large group of organic chemical compounds .[1][2]

EFFECTS OF ALCOHOL ON THE HEART

1.Alcoholic heart muscle disease[cardiomyopathy]

2.Cardiac dysrhythmias

Atrial Arrhythmias and dysrhythmias

1.Atrial fibrillation 2.Premature atrial contraction

3. Atrial flutter 4. Supraventricular tachycardia

5.Sick sinus syndrome

Ventricular Arrhythmias and dysrhythmias

1. Ventricular fibrillation 2.Premature ventricular contraction

3.Pulseless electrical activity4.Ventricular tachycardia

5.Asystole

Junctional Dysrhythmias

1.Premature junctional contraction2.Junctional tachycardia

Heart blocks

1.First degree heart block

2.Second degree heart block

* Type 1second degree heart block,also known mobitz I or wenckebach

*Type 2 second degree heart block, also known mobitz II

3. Third degree heart block, also known as complete heart block

3.Holiday heart syndrome

4.Congestive heart failure

5.Hypertension

6.Sudden death

So the main aim of the study is to assess the cardiovascular functions in chronic alcoholics.

MATERIALS AND METHODS:

SOURCE OF DATA COLLECTION: This is a hospital based cross-sectional study carried out at tertiary care, teaching hospital in South India for a period of 2 years.

100 chronic alcoholics admitted are selected for study and their cardiovascular function is evaluated by means of Electrocardiogram and Echocardiogram

INCLUSION CRITERIA:

Patients with more than 18 year of age with chronic alcoholism(as by WHO)

EXCLUSION CRITERIA: Subjects with following conditions were excluded from the study

1.patients with Hypertension

2.patients with Diabetes

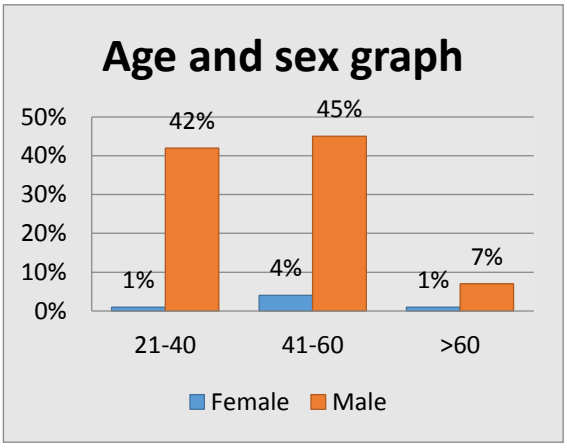
3.patients with smoking

4. patients with congenital heart diseases
5.patients with chronic kidney disease are excluded from the study.

RESULTS :

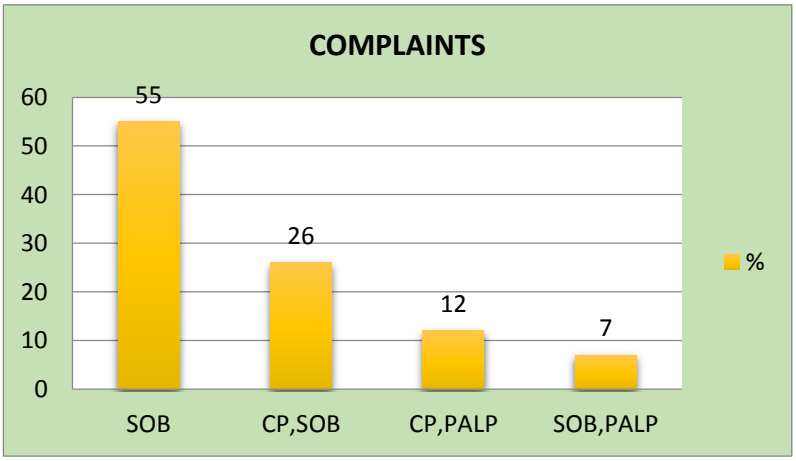
GRAPH 1

Age and sex distribution of study group



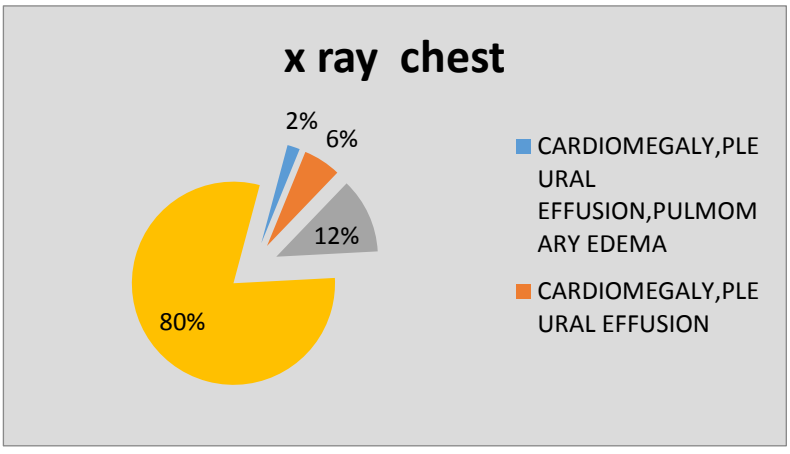
GRAPH 2

Distribution of complaints of study group.



GRAPH 3

X-Ray chest findings of study group



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GRAPH 4

USG abdomen findings of study group.

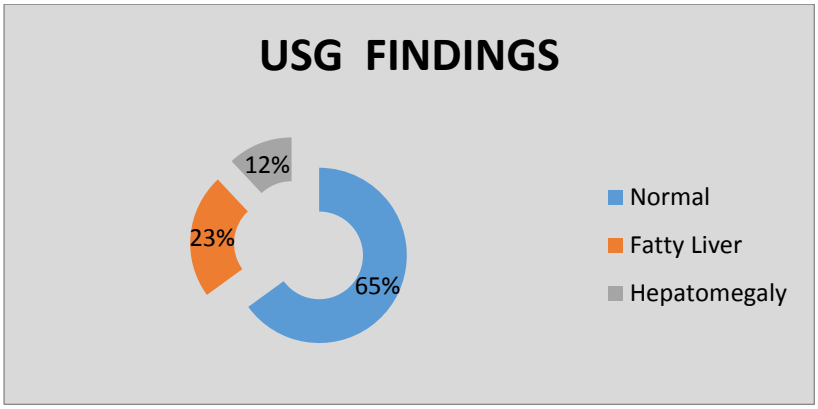


TABLE 1

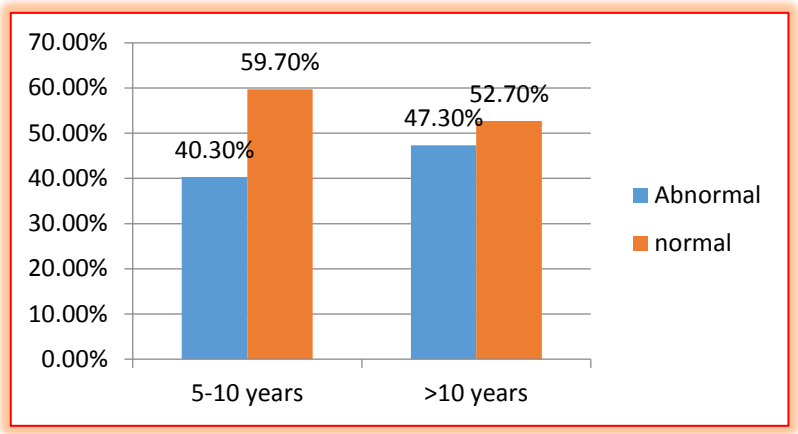
Electrocardiogram findings of study group.

ECG	Age						Total	
	21-40		41-60		>60			
	Male	Female	Male	Female	Male	Female	Count	%
AF	2	1	2	0	0	0	5	5.0%
APC	0	0	2	0	0	0	2	2.0%
LVH	1	0	1	1	2	0	5	5.0%
NSC	0	0	2	0	0	1	3	3.0%
RBBB	3	0	0	0	0	0	3	3.0%
ST	2	0	6	0	2	0	10	10.0%
QT Prologation	4	0	2	0	1	0	7	7.0%
VPC	1	0	1	1	1	0	4	4.0%
N	29	0	29	2	1	0	61	61.0%
Total	42	1	45	4	7	1	100	100.0%

Out of 100 patients, 61 % shows normal ECG findings and 39 shows abnormal ECG findings.

GRAPH 5

ECG findings wtih reference to duration of alcohol.



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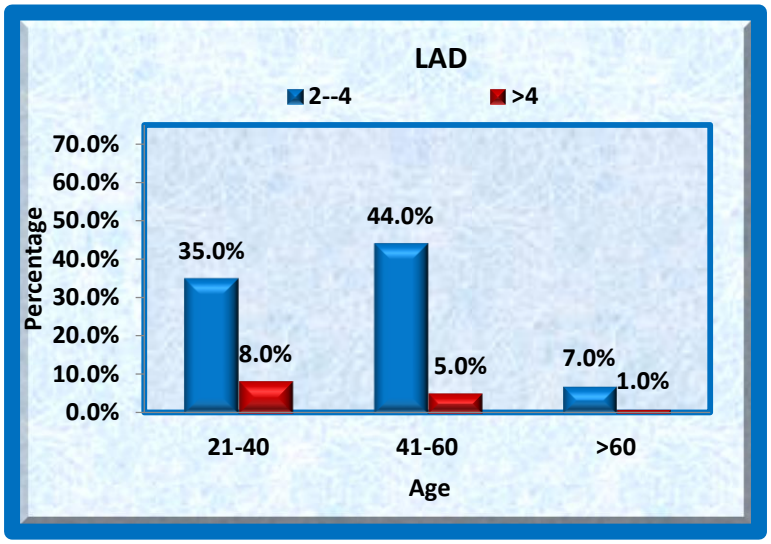
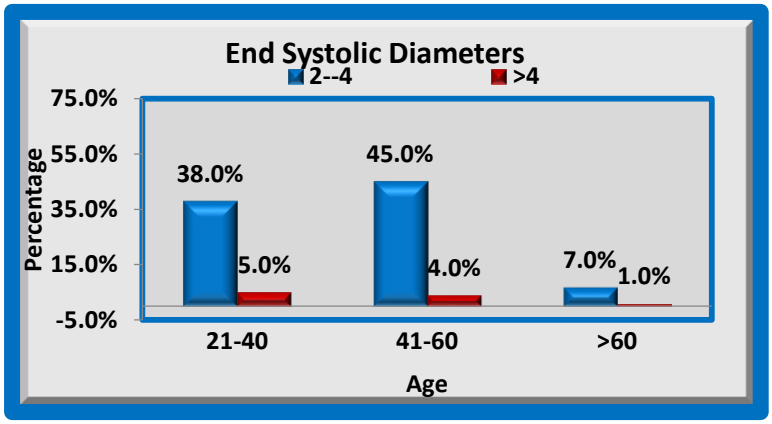
GRAPH 6

Distribution of Abnormal V/S Normal Left Atrial Diameters among study group



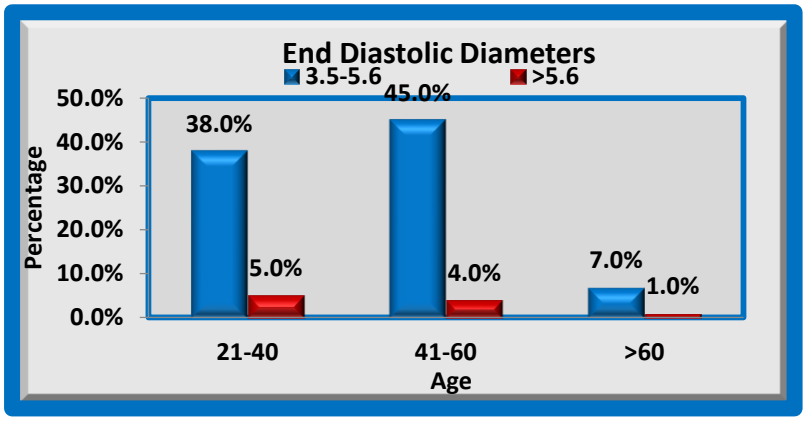
GRAPH 7

Distribution of Abnormal V/S Normal End systolic diameters among study group



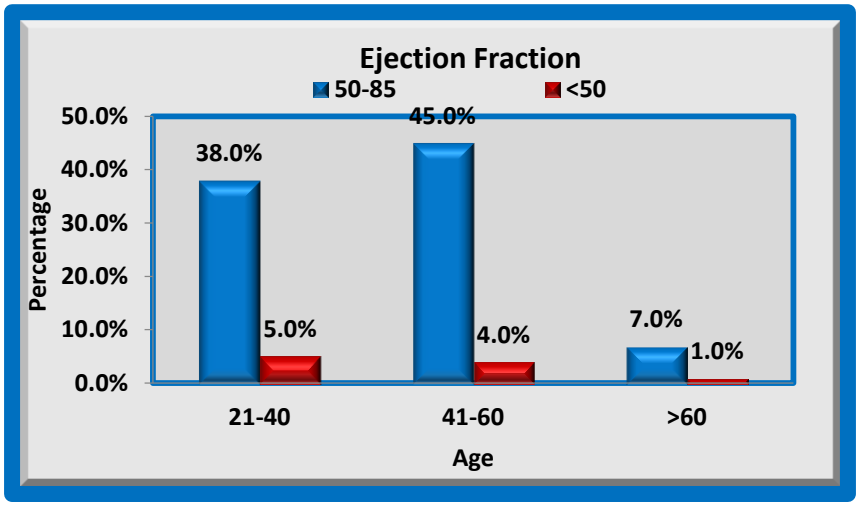
GRAPH 8

Distribution of Abnormal V/S Normal End Diastolic Diameters among study group



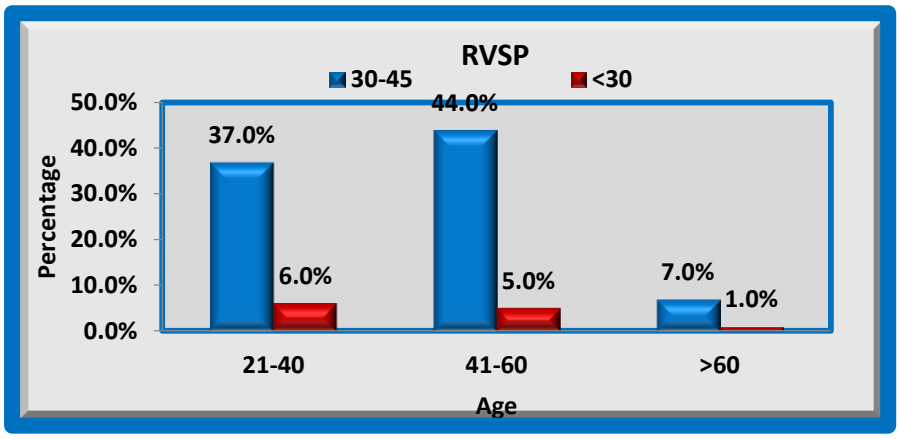
GRAPH 9

Distribution of Abnormal V/S Normal Ejection Fraction among study group



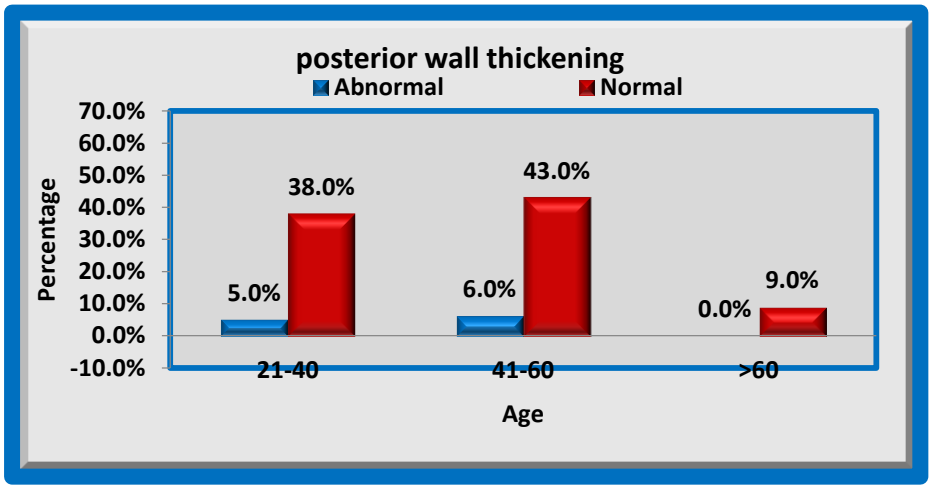
GRAPH 10

Distribution of Abnormal V/S Normal RVSP among study group



GRAPH 11

Distribution of Abnormal V/S Normal Left Posterior wall thickening study Group



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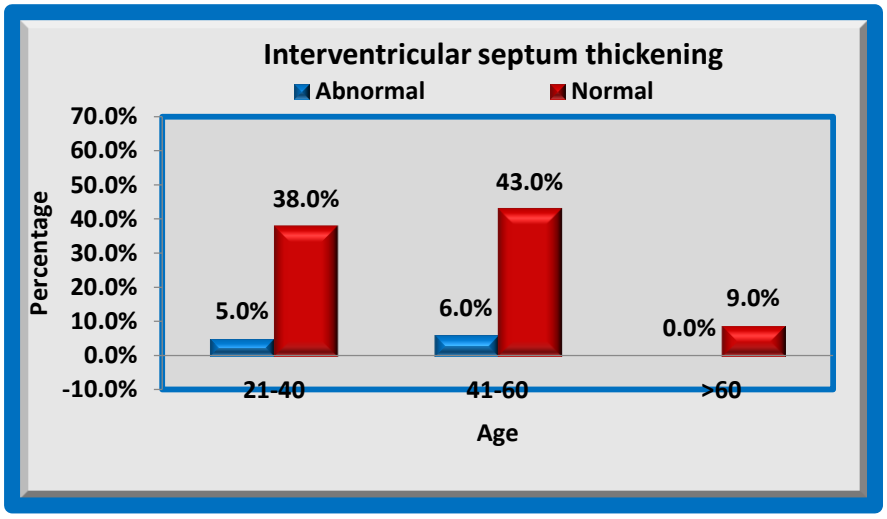
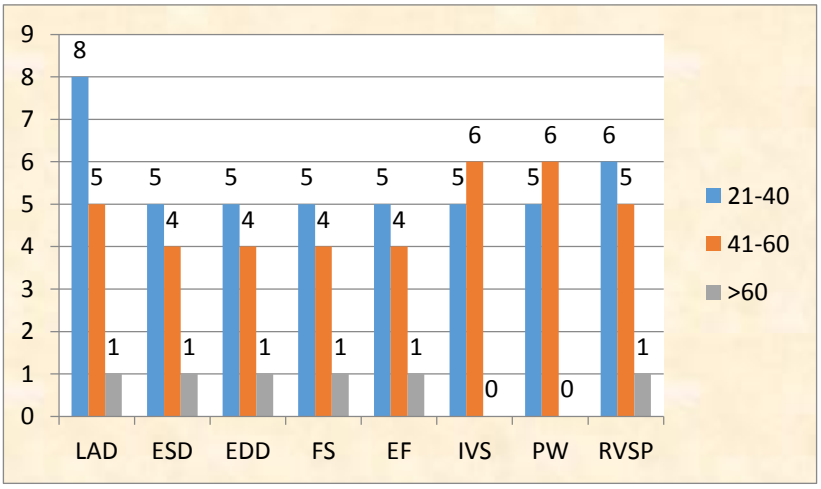
GRAPH 12

Distribution of Abnormal V/S Interventricular septum thickening among study group

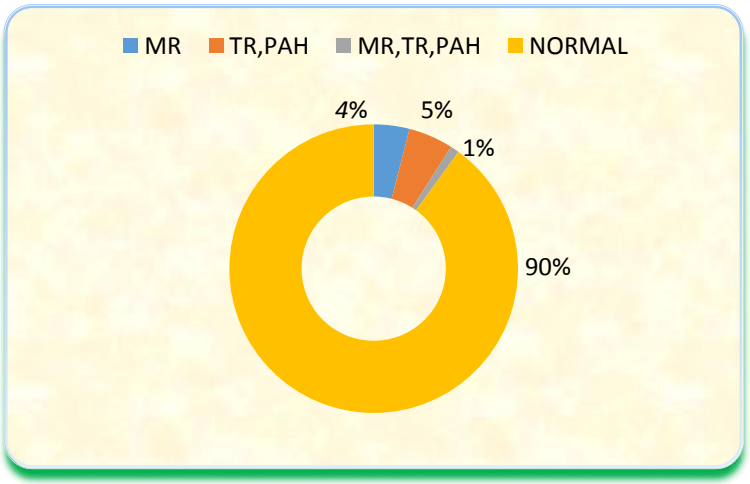


GRAPH 13

Distribution of Abnormal Echocardiogram among study group



GRAPH 14 Distribution of Echocardiogram findings.



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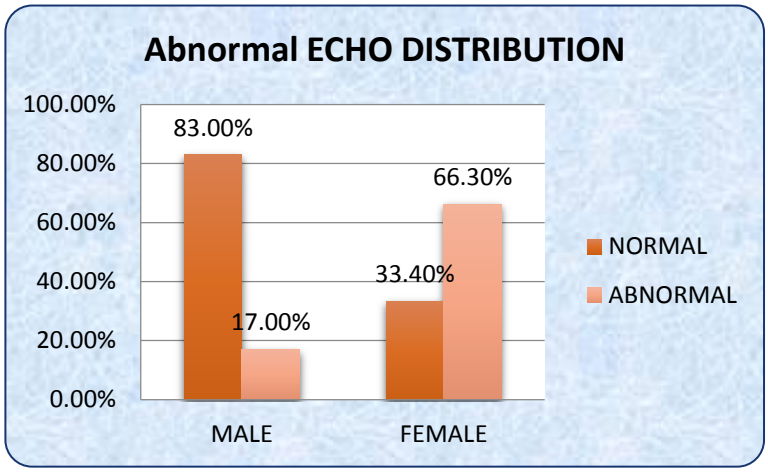
GRAPH 15 Distribution of Echocardiogram findings



DISCUSSION:

Alcohol is most commonly abused drug world wide.it has been shown to have various toxic effects over various organ systems in the body.

This study group consists of 100 patients,they were divided into 3 age groups ,21-40,41-60 and >60 years. 100 patients was divided among these age groups i.e 21-40 years - 43%,41-60 years -49%,>60 years -8 %.Mean age group was 43,with as standard deviation of 11.9.The mean age in present study (43+/- 11.9)is some what higher when compared with Mahela et al (38.85±3.3) [3]and Lazarevic et al (32.85±4.3)[4]

This study group consists of 6 %females,more in the 41-60 groups i.e 4 females.the lower incidence in female population is due to indian culture(the incidence of females taking alcohol is less in India) and 94% males .as compared toAttar HD et al[47] where 98 % of study participants were males and 2 % were females

In this study group ,majority of the study group presents with a complaint of dyspnea i.e 55% and rest of the population presents with chest pain,palpitations.In study by Divakar[5], All the patients presented with exertional dyspnea. Easy fatiguability was seen in 83.3% of subjects, the second most common symptom followed by pedal edema in 70% of patients. Other symptoms were PND, cough,palpitation, orthopnea, chest pain, abdominal pain and syncope i.e 40% of patients had chest pain while 16.6% had syncope.

In this study group ,alcohol intake duration is more than 5 yrs,duration of intake between 5-10 yrs is 62%, and >10 yrs is 38%,as it was cross sectional study and patients admitted was taken history and the study was there was a disparity in the percentage of persons taking alcohol for more than 10 years was less,it was comparable with Attar HD et al [6]study,where total number of study participants 32% had 5-8 years and 68 % had > 8 years history of alcohol consumption

Chest radiography findings included cardiomegaly which was similar in percentage to study by Massumi et al[7].

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In this study various ecg abnormalities have been recorded.out of 100 patients,39 was been seen with ecg abnormalities,61 patients ecg was normal in all parameters. The most common ecg abnormality in this study group being sinus tachycardia ,othersecg changes includes Atrial fibrillation,left ventricular hypertrophy,non specific ST-T Changes,Poor R wave progression,Atrial premature complexes,Ventricular premature complexes,Right Bundle Branch Block.

In this sudy, most of ecg abnormalities are seen in the 41-60years i.e 18%,21 to 40-14%,more than 60 years 7%.as there was disparity in the number of patients distrubuted in the different group,there was a disparity in the results.Out of 6 patients in females,4 have ecg abnormalities in this study

In this study, sinus tachycardia is the most commonly observed ECG abnormality,Sinus-tachycardia is the most commonly observed ECG abnormality in chronic alcoholics.

Of these patients in this group with sinus tachycardia, 6% between 41-60 years age group, 2% of patients in 21-40 years age group and 2% between>60 years,compared to study done by Attar HD et al[6]

Qt segment prolongation was seen in 7 % patients. QT C interval in the electrocardiogram includes both ventricular depolarization and repolarization times and varies inversely with the heart rate .Lorsheyd A et al[8] studied acute effect of alcohol in healthy individuals and showed that 13% QT C prolongation was seen in the subjects.

In this study ectopics are present,of which ventricular premature beats are present in 4% population ,Atrial premature complexes are present in 2% population.In study done by Attar HD et al[6] 1% patients have APC and 1% patients have VPC. Which was relatively high in this study,these complexes resolves spontaneously,no treatment was needed

In this study AF was seen in 2% patients.It is usually spontaneously subsided.In one study done in western population 5-10% cases of new onset atrial fibrillation explained by alcohol consumption.In this study RBBB Was seen in 3 % population,compared to study done by Mahela et al[9],

Non specificcomplexes.i.e ST-T Changes was seen in 3% population .A study done by Mahela et al [9] showed non specific ST-T changes in 17.5% chronic alcoholic patients

In this study Left ventricular hypertrophy was seen in 5 % patients,as comparable to Segel et al. 1981[10]

Electrocardiographic abnormalities observed are 37.3% in males and 66.7% in females. This high incidence in females is due to more cardiotoxicity. This study show increased incidence of ecgabnormalities are more in the patients with alcohol consumption of more than 10 years i.e 47.3% and 40.3% in the patients with 5-10 years of age.

Echocardiography is useful in the detection of the early cardiovascular abnormalities .so echo is used as assesment tool for the detection of early abnormalities and structural changes in alcoholics.

Various parameters are studied in Echo Cardiography, they include End systolic diameter,End Diastolic Diameter,ejection fraction,Fractional Shortening,Left Atrial Diameter,posterior septum thickening,Inter ventricular septum thickening.

In this study 10% patients shows increased ESD,EDD and decreased EF,FS.11% Shows PW and IVS thickening,11% shows increase in RVSP.14% of patients shows increased LAD,Which is the most observed change.

Study of Urbano-Marquez et al.[11] reported significantly lower EF in alcoholics compared with control subjects.

In 1997, Fernandez-Sola and colleagues[12] evaluated 10 women and 26 men who were alcohol abusers and reported a similar prevalence of cardiomyopathy in the males and females, despite a lower total lifetime alcohol dose in the women.

In this study LVH was observed in 11% of patientsthicknesss in the posterior wall and interventricular septum thickness was also seen in 10 percent of patients .We also found that the LV mass was larger and the posterior wall was thicker in alcoholics than it was in control subjects. This is in accordance with the previously necropsy study from Schenk and Cohen[13]

Echocardiographic abnormalities observed are 17% in males and 66.3% in females. This high incidence in females is due to more cardiotoxicity and lower study group of females.

CONCLUSION :-In conclusion there was significant prevalence of cardiovascular abnormalities in chronic alcoholics >5 years duration.and incidence increases with increasing duration. Early screening by means of ECHO and ECG can be useful in preventing the progression to irreversible changes.Alcohol de-addiction and counseling should be encouraged.

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