Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.69980/vv028t59

A STUDY ON THE EVALUATION OF CARDIAC DYSFUNCTION AMONG OLDER PEOPLE ATTENDING HOSPITAL FOR APPARENTLY NON-CARDIAC PROBLEM

Dr Shamik Banerjee[1*], Dr Bipul Barman[2]

[1*]Assistant Professor Institute Of Post Graduate Medical Education And Research (IPGMER) Kolkata West Bengal The West Bengal University Of Health Sciences Email Id: docshamikbanerjy1981@gmail.Com

[2]Assistant Professor IPGMER, Kolkata West Bengal The West Bengal University Of Health Sciences
Email Id: barman79.bipul@Gmail.Com

ABSTRACT

An unprecedented increase in human longevity was one of the most spectacular events of 20th century. The United Nations held its second General Assembly on aging in Madrid, in April 02 and International Plan of Action on aging 2002 was adopted. The health component of this declaration was based on the document "Active aging: A policy frame work" prepared by WHO.[2]

In the year 2002 there were an estimated 605 million old person in the world of which 400 million were living in low income countries. Between 2000 and 2030, the number of older adults worldwide is expected to increase from 420 to 974 million. Cardiovascular disease is the most frequent diagnosis in elderly people and is the leading cause of death in both men and women [1] older than 65 years of age. The profile of these common cardiovascular diseases differs in older patients from that in younger patients. Systolic, but not diastolic, blood pressure increases with aging, resulting in increased pulse pressure. Systolic hypertension becomes a stronger predictor of cardiovascular events, especially in women. Heart failure with preserved systolic function becomes more common at older ages and is more common in women. Coronary artery disease (CAD) is more likely to involve multiple vessels and left main artery disease and is equally likely in women as in men older than 65 years of age. Equal numbers of older men and women present with acute myocardial infarction (MI) until age 80, after which more women present

Aims and Objectives:

SPECIFIC OBJECTIVES OF THIS STUDY

1. Evaluation of cardiac dysfunction pattern among older people with apparently non-cardiac problem.

2. To find any correlation of various co-morbidities between different cardiac dysfunctions.
3. To find out any relationship between different types of cardiac abnormalities.

Materials and Methods

- This study was conducted in CNMCH from June 2010 to, May 2011 after approval by this institutes ethical committee
- **Study Area**
- Department of general medicine in Indoor, out door and geriatric clinic CNMCH **.**
- **Study population**
- All elderlv population > = 60 years both male and female

- **Sample size:**
- 51 cases were studied.
- **Study design .**
- Hospital based descriptive study with cross sectional design

Selection of cases :

Inclusion criteria:

Elderly 60>= years presenting with a non - cardiac problem having cardiac abnormality based on examination and investigation

Exclusion criteria : A) Pts Having diagnosed specific cardiac disorder like

Hypertension

Ischaemic heart disease

Valvular Heart disease

- Pericardial disease
- **B) Specific cardiac symptoms like**
- Angina
- Paroxysmal nocturnal dyspnea
- NYHA Gr. III - IV symptoms
- **C) Acutely ill patients**
- However factors predisposing to cardiac morbidity like anemia diabetes, chronic kidney disease has been included in the study
- .From patients screen from study population 51 patients having cardiac dysfunction were taken for study. The were interrogated about their problems & further procedures were explain to them and written consent was taken.

METHODS

Clinical Examination

- JVP & Hepatojugular reflux
- Rales
- CVS examination esp apex, features of PULMONARY ARTERIAL HYPERTENSION, L.V dysfunction S3,S4,regurgitation,Heaves, Lifts

Routine examination

Hb, TC, DC, ESR

sugar(Fasting), HBAIC (FOR DIABETIC STATUS)

LFT

Urea, Creatinine

Lipid profile

Sodium, potassium :

BASIC CARDIOLOGICAL INVESTIGATIONS

ECG

Doppler Echo cardiography

SPECIAL TEST IF NEEDED

Coronary Angiography

TMT & Holter Monitor

Criteria for various co-morbidities

Anemia - Hb < 12 for male Hb < 11 mg% for female

Deranged LFT

Elevated levels of enzymes ALT>41 IU/L AST>38 IU/L

Total Bilirubin >1.3 mg % Albumin <3.5 or Globulin >2.5 mg %

Deranged renal function Test:
Urea > 40 & / Creatinine > 1.2 mg %
Deranged Lipid Profile
TG>250 & / Cholesterol > 150 mg %
2D, M-Mode & Doppler echo -cardiography were perform. All pts who had any cardiac abnormality by clinical examination & ECG were chosen for Echo. However, pts having abnormalities in Echo were included for study.

ECHOCARDIO GRAPHIC PARAMETERS
SYSTOLIC DYSFUNCTION
- LV internal diameter in systole
- LV internal diameter in diastole
- Ejection Fraction (EF)
- Stroke volume index

DIASTOLIC DYSFUNCTION
- E/A ratio whether reversed. The E-wave reflects the early rapid transmitral flow and the A-wave the late atrial contribution to filling. E/A less than 1 shows an increased contribution of atrial systole to ventricular filling due to diastolic dysfunction[57].
- Deceleration time of E-wave (DT). Early diastolic transmitral filling is prolonged due to ventricular stiffness. Prolongation > 220 ms has been taken as an index of diastolic dysfunction[59].
- Prolonged isovolumetric relaxation time (IVRT) > 105ms

LA ENLARGEMENT
Increased Left atrial diameter (LA) > 37 mm
PULMONARY ARTERIAL HYPERTENSION
1. Abnormal M-Mode of Pulmonary valve leaflets with absent A-wave or mid systolic notch [1A]
2. when tricuspid regurgitation(TR) not present by Mahans equation mPulmonary arterial pressure=80-(RVOT Acceleration time)/2 mmHg. In presence of TR by modified Bernoullis equation
3. Pulmonary arterial systolic pressure=Right ventricular systolic pressure=$4V_{TR}^2$+ JVP or Rt atrial pressure
4. Pulmonary regurgitation velocity represents the diastolic pressure difference between the pulmonary artery and the RV. Hence pulmonary artery end-diastolic pressure (PAEDP) =RV end-diastolic pressure (RVEDP) (which is equal to RA pressure) + (pulmonary regurgitation end-diastolic velocity)^2 × 4. The pulmonary artery mean pressure correlates well with the early diastolic pressure difference between the pulmonary artery and RV, hence (pulmonary regurgitation peak velocity)^2 × 4.

LVH :
IV septum or LV posterior wall thickness is > 12 mm in diastole.
LV mass ≈1 .04 [(LVEDD + IVS +LVPW)^3 – LVEDD^3]- 14
Corrected for height or BSA

	Women	**Men**
LV Mass for BSA	**112**	**136**
LV Mass for height	89±25	114±35

STATISTICS:-
Chi square test is a test for association between two categorical variables and a method of testing the significance of difference between them. Chi-square test was used, with p-value < 0.05 considered

statistically significant. Similarly, Fisher's Exact test has been used where applicable with p-value < 0.05 considered statistically significant.

Results and Analysis

Table 1 showing age and sex distribution of study population

Age	Males	%	Female	%	Total
60-65	10	41.6	17	63	27
65-70	7	29.2	7	26	4
70-75	7	29.2	3	11	10
Total	**24**	**100**	**27**	**100**	**51**

Our work comprised of 51 patient compare to more no. of patients in other studies. Out of 51 patients there were 24 male patients and 27 female patient .**Among the 61 patients 27 patients were of 60-65 yrs age among which 10 male and 17 females.**
14 were of 65-70 yrs age and 7 males 7 females. Out of 10 patients in 70-75 yrs. 7 were males and 3 were females

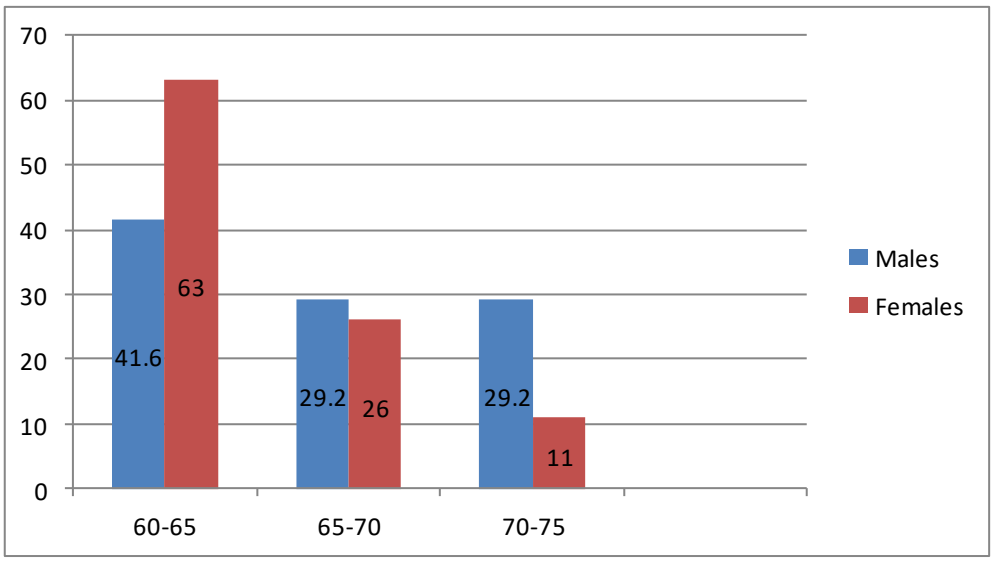
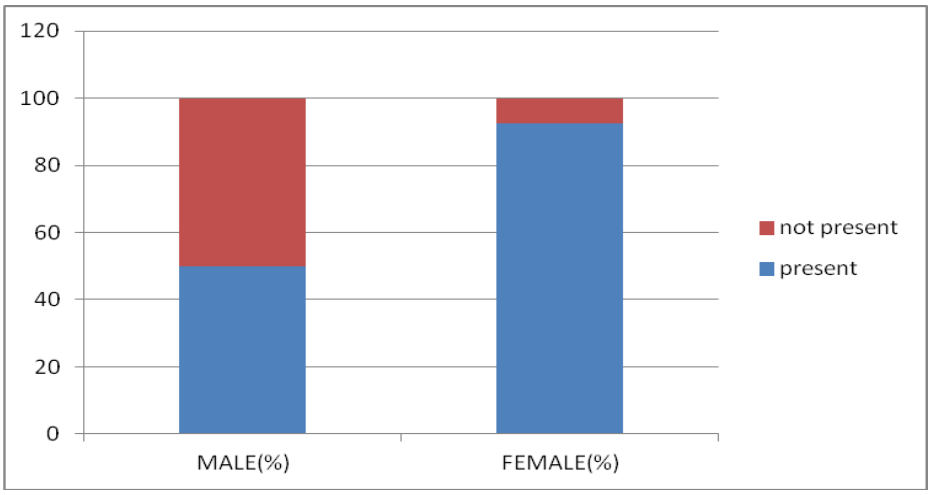


Table 2 showing presence of anemia in different sexes

Anemia	Males	%	Female	%	Total
Present	12	50	25	92.6	27
Not present	12	50	2	7.4	14
Total	**24**	**100**	**27**	**100**	**51**



Stacked column showing relationship of anemia with sex
Mean Hb=10.8%
Mean age=66yrs
Correlation with age=0.3
P=0.81
Out of 51 patients 37 patients were anemic, approximately 72.5% of total patients. 50% of males were anemic while 92.65 of females were anemic

Table 3 showing presence of leucocytes in different sexes

Leucocytes	**Males**	**%**	**Female**	**%**	**Total**
Present	8	33.3	11	40.74	19
Not present	16	65.7	16	59.26	32
Total	**24**	**100**	**27**	**100**	**51**

Correlation with age=-0.285
P=0.043 Out of 51 patients 19 had elevated total count(37.25%).
Among males 8 pts(33.%) were having high total count and among females high total counts was found in11 pts(40.74%).

Pyramid showing relationship of leucocytosis with sex

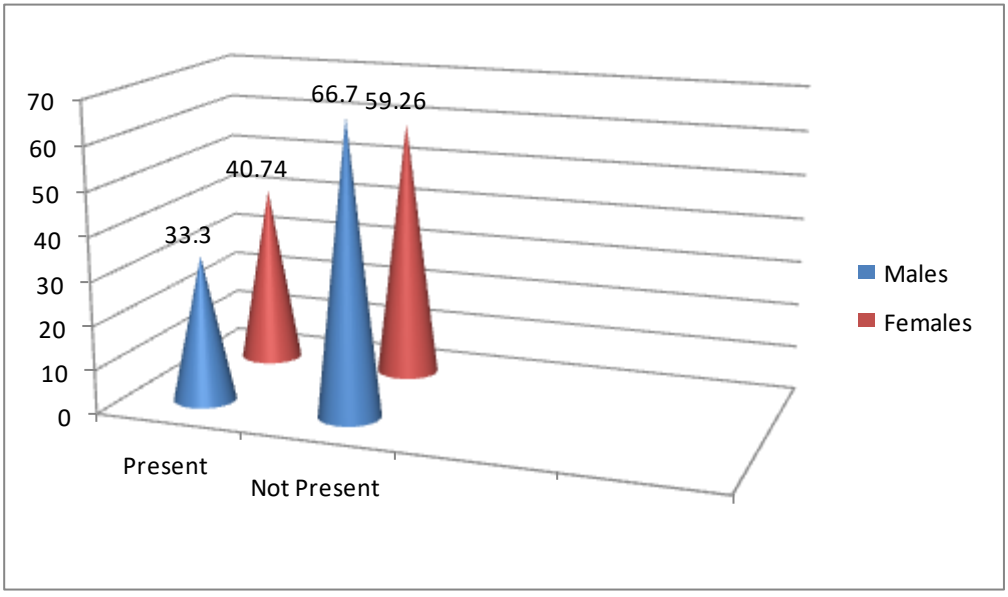


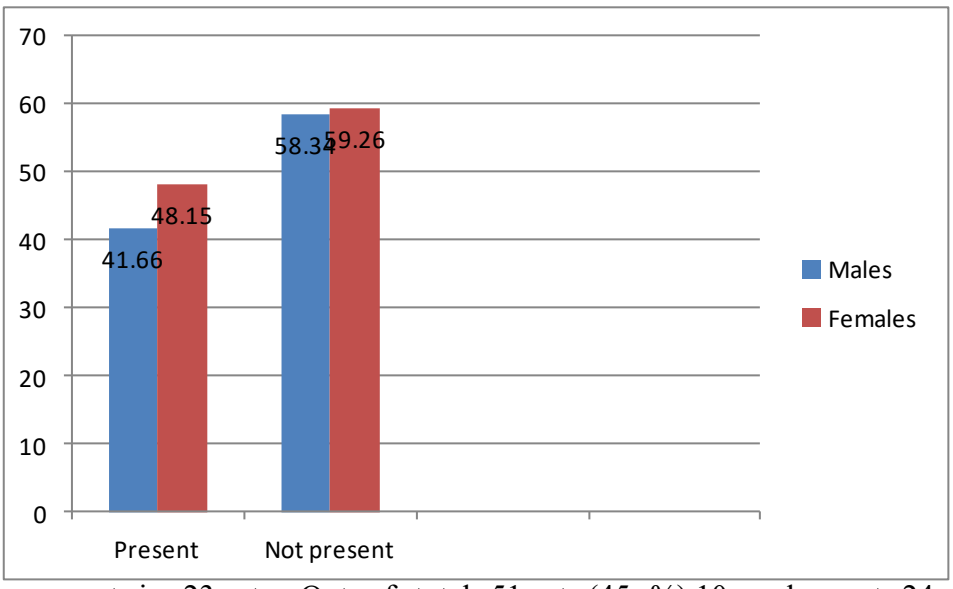
Table 4 showing presence of diabetes in different sexes

Diabetes	Males	%	Female	%	Total
Present	10	41.66	13	48.15	23
Not present	14	58.34	14	51.85	28
Total	**24**	**100**	**27**	**100**	**51**

x2=0.22

p=0.64

column showing relationship of diabetes with sex



Diabetes was present in 23 pts. Out of total 51 pts.(45 %).10 males out 24 males were diabetic(41.66%).13 females out of 27 females were diabetic(48.15%)

Table 5 showing presence of deranged liver function test in different sexes

Deranged liver function test	Males	%	Female	%	Total
Present	8	33.3	8	29.6	16
Not present	16	66.7	19	70.4	35
Total	**24**	**100**	**27**	**100**	**51**

Alter LFT was found in 16 patients out of 51 patients (31.37%).

Deranged LFT was found in 8 out of 24 males (33.33 %) . and 8 out of 27 females(29.6 %).

X^2 =0.2.14

P=0.14

Column showing relationship of deranged Liver function test with sex

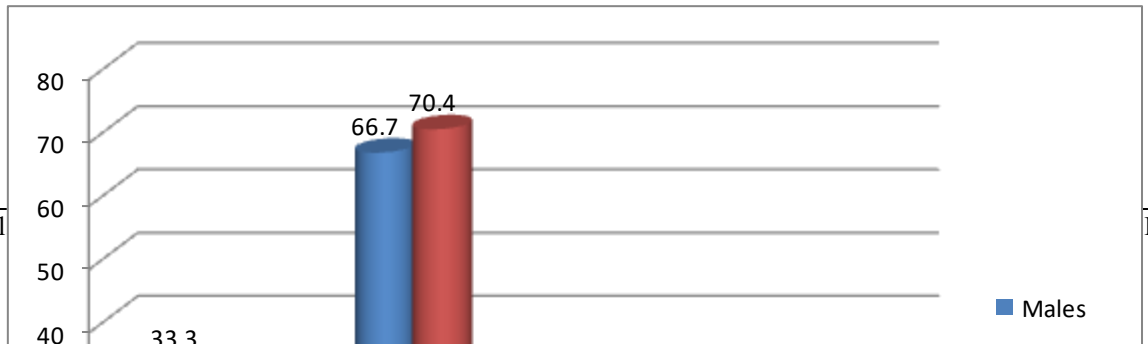


Table 6 showing presence of deranged renal function test in different sexes

Deranged liver function test	Males	%	Female	%	Total
Present	15	62.5	24	88.9	39
Not present	9	37.5	3	11.1	12
Total	**2424**	**100**	**27**	**100**	**51**

x2 = 4.92

p=0.026

Graph showing relationship of deranged Renal function Test with sex.39 out of 51 subjects had deranged renal function test (76.5%). Among males deranged renal function was presenting 15 out of 24 males (62.5 %). And among females 24 out of 27 (88.9%).

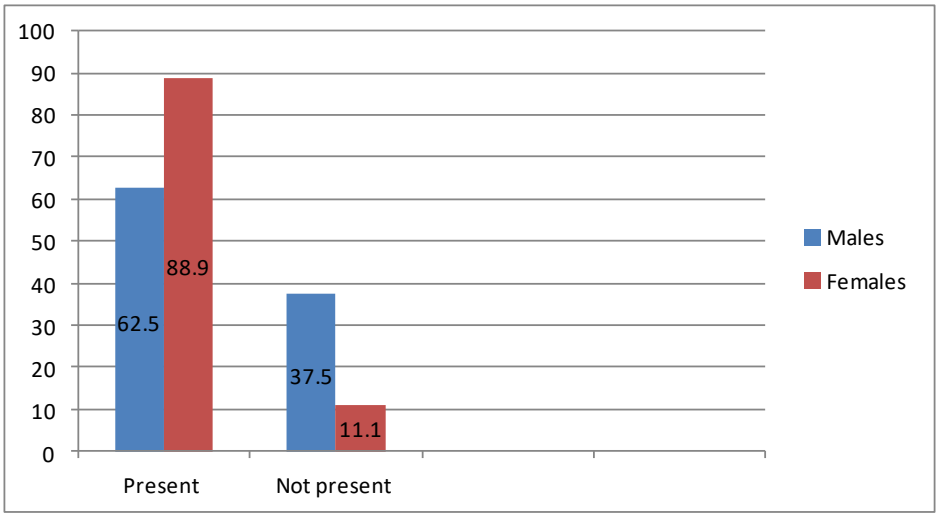


Table 7 showing patterns of deranged in renal function different sexes

Deranged liver function test	Males	%	Female	%	Total
Isolated increased urea	0	0	6	25	6
Isolated increased creatinine	0	0	2	8.3	2
Both increased	15	100	16	66.7	31
Total	**15**	**100**	**24**	**100**	**39**

Column showing patterns of various Renal function derangement with sex. Both Urea and Creatinine were raised in males while in females both were raised in 66.7 % while isolated Urea and creatinine elevation was 25% and 8% respectively

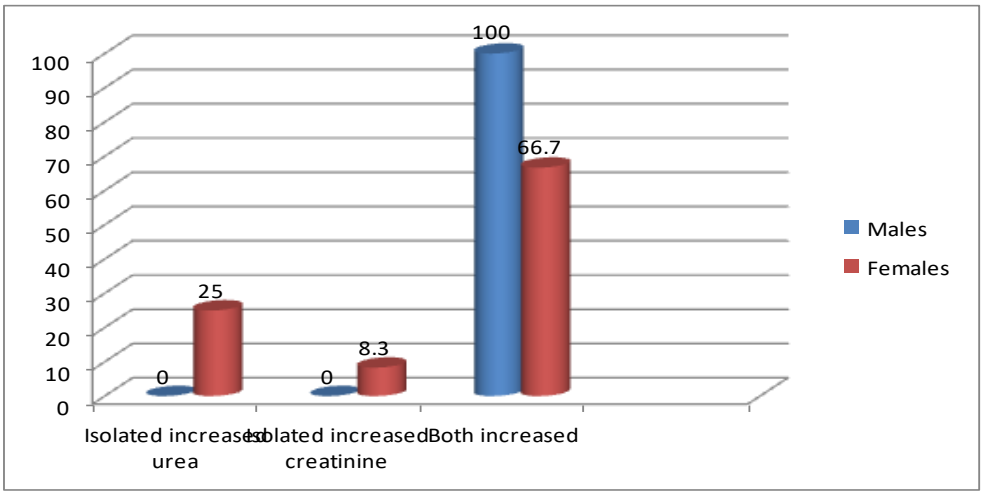


Table 8 showing age distribution of various patterns of cardiac dysfunction

Age	Sys dys	Dias dys	LV hypertrophy	Dilated atria	Wall hypokinesia	Mitral valve dys	Pul art htn peri effusn others	Total
60-65	6 (22.2)	15 (55.5%)	10 (37%)	3 (11.1%)	7 (25.9%)		5 (20%)	
65-70	4 (28.5)	9 (64.3)	7 (50%)	2 (14.3%)	3 (21.4%)	2 (14.3%)	2 (14%)	
70-75	5 (50)	9 (90%)	7 (70%)	4 (40%)	3 (30%)	4 (40%)	2 (20%)	
Total	4		11	6	6	2	8	

Column diagram showing various patterns of Cardiac dysfunction Among cardiac dysfunctions most common was diastolic dysfunction in 33 out of 51 patients(64.7%). Others to follow were LEFT VENTRICULAR HYPERTROPHY in 24 out of 51 patients(47.06%), systolic dysfunction 15 out of 51(29.4%)wall hypokinesia(25.5%), left atrial enlargement in 9 out of 51(17.6%), PAH in 9 out of 51 patients(17.6%). There were 2 patients of pericardial effusion and atrial fibrillation and 1 of ASD.

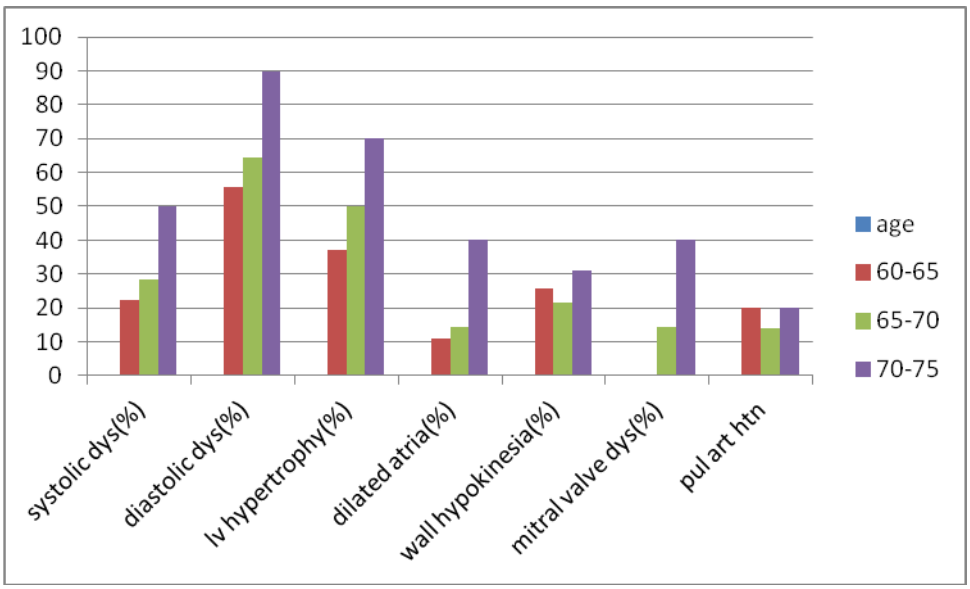


Table 9 showing relationship of diastolic dysfunction with other cardiac different ages The various cardiac co-morbidities associated with diastolic dysfunction are as follows

LEFT VENTRICULAR HYPERTROPHY (33 %), PAH(24%), Wall hypokinesia (18%), dilated atria (18%), systolic dysfunction 12 %, Mitral valve dysfunction 6 %. There is no preponderance for any dysfunction in relation with age.

Age	Sys dys	LV hypertrophy	Dilated atria	Wall hypokinesia	Mitral valve dys	Pul art htn	Total
60-65	1 (6%)	4 (27%)	2 (13%)	4 (27%)		4 (27%)	15
65-70	1 (12.5%)	2 (25%)	1 (12.5%)	1 (12.5%)	1 (12.5%)	2 (25%)	8
70-75	2 (14.3%)	5 (35.7%)	1 (7.1%)	1 (7.1%)	1 (7.1%)	2 (14.3%)	14
Total	4	11	6	6	2	8	

Table 10 showing relationship of renal dysfunction with diastolic days

Renal Dysfunction	Diastolic dysfunction present	%	Other cardiac dysfunction	%	Total
Present	25	78	14	77.8	39
Not Present	8	22	4	22.2	12
Total	**33**	**100**	**18**	**100**	**51**

X^2 =0.13

P=0.7

Column showing relationship of diastolic dysfunction with Renal function derangement 78% of patients with diastolic dysfunction have renal dysfunction which may be even isolated elevation of Urea and Creatinine or both. We have not found any correlation with severity of renal dysfunction

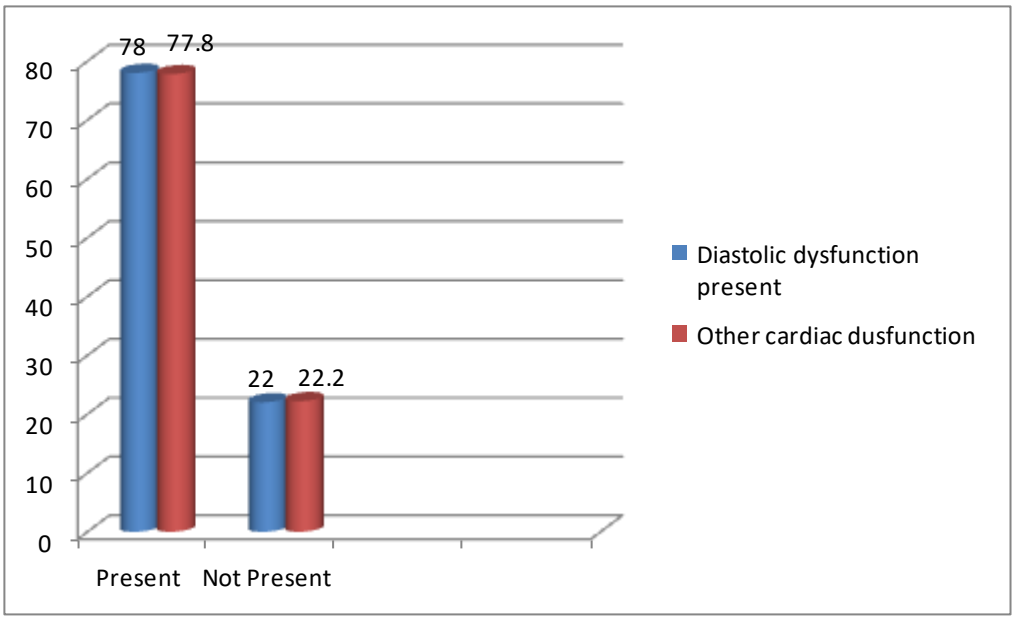


Table 11 showing relationship of diabetes with diastolic dysfunction

Diabetes	Diastolic dysfunction present	%	Other cardio dysfunction	%	Total
Present	20	60.6	3	22.2	23
Not Present	13	39.3	15	77.8	28
Total	**33**	**100**	**18**	**100**	**51**

X^2 = 9.08

P=0.0025

Graph showing relationship of diastolic dysfunction with Diabetes. 60.6% of patients with DIASTOLIC DYSFUNCTION have diabetes. Diabetes has major impact on diastolic function on heart as is evidenced by it high correlation (p=0.0025). Prevalence of DM in other cardiac dysfunctions were only 22 %.

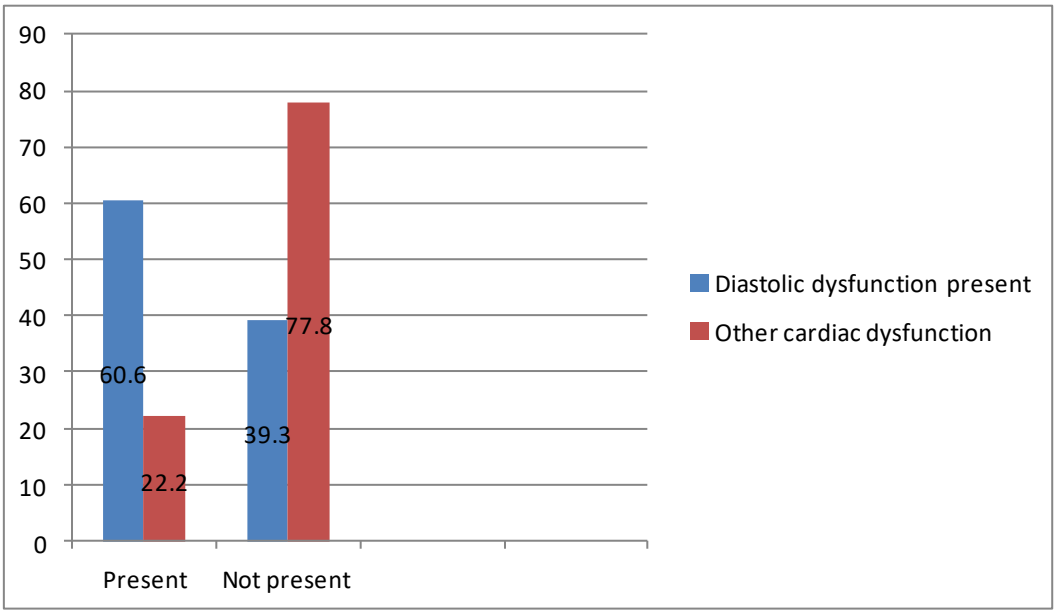


Table 12 showing relationship of anemia with diastolic dysfunction

Anemia	Diastolic dysfunction present	%	Other cardio dysfunction	%	Total
Present	23	69.7	14	77.8	37
Not Present	10	30.3	4	22.2	14
Total	**33**	**100**	**18**	**100**	**51**

Column showing Relationship of Anemia with diastolic dysfunction 69.7% of patient with DIASTOLIC DYSFUNCTION had anemia. However, considering the high prevalence of anemia in general population our study did not show any association (p=0.53).

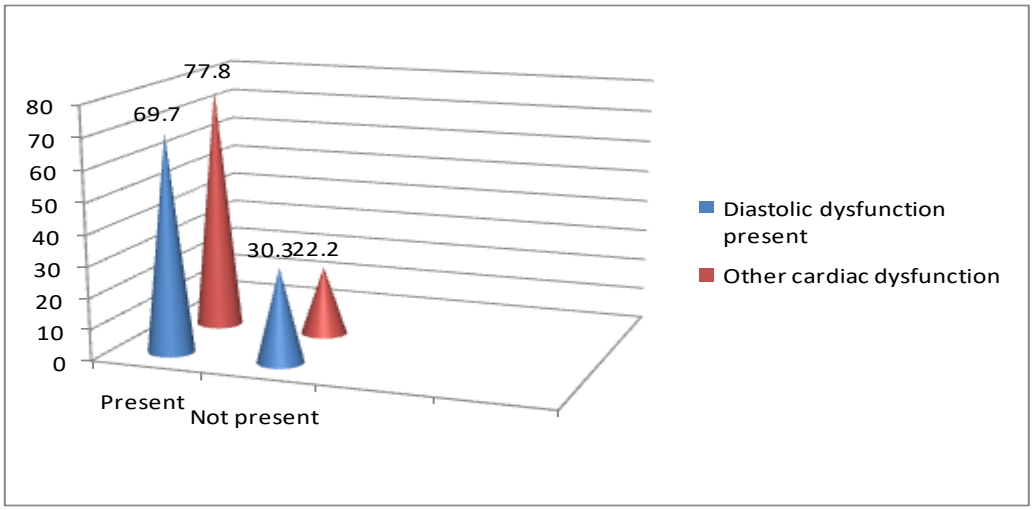


Table 13 showing relationship of liver function test with diastolic dysfunction

Liver function test	Diastolic dysfunction present	%	Other cardio dysfunction	%	Total
Present	11	33.3	5	27.8	16
Not Present	22	66.7	13	72.2	35
Total	**33**	**100**	**18**	**100**	**51**

Column showing relationship of DIASTOLIC DYSFUNCTION with deranged Liver function Test 54.5% of patients with DIASTOLIC DYSFUNCTION had deranged LFT. However, considering the

wide prevalence of mild liver dysfunction due to old age, hepatitis, malnutrition, DM and sepsis. It did not show any association with DIASTOLIC DYSFUNCTION (p=0.68).

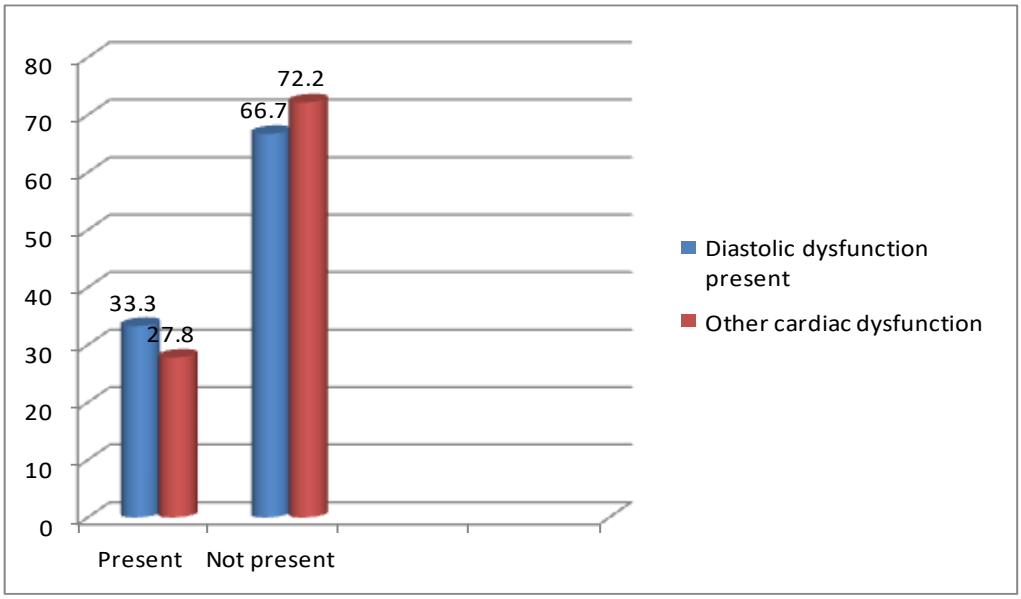


Table 14 showing relationship of lipid profile test with diastolic dysfunction

Lipid profile deranged	Diastolic dysfunction present	%	Other cardio dysfunction	%	Total
Present	18	54.5	11	61.1	29
Not Present	15	66.7	7	38.9	22
Total	**33**	**100**	**18**	**100**	**51**

Column showing relationship of DIASTOLIC DYSFUNCTION with deranged Lipid profile Deranged lipid profile (increased Cholesterol or trygliceride or both) was present in 29 out of 51 patients(56.8 %). However, among the patients with DIASTOLIC DYSFUNCTION, 54 % had deranged lipid profile while 61.4% of other cardiac dysfunction had deranged lipid profile. The association with DIASTOLIC DYSFUNCTION was not significant.

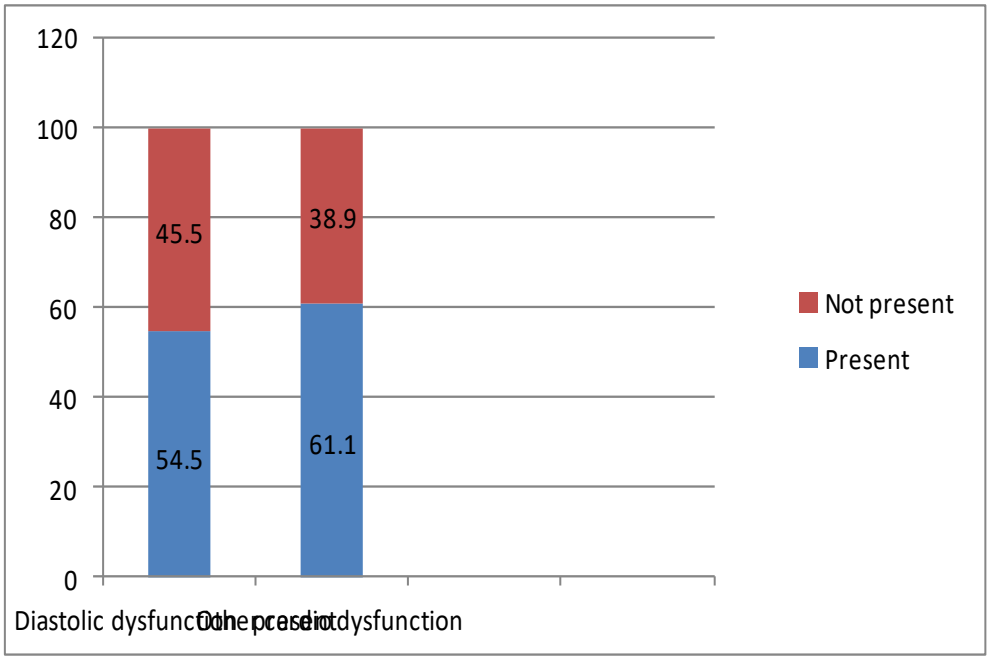


Table 15 showing relationship of ejection fraction with diastolic dysfunction

Ejection fraction	Diastolic dysfunction present	%	Other cardio dysfunction	%	Total
< 50	6	18.2	10	55.5	16
> 50	27	81.8	8	44.5	35
Total	**33**	**100**	**18**	**100**	**51**

Column showing relationship of DIASTOLIC DYSFUNCTION with Ejection fraction Depressed EF (< 50%) was seen in 6 out of 33 patients with DIASTOLIC DYSFUNCTION(18.2%) while it is seen in 55 % of patients with other cardiac dysfunction.
The total no. of patients with depressed EF was 16 out 51 patients (31.4%).DIASTOLIC DYSFUNCTION patients with normal EF was 81.8 %.

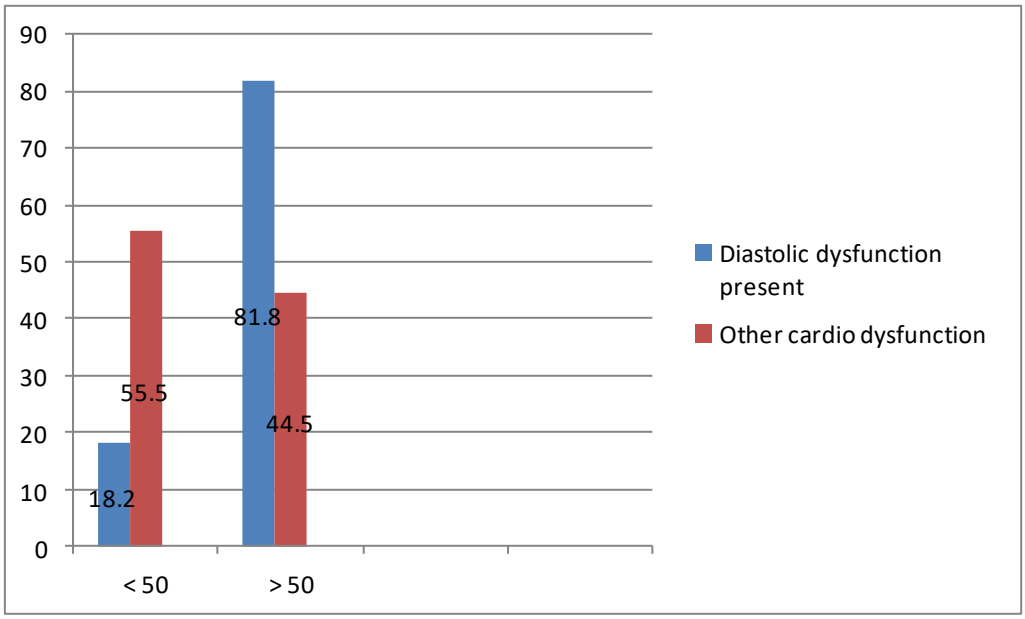
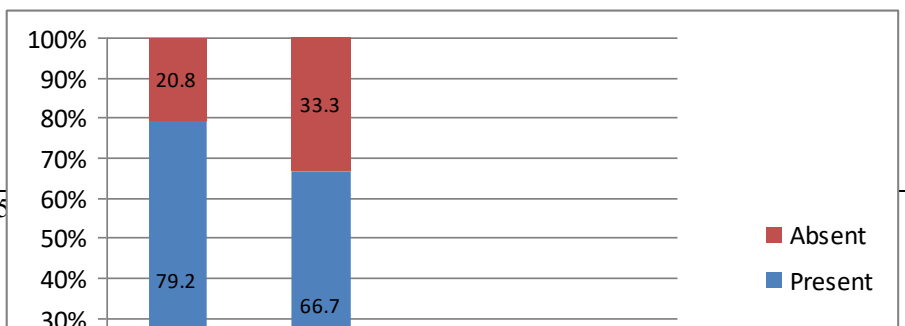


Table 16 showing relationship of anemia with LV hypertrophy

Anemia	LV hypertrophy	%	Other cardio dysfunction	%	Total
Present	19	79.2	18	66.7	37
Not present	5	20.8	9	33.3	14
Total	**24**	**100**	**27**	**100**	**51**

Column showing relationship of LEFT VENTRICULAR HYPERTROPHY with Anemia .Anemia was presenting 79.2 % of patients with LEFT VENTRICULAR HYPERTROPHY(p=0.32).



LVH OTHER CARDIOLOGICAL DYSFUNCTION

Table 17 showing relationship of diabetes with LV hypertrophy

Diabetes	LV hypertrophy	%	Other cardio dysfunction	%	Total
Present	10	41.6	13	48.2	23
Not present	14	58.4	14	51.8	28
Total	**24**	**100**	**27**	**100**	**51**

Column showing relationship of LEFT VENTRICULAR HYPERTROPHY with diabetes. DM is present in 41.7 % of patients of LEFT VENTRICULAR HYPERTROPHY(p=0.64)

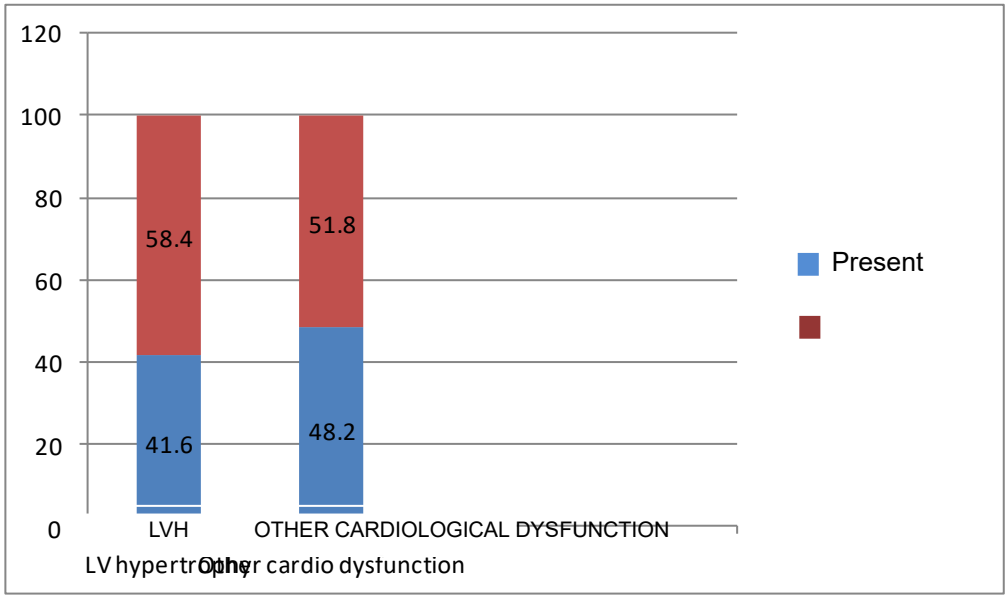


Table 18 showing presenting complaints in various patients

Presenting problem	no of patients	%
Jaundice	6	11.7
Severe anemia	1	1.9
CVA	9	17.6
COPD	16	31.4
Septicemia	13	25.5
Arthritis	4	7.4
CKD	1	1.9
Hypothyroid	1	1.9
TOTAL	51	100

Pie-Chart showing various non-Cardiac problem on presentation Out of various non-cardiac problems on presentation, the most common was COPD(31.4 %) followed by septicaemia (25.5 %), CVA(17.6 %), liver disorder (11.7%). Arthritis (7.8 %), Severe anemia, renal disease and hypothyroidism.

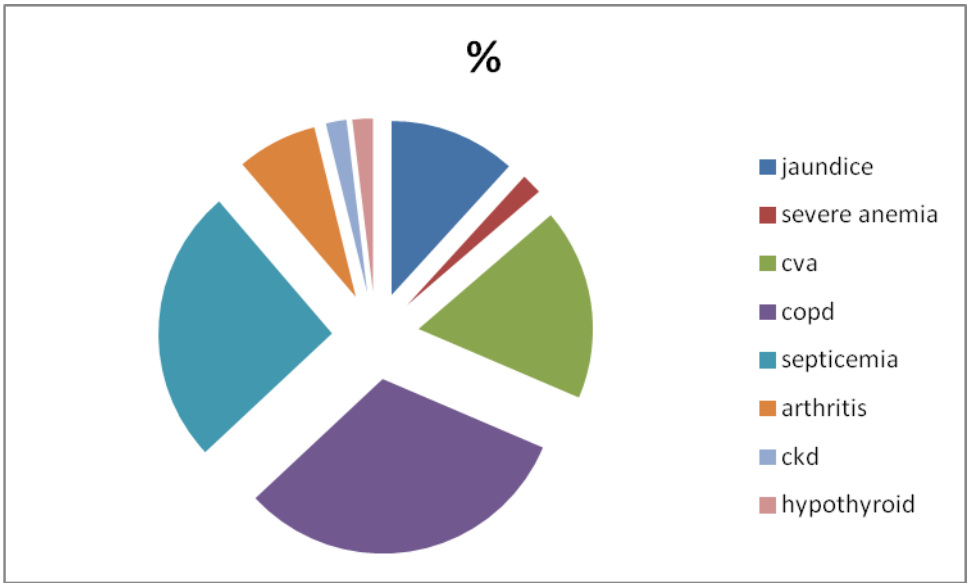
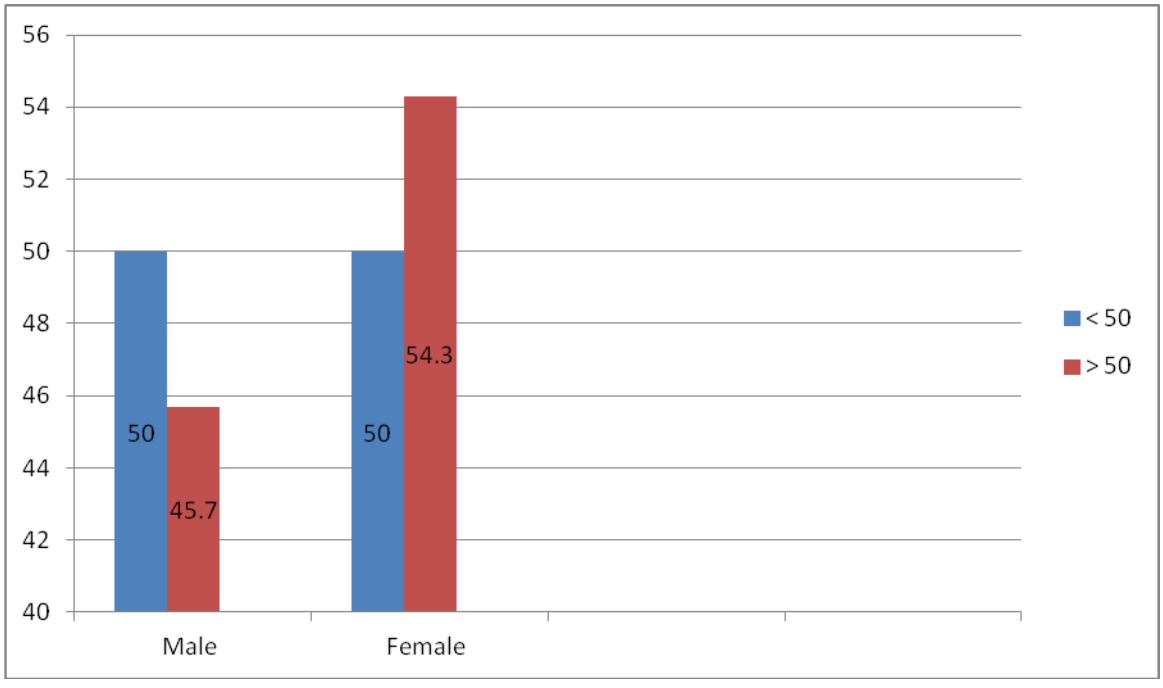


Table 19 showing RELATIONSHIP OF EF IN DIFFERENT SEXES

ejection fraction	male	%	female	%	total	%
<50%	8	50	8	50	16	100
>50%	16	45.7	19	54.3	35	100
Total	24		27			

COLUMN SHOWING RELATIONSHIP OF DIASTOLIC DYSFUNCTION WITH EF IN DIFFERENT SEXES

Female dominated in cardiac dysfunction with normal EF(54.3%),while both sexes had equal no. of pts with cardiac dysfunction with depressed EF



Discussion

Our work comprised of 51 patients compared to more number of patients in other studies. Out of 51 patients there were 24 male patients and 27 female patients. All patients on presentation had a presenting non-cardiac problem. Known patients of hypertension, ischaemic heart disease or those on any cardiovascular medication were kept out of study.

Out of various non-cardiac problems on presentation, the most common was COPD(31.4 %) followed by septicaemia(25.5 %), CVA(17.6 %), liver disorder (11.7%). Arthritis (7.8 %), Severe anemia, renal disease and hypothyroidism.

This is in contrast to the various studies in USA where arthritis was presenting complaint in 60% of patients and diabetes in 20% patients. The prevalence of dementia was also high.

Among the 61 patients 27 patients were of 60-65 yrs age among which 10 male and 17 females.

14 were of 65-70 yrs age and 7 males 7 females.

Out of 10 patients in 70-75 yrs. 7 were males and 3 were females.

Out of 51 patients 37 patients were anemic, approximately 72.5% of total patients. 50% of males were anemic while 92.65 of females were anemic(The cut of values for anemia were taken as 12 gm% for male and 11 gm% for females.

Total WBC count of patients were measured. The cut of value for upper limits was taken at 11,000/cumm.

Out of 51 patients 19 had elevated total count(37.25%).

This was mostly because of infective states like septicemia(25.5%) and COPD(31.4%) being the bulk of patients.

Among males 8 pts(33.%) were having high total count and among females high total counts was found in11 pts(40.74%).

This was due to high percentage of UTI leading to septicemia in elderly females.

Diabetes was present in 23 pts. Out of total 51 pts.(45 %). 10 males out 24 males were diabetics(41.66%). 13 females out of 27 females were diabetics(48.15%).

Altered LFT was found in 16 patients out of 51 patients(31.37%). Deranged LFT was found in 8 out of 24 males(33.33 %) . and 8 out of 27 females(29.6 %). The major cause of deranged LFT were jaundice (mainly viral hepatitis), septicemia with multi organ failure and chronic disease presenting as altered A/G ratio. Few patients had elevated enzymes mainly SGOT 27% of male and 44.4% of females (may be due to congestive hepatitis).

Most common presentation of deranged LFT among males was altered A/G ratio(62.5%) and among females were increased enzyme levels(100%). 39 out of 51 subjects had deranged renal function test(76.5%).The upper limits of there was taken as 40 and creatinine as 1.2 mg%. Among males deranged renal function was presenting 15 out of 24 males(62.5 %). And among females 24 out of 27 (88.9%).

This may be due to neglect among females about their disease progression and also arthritis(NSAID intake) and UTI. Percentage of diabetes was higher in females. Both Urea and Creatinine were raised in males while in females both were raised in 66.7 % while isolated Urea and creatinine elevation was 25% and 8% respectively.

Among cardiac dysfunctions most common was diastolic dysfunction in 33 out of 51 patients (64.7%). Others to follow were LEFT VENTRICULAR HYPERTROPHY in 24 out of 51 patients(47.06%), systolic dysfunction 15 out of 51(29.4%) wall hypokinesia (25.5%), left atrial enlargement in 9 out of 51(17.6%), PULMONARY ARTERIAL HYPERTENSION in 9 out of 51 patients(17.6%). There were 2 patients of pericardial effusion and atrial fibrillati fibrillation and 1 of ASD. Among various age groups diastolic dysfunction was most common abnormality in all age groups irrespective of age. However, its prevalence increased with age being 55% in 60-65 yrs

64.3% in 65-70 yrs

90% in 70-75 yrs.

LEFT VENTRICULAR HYPERTROPHY being second common in all age groups its prevalence also increased with increasing age.

37% in 60-65 yrs.
50% in 65-70 yrs.
70% in >70 yrs.
Next common was systolic dysfunction which also showed increased prevalence with age being
22.2% in 60-65 yrs.
28.5% in 65-70 yrs.
50% in 70-75 yrs.
Atrial enlargement also showed similar trend.
Mitral valve abnormalities also increased with age
PULMONARY ARTERIAL HYPERTENSION did not show any age related pattern. This may be due to large no. of COPD patients in age group of 60-65 yrs. who have concomitant PULMONARY ARTERIAL HYPERTENSION.
NB: All percentage are given as prevalence of that cardiac dysfunction on total cardiac dysfunction for that age.

DIASTOLIC DYSFUNCTION

Being the most common cardiac dysfunction we have chosen it for special discussion. It is present in 55.5% of age group 60-65 yrs and upto 90 % in > 70 yrs.Our study has shown it has increased prevalence with age.
.This is ascribed to structural cardiac changes with aging including myocardial stiffness.Sustained endurance training may help preserve LV compliance.
The various cardiac co-morbidities associated with diastolic dysfunction are as follows
LEFT VENTRICULAR HYPERTROPHY (33 %), PULMONARY ARTERIAL HYPERTENSION (24%), Wall hypokinesia (18%), dilated atria (18%), systolic dysfunction 12 %, Mitral valve dysfunction 6 %.
There is no preponderance for any dysfunction in relation with age.
60.6% of patients with DIASTOLIC DYSFUNCTION have diabetes. Diabetes has major impact on diastolic function on heart as is evidenced by it high correlation (p=0.0025).
Prevalence of DM in other cardiac dysfunctions were only 22 %.
69.7% of patient with DIASTOLIC DYSFUNCTION had anemia. However, considering the high prevalence of anemia in general population our study did not show any association (p=0.53).
54.5% of patients with DIASTOLIC DYSFUNCTION had deranged LFT. However, considering the wide prevalence of mild liver dysfunction due to old age, hepatitis, malnutrition, DM and sepsis. It did not show any association with DIASTOLIC DYSFUNCTION (p=0.68).
Deranged lipid profile (increased Cholesterol or trygliceride or both) was present in 29 out of 51 patients(56.8 %). However, among the patients with DIASTOLIC DYSFUNCTION, 54 % had deranged lipid profile while 61.4% of other cardiac dysfunction had deranged lipid profile. The association with DIASTOLIC DYSFUNCTION was not significant.
Depressed EF (< 50%) was seen in 6 out of 33 patients with DIASTOLIC DYSFUNCTION(18.2%) while it is seen in 55 % of patients with other cardiac dysfunction. The total no. of patients with depressed EF was 16 out 51 patients(31.4%).
DIASTOLIC DYSFUNCTION patients with normal EF was 81.8 %.
While our study had 68.6% of patients with cardiac dysfunction with EF > 50%.
Similar activity was done for LEFT VENTRICULAR HYPERTROPHY. Anemia was presenting 79.2 % of patients with LEFT VENTRICULAR HYPERTROPHY(p=0.32).
Renal dysfunction was presenting 66.7% of patients with LEFT VENTRICULAR HYPERTROPHY(p=0.37).
DM is present in 41.7 % of patients of LEFT VENTRICULAR HYPERTROPHY(p=0.64) None of them were significantly associated with LEFT VENTRICULAR HYPERTROPHY.

Summary

Our study comprised of 51 pts out of 51 pts there were 24 males and 27 females. Patients(Pts) of known cardiac illness like IHD, valvular heart disease or pericardial disease were excluded from the study.

The most common presenting problem was COPD followed by septicemia, CVA , Liver disorder anemia was present in 72.5% of total pts. 50% of males and 92% females were anemic. Leucocytosis was present in 37% pts. There were 23 diabetics . Prevalence of DM was more in females (48.5%) than males(41.6%). Altered LFt was found in 31.37% pts. The major cause of deranged LFT was jaundice . Deranged RFT was present in 76.5% of pts.

Among cardiac dysfunctions the most common was diastolic dysfunction(64.7%) followed by LVH(47.06%), systolic dysfunction (29.4%)LA enlargement (17.6%),PAH(17.6%) and 2 pts of pericardial effusion and AF & one pt of ASD. Except PAH all the other cardiac dysfunctions showed increased prevalence with age.

DD being most common has been chosen for special discussion . Other dysfunctions associated with it are LVH(33%), PAH(24%),wall hypokinesia 18%, Dilated LA (18%), systolic dysfunction(12%), MV disease (6%).

It has shown to be associated in 78% of renal dysfunction pts, 60.6% of DM pts, 69.4% of anemic pts, and 54.5% with deranged LFT ,54% deranged lipid profile had DD. However, only DM showed significant association.

LVH pts were studied and 79.2% of anemic pts, 66.7% of renal dysfunction pts & 41.7% of DM pts resented with LVH. None of them showed significant correlation .

Conclusions

- Most common non-cardiac presenting problem was COPD .
- Anemia was commonly present with cardiac dysfunction .
- In elderly anemia is more common in females.
- Diabetes is present among 45% of pts. with cardiac dysfunction
- 76.5% of pts had deranged RFT .
- Most common cardiac dysfunction was diastolic dysfunction followed by LVH .
- Almost all cardiac abnormalities show increased prevalence with age.
- Present of diabetes showed significant correlation with DD.
- DD was more commonly associated with normal EF(>=50%)
- Cardiac abnormalities with normal EF was prevalent in females while low EF cardiac dysfunction were equally prevalent among both sexes.

Bibliography

1. Libby: Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine, 8th ed. Park; textbook on community medicine,20th ed
2. Centers for Disease Control and Prevention : MMWR Series on Public Health and Aging. *MMWR* 2003; 52:101-106.
3. National Academy on an Aging Society : *Alzheimer's Disease and Dementia. A Growing Challenge*, Washington, DC, National Academy on an Aging Society, 2000.
4. Lakatta E, Levy D: Arterial and cardiac aging: Major shareholders in cardiovascular disease enterprises: Part II: The aging heart in health: Links to heart disease. *Circulation* 2003; 107:346-354.
5. Lakatta E, Levy D: Arterial and cardiac aging: major shareholders in cardiovascular disease enterprises: Part I: Aging arteries a “set up” for vascular disease. *Circulation* 2003; 107:139-146.
6. Kass D: Age-related changes in ventricular-arterial coupling: Pathophysiologic implications. *Heart Fail Rev* 2002; 7:51-62.

7. Lakatta E: Arterial and cardiac aging: Major shareholders in cardiovascular disease enterprises: Part III: Cellular and molecular clues to heart and arterial aging. *Circulation* 2003; 107:490-497.
8. Zhou Y, Lakatta E, Xiao R: Age-associated alterations in calcium current and its modulation in cardiac myocytes. *Drugs Aging* 1998; 13:159-171.
9. Wilkerson W, Sane D: Aging and thrombosis. *Semin Thromb Hemost* 2002; 28:555-568.
10. Seals D, Esler M: Human ageing and the sympathoadrenal system. *J Physiol* 2000; 528:407-417.
11. Rehman H, Masson E: Neuroendocrinology of ageing. *Age Ageing* 2001; 30:279-287.
12. Kaasinen V, Rinne J: Functional imaging studies of dopamine system and cognition in normal aging and Parkinson's disease. *Neurosci Biobehav Rev* 2002; 26:785-793.
13. Hess P, Fleg J, Mirza Z, et al: Effects of normal aging on left ventricular lusitropic, inotropic, and chronotropic responses to dobutamine. *J Am Coll Cardiol* 2006; 47:1440-1447.
14. Walford R, Mock D, Verdery R, MacCallum T: Calorie restriction in biosphere 2: Alterations in physiologic, hematologic, hormonal, and biochemical parameters in humans restricted for a 2-year period. *J Gerontol A Biol Sci Med Sci* 2002; 57:B211-B224.