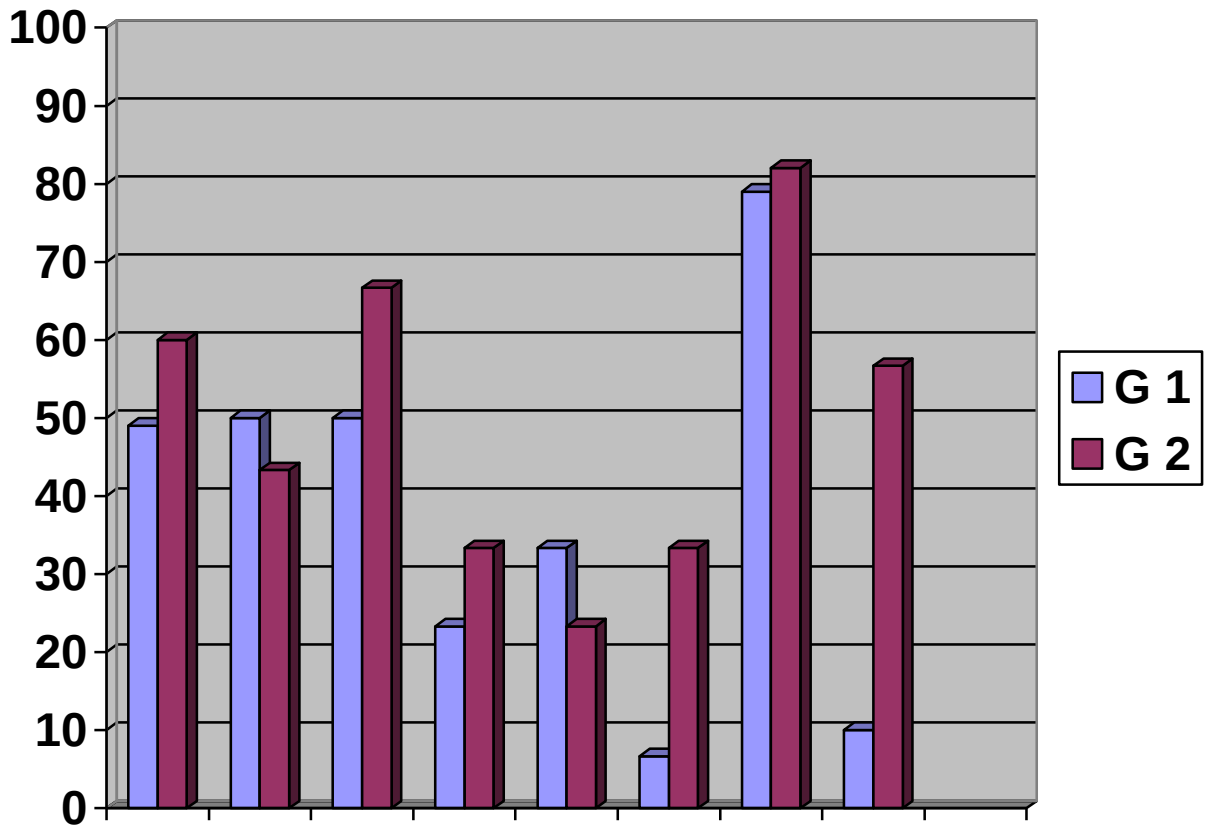
Results

Table (4): Comparison between group I & group II regarding demographic and basic clinical data.

Parameters	Gr.I	Gr.II	P value	Significance
Age				
Range in years	22-70	23-85		
Mean age±SD	49 ± 13.3	60 ± 11.4	< 0.05	S
Sex				
Male (no, %)	15, (50%)	13, (43.33%)	<0.05	NS
Female (no, %)	15, (50%)	17, (56.67%)	<0.05	NS
NYHA class>II (no, %)	3, (10%)	17, (56.67%)	< 0.001	HS
HTN (no, %)	15, (50%)	20, (66.67%)	> 0.05	NS
DM (no, %)	7, (23.33%)	10, (33.33%)	> 0.05	NS
Smoking(no,%)	10, (30.33%)	7, (23.33%)	> 0.05	NS
CAD (no, %)	2**,** (6.67%)	10, (33.33%)	< 0.01	HS
HR(bpm) Mean±SD	79.62±12.76	82.53 ± 19.76	>0.05	NS

Gr.: Group
No: Number
SD: Standard Deviation
DM: Diabetes Mellitus
BPM: Beat per minute.
HS: Highly significant.
CAD: Coronary artery disease
NYHA: New York Heart Association
HTN: Hypertension
HR: Heart rate
S : Significant.



Histogram (1): Shows comparison between patients of group 1 versus patients of group 2 as regarding age, sex, Hypertension (HTN), Diabetes mellitus (DM), smoking, Coronary artery disease (CAD), Heart rate (HR) & NYHA class≥II.

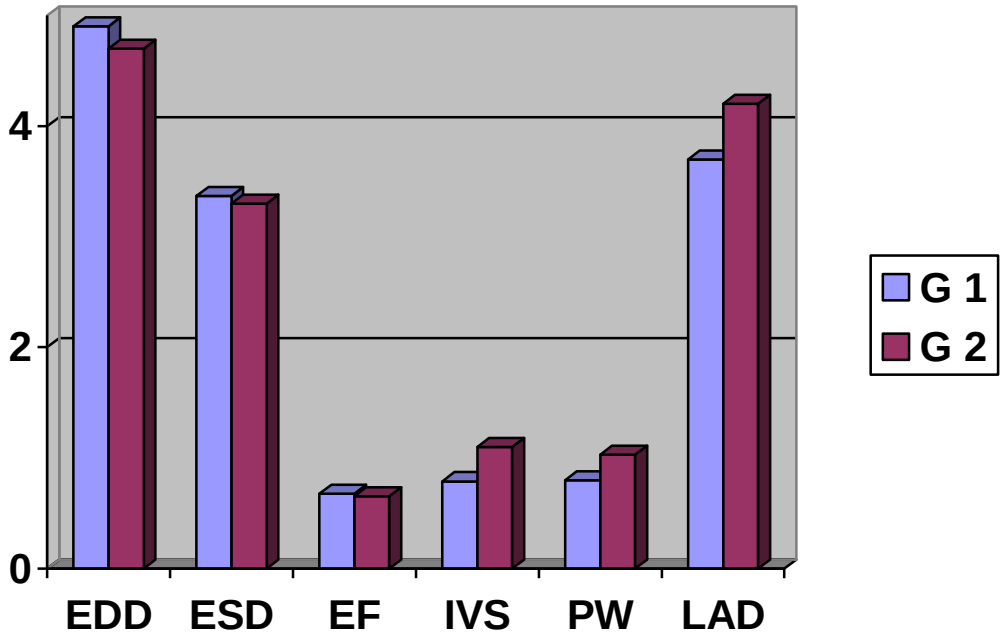
Table (4) & Histogram (1) show:

- The mean age was significantly lower in group I than in group II ($P<0.05$).
- There was non significant difference between group I and group II as regard sex distribution, major coronary risk factors (hypertension, diabetes and smoking habit) and the mean heart rate ($P>0.05$)**.**
- Group II had higher number of patients with NYHA class II or more and a higher prevalence of coronary artery disease than Group I. The differences were highly significant. ($P<0.001$).
- This means that patients with AF have higher prevalence of coronary artery disease and heart failure and they are older than those in sinus rhythm.

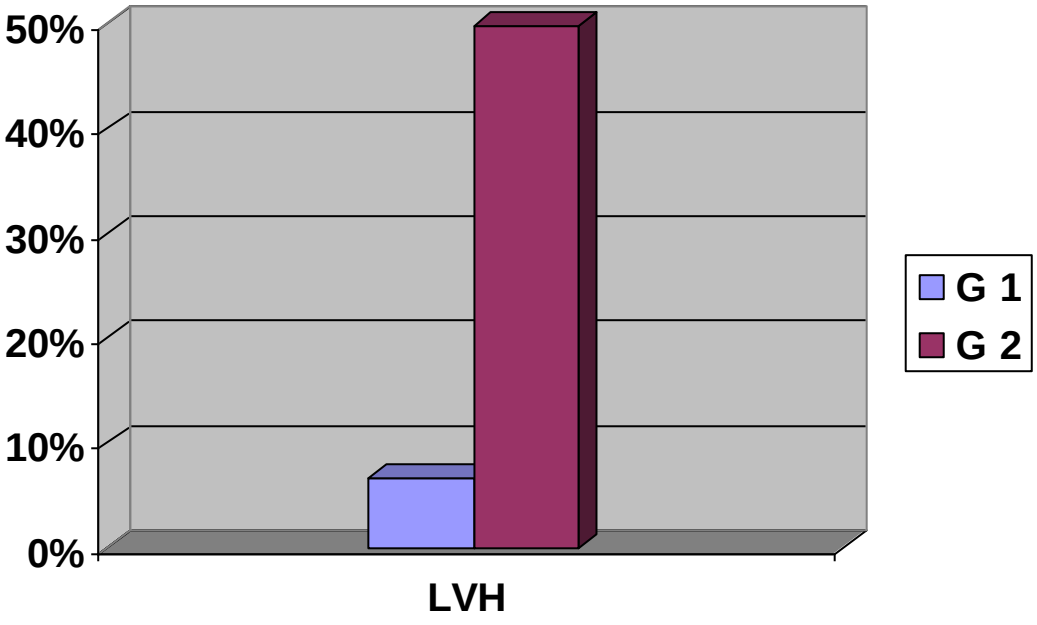
Table (5): Comparison between group I & group II regarding M-mode, 2-D, Doppler & DTI echocardiographic parameters.

Parameter	Gr.I	Gr.II	P value	Significance
LVEDD(cm) Mean±SD	4.93 ± 0.6	4.7 ±0.56	>0.05	NS
LVESD(cm) Mean±SD	3.37 ± 0.53	3.3 ± 0.53	>0.05	NS
LVEF(%) Mean±SD	67.6% ± 8.1 %	65.5% ± 8.3%	>0.05	NS
IVS(cm) Mean±SD	0.79 ± 0.27	1.1 ± 0.3	< 0.01	HS
PW(cm) Mean±SD	0.8 ± 0.3	1.03 ± 0.3	< 0.05	S
LVH(no,%)	2,(6.67%)	15,(50%)	<0.001	HS
LAD(cm) Mean±SD	3.7 ± 0.6	4.2 ± 0.5	< 0.05	S
L wave(no,%)	2,(6.67%)	22,(73.33%)	< 0.001	HS
Ewave (cm/s**)** Mean±SD	71.2 ± 22.2	96.8 ± 29.2	< 0.001	HS
EDT(ms) Mean±SD	159.4 ± 27.93	169.3 ± 29.59	> 0.05	NS
Em (cm/s) Mean±SD	12.44 ± 3.5	7.2 ± 3.1	< 0.001	HS
E/Em ratio	7.15 ± 4.35	16 ± 7.85	< 0.01	HS

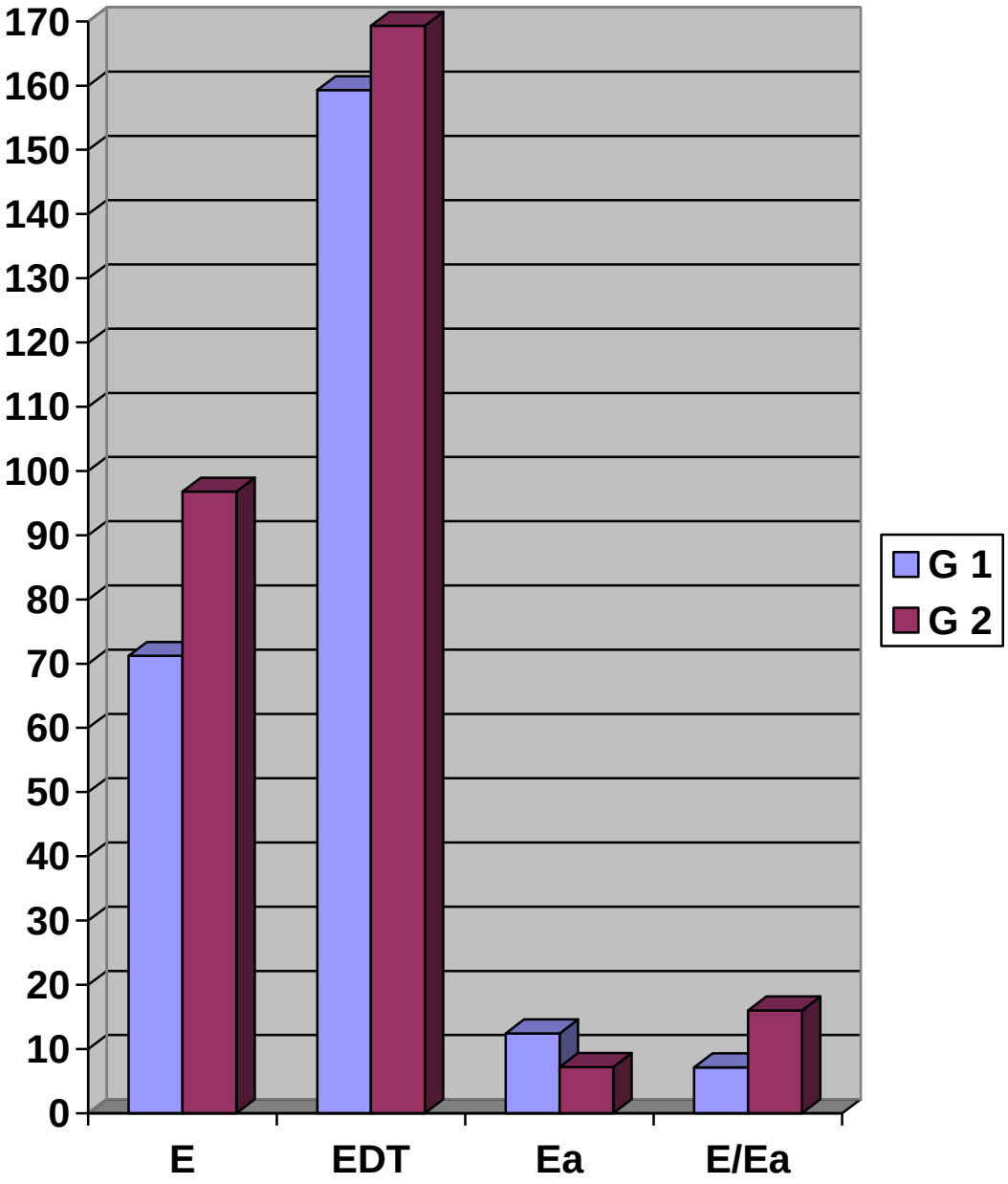
LVEDD: Left ventricular end diastolic dimension. LVH: Left ventricular hypertrophy.
LVESD: Left ventricular end systolic dimension. LAD: Left atrial dimension.
EDT: E wave deceleration time. LVEF: Left ventricular ejection fraction.
2D : Two Dimensional. IVS: Inter ventricular septum.
DTI: Doppler tissue imaging. PW: Posterior wall
NS: Non significant. E wave: Early transmitral velocity.



Histogram (2-A): Shows comparison between patients of group 1 versus patients of group 2 as regarding M-mode echocardiographic parameters.



Histogram (2-B): Shows comparison between patients of group I versus patients of group II as regarding LVH.



Histogram (2-C): Shows comparison between patients of group I versus patients of group II as regarding Tissue Doppler (TD) parameters.

Figure (7): The percentage of patients in each group having Mitral" L" wave.

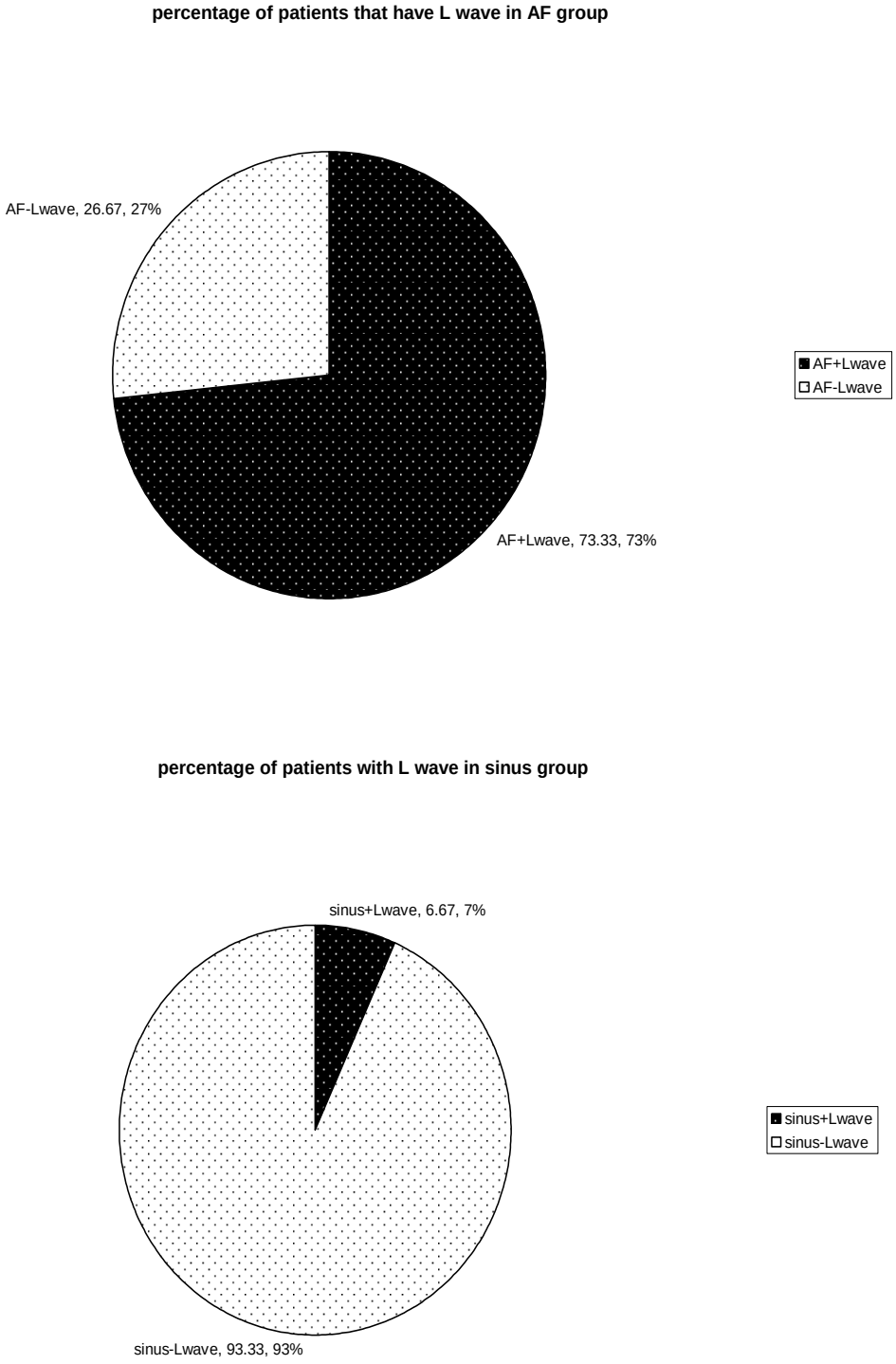


Table (5), Histograms (2-A, B&C) & Figure (7) show:

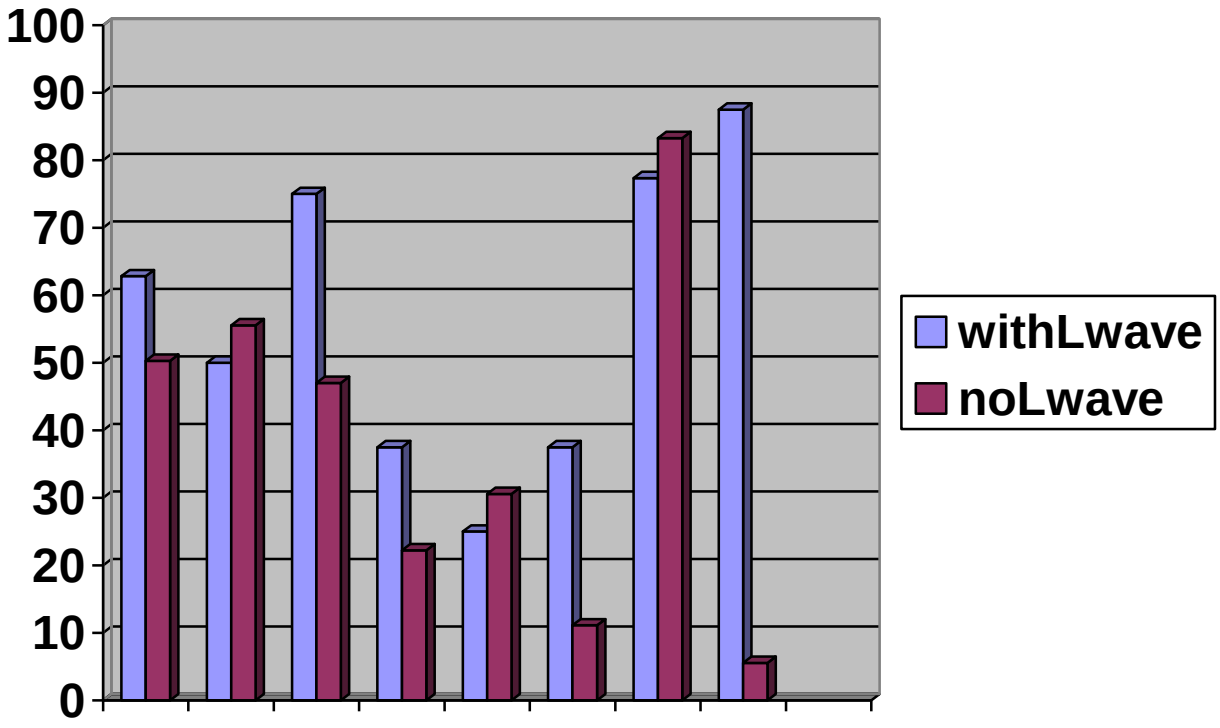
- Group II patients had a significantly higher means of IVS and posterior wall thickness ($p<0.01$ & $p<0.05$ respectively) and higher mean LA dimensions ($p<0.05$) than group I.
- There prevalence of LVH and Mitral L-wave were higher among group II patients compared to group I. the differences were highly significant ($p<0.01$).
- The mean E-wave was higher while the mean Em was lower in group II than in group I. the differences were highly significant ($p<0.01$).
- The mean ratio of E/Em was higher in group II compared to group I ($p<0.01$).
- This means that the presence of AF affects LV diastolic function significantly while the systolic function is not.
- The LV dimensions are not affected by AF while the wall thickness, increase LA size and LVH are highly associated with AF.

Table (6): Comparison between patients with L wave & patients with out L wave regarding demographic and basic clinical data.

Parameters	Patients with L wave		Patients without L wave		P value	Significance
	No	٢٤	No	36		
Age Range in years Mean age±SD	40-85 62.83±10.83		22-80 50.92±14.54		<0.001	HS
Sex Male(no,%) Female(no,%)	12,(50%) 12,(50%)		16,(44.44%) 20,(55.56%)		>0.05	NS
NYHA class>II (no,%)	21,(87.5%)		2,(5.56%)		<0.001	HS
HTN(no,%)	18,(75%)		17,(47.22%)		<0.05	S
DM(no,%)	9,(37.5%)		8,(22.22%)		<0.05	S
Smoking(no,%)	6,(25%)		11,(30.56%)		>0.05	NS
CAD(no,%)	9,(37.5%)		4,(11.11%)		<0.05	S
HR(bpm) Mean±SD	77.33±16.88		83.28±16.17		>0.05	NS

The table shows:

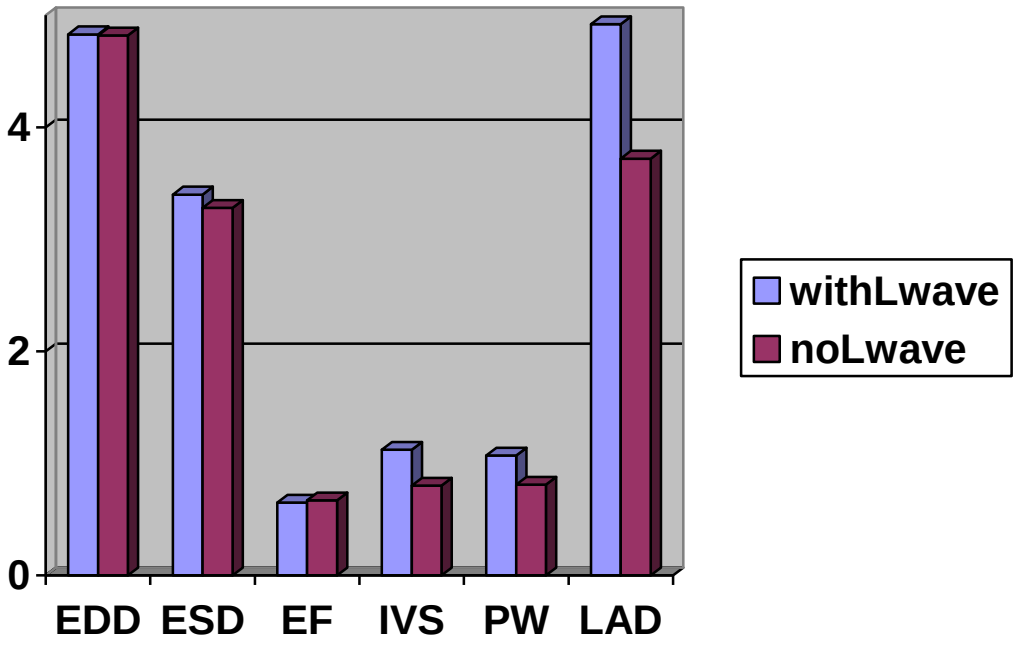
- Patients with Mitral L wave had higher mean age ($p<0.001$), and higher prevalence of hypertension ($p<0.05$), diabetes ($p<0.05$), NYHA class II or more ($p<0.001$) and higher prevalence of CAD ($p<0.05$) than those without mitral L wave.
- Sex distribution, smoking habit and the heart rate showed no statistically differences between both groups of patients.



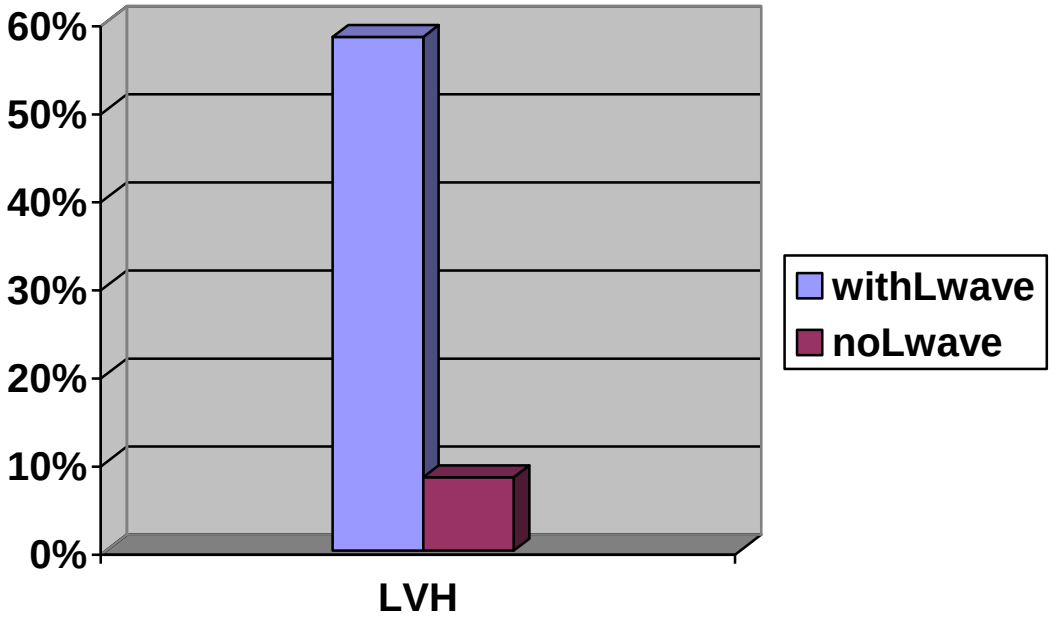
Histogram (3): Shows comparison between patients with L wave versus patients without L wave as regarding age, sex, HTN, DM, smoking, CAD, HR & NYHA class II or more .

Table (7): Comparison between patients with L wave & Patients without L wave regarding M-mode, 2-D, Doppler & DTI echocardiographic parameters.

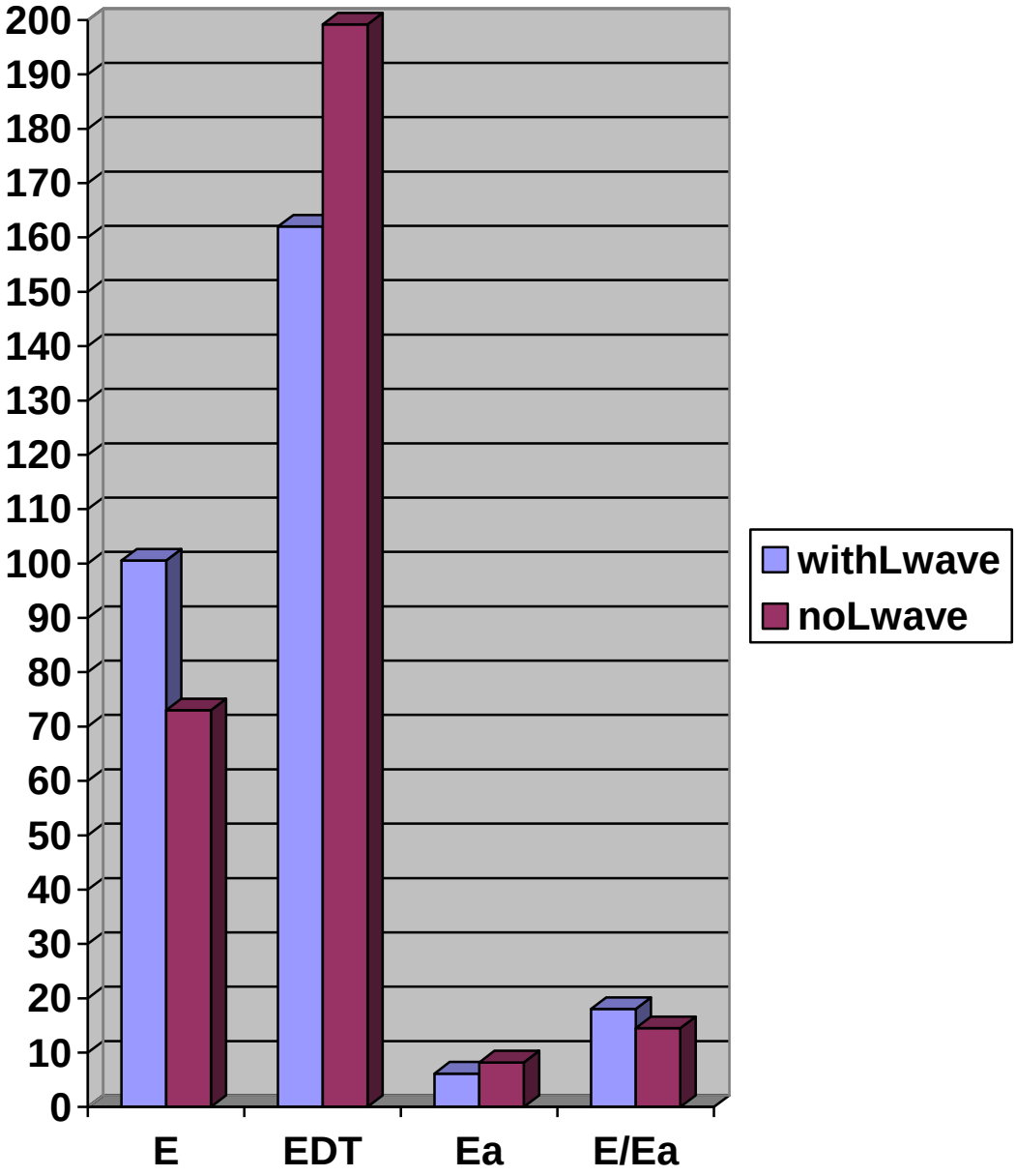
Parameter	Patients with L wave	Patients without L wave	P value	Significance
LVEDD(cm) Mean±SD	4.83±0.6	4.82±0.58	>0.05	NS
LVESD(cm) Mean±SD	3.40±0.5	3.28±0.54	>0.05	NS
LVEF(%) Mean±SD	65±7	67±9	>0.05	NS
IVS(cm) Mean±SD	1.12±0.30	0.81±0.29	<0.001	HS
PW(cm) Mean±SD	1.07±0.26	0.81±0.29	<0.001	HS
LVH(no,%)	14,58.33%	3,8.33%	<0.001	HS
LAD(cm) Mean±SD	4.29±0.37	3.72±0.61	<0.001	HS
Ewave (cm/s**)** Mean±SD	100.55±28.58	73±23.38	<0.001	HS
EDT(ms) Mean±SD	162±33.79	199.19±61.86	<0.01	HS
Em (cm/s) Mean±SD	6.13±2.1	12.28±3.35	<0.05	S
E/Em ratio	18.04±6.85	6.90±4.63	<0.01	HS



Histogram (4-A): Shows comparison between patients with L wave versus patients without L wave as regarding M-mode echocardiographic parameters.



Histogram (4-B): Shows comparison between patients with L wave versus patients without L wave as regarding LVH.



Histogram (4-C): Shows comparison between patients with L wave versus patients without L wave as regarding TD parameters.

Table (7) & Histograms (4-A, B&C) show:

- Patients with Mitral L wave had higher mean values of IVS and posterior wall thickness ($p<0.001$), left atrial dimension ($p<0.001$), E wave velocity ($p<0.001$), and E/Em ratio ($p<0.01$) than those without.
- The percentage of patients with LVH was higher and the mean values of E wave deceleration time ($p<0.01$) and Em velocity ($p<0.05$) were lower in patients with Mitral L wave compared to patients without Mitral L wave.
- This means that the prevalence of Mitral L wave is associated with more incidences of diastolic dysfunction and LVH while systolic function and LV diameters are not related to that wave.
- There was significant statistical difference between patients with L wave and patients without L wave as regard E/Em ratio ($P<0.01$).

Table (8): The sensitivity and specificity of Mitral L wave in detecting LV diastolic dysfunctions.

		Diastolic dysfunction (E/Em ratio>15)		
		diseased	**free**	**total**
Presence of (L wave)	**Test +ve**	١٥	٩	٢٤
	Test -ve	2	٣٤	٣٦
	Total	17	٤٣	٦٠

Sensitivity of L wave for diagnosis of diastolic dysfunction = 88.2%.

Specificity of L wave for diagnosis of diastolic dysfunction=79%.

Positive predictive value (PPV) of L wave for diagnosis of diastolic dysfunction=62.5%.

Negative predictive value (NPV) of L wave for diagnosis of diastolic dysfunction= 94.4%.

Overall accuracy of L wave for diagnosis of diastolic dysfunction= 81.7%.