<u>Results</u>

This study included fifty patients presented to Mahalla Cardiac Center asking for medical examination or for medical follow up in the period from March 2007 to March 2008.

Their age ranged between 36 – 71 years with mean age (54.9 ± 17), SD was 8.044.

32 patients were male (64%) and 18 were female (32%), as shown in table (1).

Table (1): Age and sex distribution of the studied patients.

Characteristics		
Age in years:		
Range		36-71 years
Mean age		54.9±17
SD		8.044
Gender:	No.	%
Males	32	64
Females	18	36

Table (2): Risk factors distribution of the studied patients.

Risk factors	NO.	%
_DM_	24	48
Dyslipidaemia	30	60
Smoking	21	42

All the patients underwent resting echocardiogram to assess the following:

*Evaluation of the global left ventricular function and estimation of ejection fraction which is considered normal when it ≥55%. **(Lang et al., 2005)**

*Detection of the resting segmental wall motion abnormalities and giving wall motion score index (WMSI) which was considered abnormal when it >1. (**J Am Soc Echocardiography., 1989**)

*Evaluation of diastolic function.

*Measuring of left atrial volume then indexed to the body surface area to obtain left atrial volume index (LAVI).

The patients were divided according to LAVI into two groups:

Group A: patients with normal LAVI $\leq$ 26 ml/m², they were 17 patients (34%).

Group B: patients with abnormal LAVI > 26 ml/m², they were 33 patients (66%)

The two groups were compared according to the prevalence of IHD risk factors among them, as shown in table (3) and figure (5-6-7).

We found that:

Group A included 17 patients (34%) showed 7 patients (41.1%) were diabetic, 3 patients (17.6%) were dyslipidaemic and 6 patients (35.3%) were smoker.

Group B included 33 patients (66%) showed 17 patients (51.5%) were diabetic, 27 patients (81.8%) were dyslipidaemic and 15 patients (45.5%) were smoker.

Table (3): the prevalence of IHD risk factors among the studied groups (A, B).

Risk Factors	Left atrial volume index				OR	95% CI	p
	Group A (n=17)		Group B (n=33)				
	n	%	n	%			
Diabetic	7	41.1	17	51.5	1.518	0.465 - 4.953	0.488
Dyslipidaemic	3	17.6	27	81.8	21.00	4.55 - 96.87	<0.001*
Smoker	6	35.3	15	45.5	1.528	0.457 - 5.113	0.490

This table shows that:

1- When we compared between the two groups as regard DM, there were no significant statistical difference (p = 0.488).

2- When we compared between the two groups as regard dyslipidaemia, there were significant statistical difference (p = <0.001).

3- When we compared between the two groups as regard smoking, there were no significant statistical difference (p = 0.490).
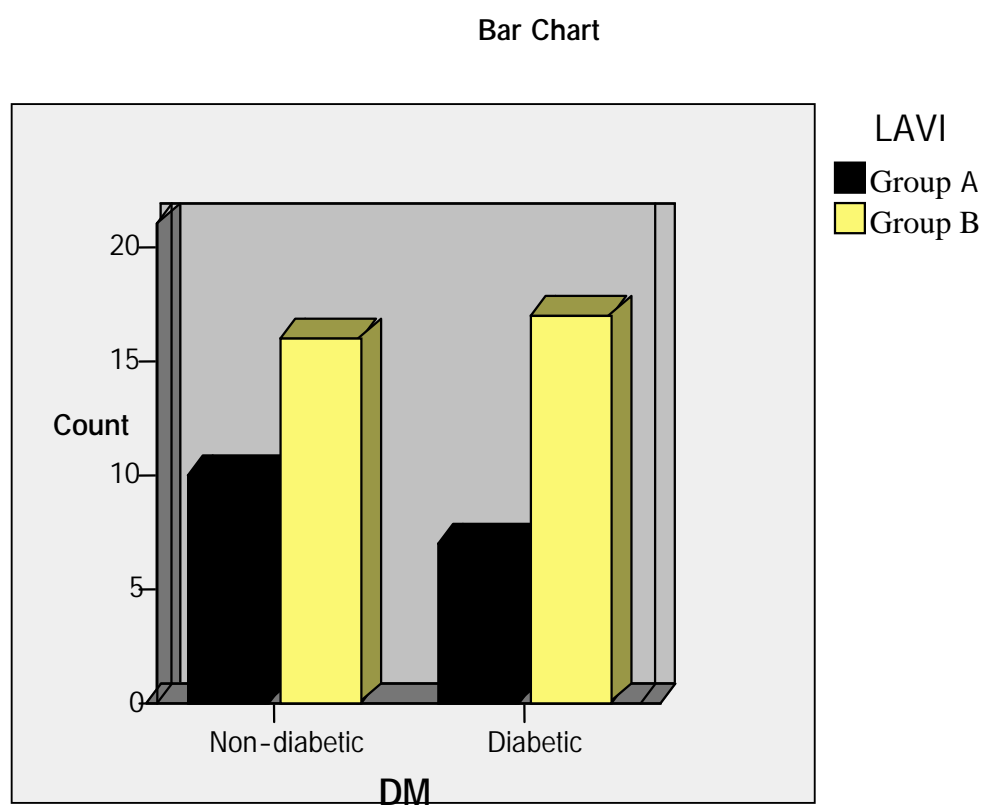
Bar Chart

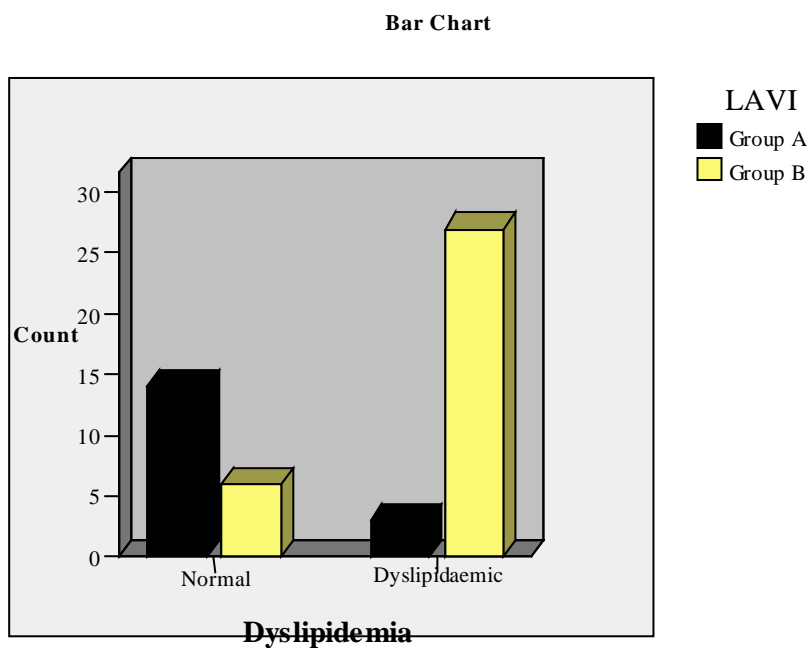*Figure (5): Comparison of DM between the studied groups (A, B).*

Bar Chart

Figure (6): Comparison of dyslipidaemia between the studied groups (A, B).
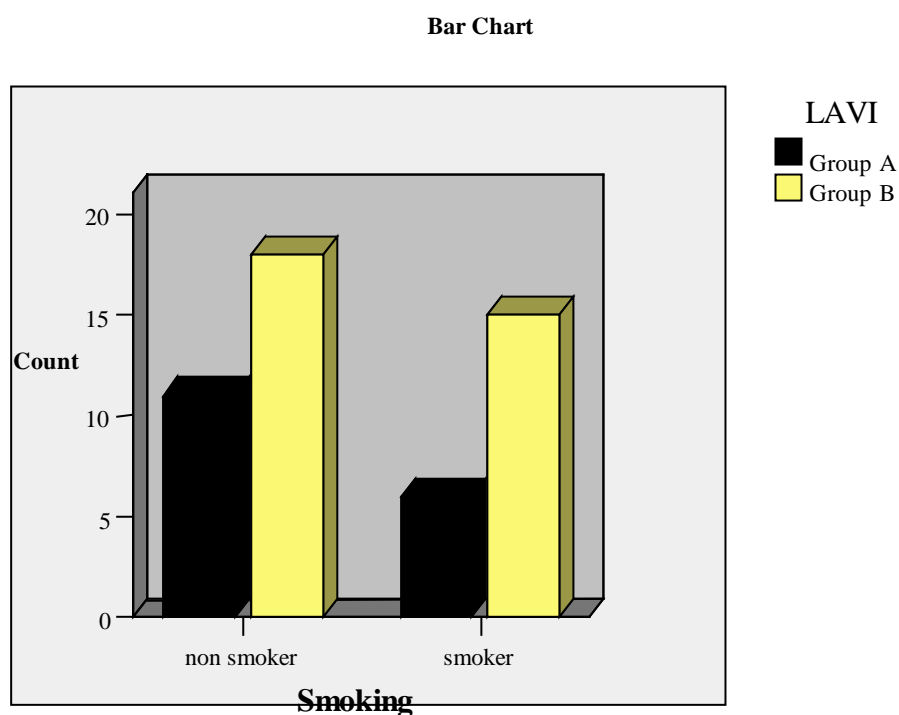
Bar Chart

Figure (7): Comparison of smoking between the studied groups (A, B).

The two groups were compared according to the ejection fraction (EF) as shown in table (4) and figure (8).

We found that:

Group A included 17 patients (34%) showed 4 patients (23.5%) had abnormal EF, 13 patients (76.5%) had a normal EF.

Group B included 33 patients (66%) showed 13 patients (39.4%) had abnormal EF, 20 patients (60.6%) had a normal EF.

Table (4): comparison of EF between the studied groups (A, B).

Variables	Left atrial volume index				OR	95% CI	p
	Group A (n=17)		Group B (n=33)				
	n	%	n	%			
Ejection fraction							
<55%	4	23.5	13	39.4	2.395	.642 - 8.931	0.187

This table shows that:

When we compared between the two groups as regard ejection fraction, there was no significant statistical difference.
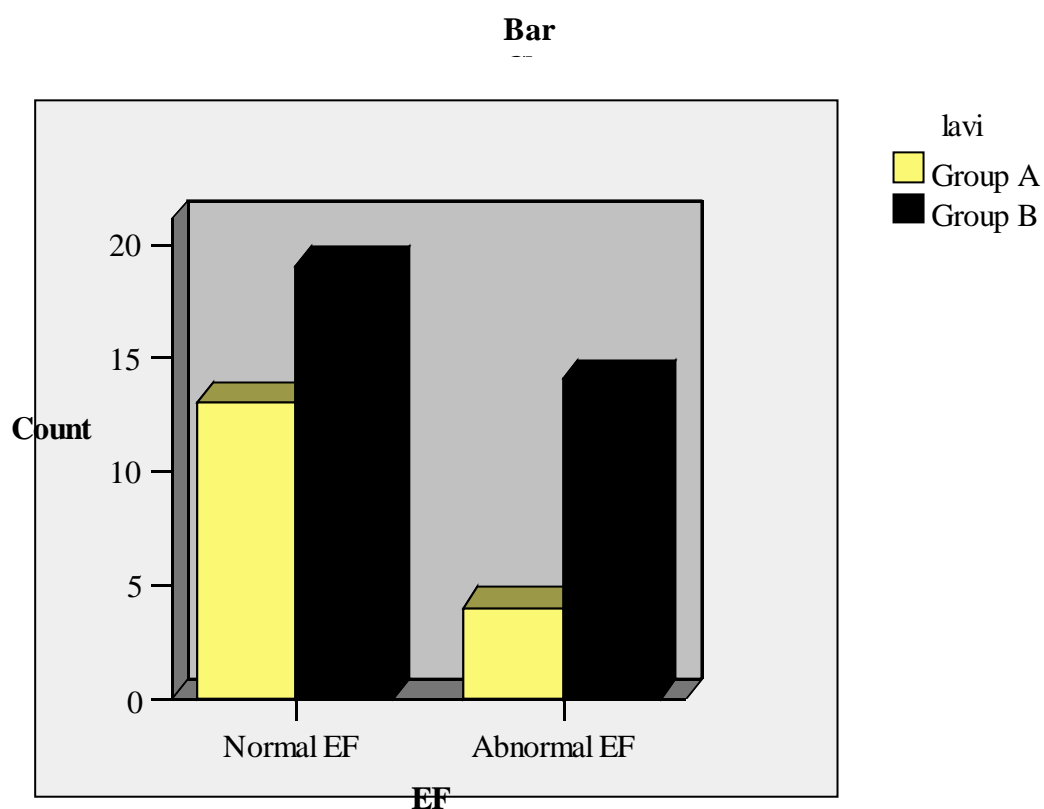
(P = 0.187)

Bar

Figure (8): Comparison of EF between the studied groups (A, B).

The two groups were compared according to the wall motion score index (WMSI) as shown in table (5) and figure (9).

We found that:

Group A included 17 patients (34%) showed 3 patients (17.6%) had abnormal WMSI, 14 patients (82.4%) had a normal WMSI.

Group B included 33 patients (66%) showed 22 patients (66.7%) had abnormal WMSI, 11 patients (33.3%) had a normal WMSI.

Table (5): comparison of wall motion score index (WMSI) between the studied groups (A, B).

Variables	Left atrial volume index				OR	95% CI	p
	Group A (n=17)		Group B (n=33)				
	n	%	n	%			
WMSI							
> 1	3	17.6	22	66.7	9.333	2.207 - 39.463	<0.001*

This table shows that:

When we compared between the two groups as regard the wall motion score index (WMSI), there was significant statistical difference.
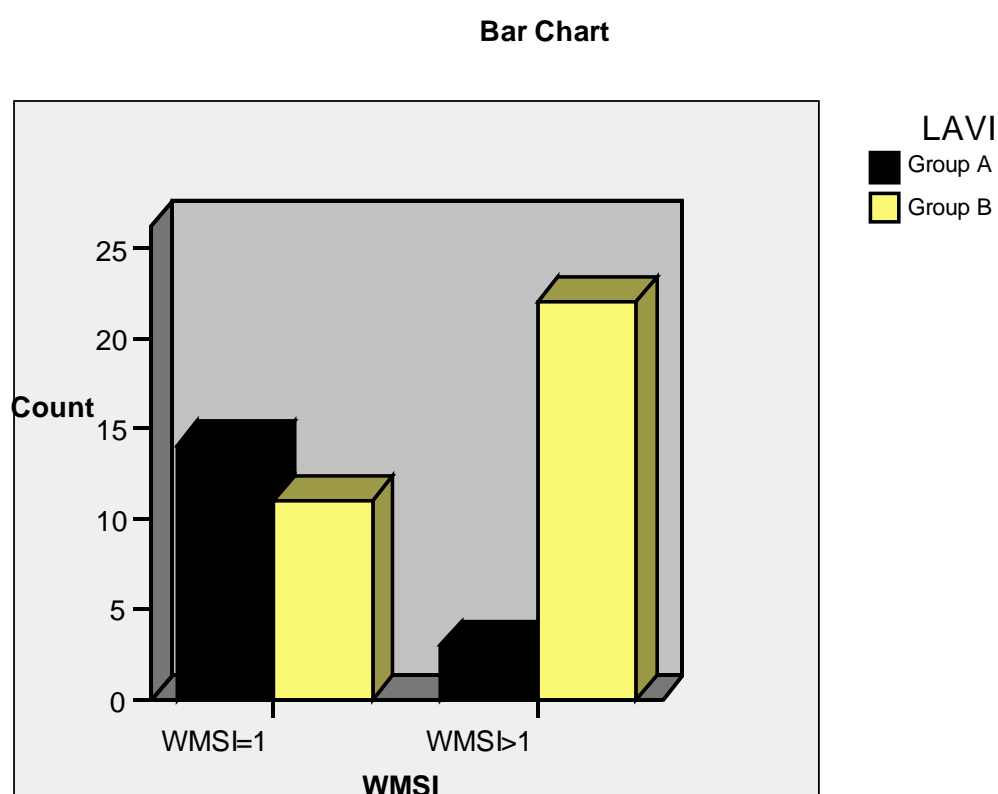
(P = <0.001)

Bar Chart

Figure (9): Comparison of wall motion score index (WMSI) between the studied groups (A, B).

The two groups were compared according to the diastolic function as shown in table (6) and figure (10).

We found that:

Group A included 17 patients (34%) showed 8 patients (47.1%) had diastolic dysfunction, 9 patients (52.9%) had a normal diastolic function.

Group B included 33 patients (66%) showed 32 patients (96.9%) had diastolic dysfunction, 1 patient (3.1%) had a normal diastolic function.

Table (6): comparison of diastolic function between the studied groups (A, B).

Variables	Left atrial volume index				OR	95% CI	p
	Group A (n=17)		Group B (n=33)				
	n	%	n	%			
Diastolic function							
Abnormal	8	47.1	32	96.9	36.00	3.963 - 327.01	<0.001*

This table shows that:

When we compared between the two groups as regard diastolic function, there was significant statistical difference. (P = <0.001)
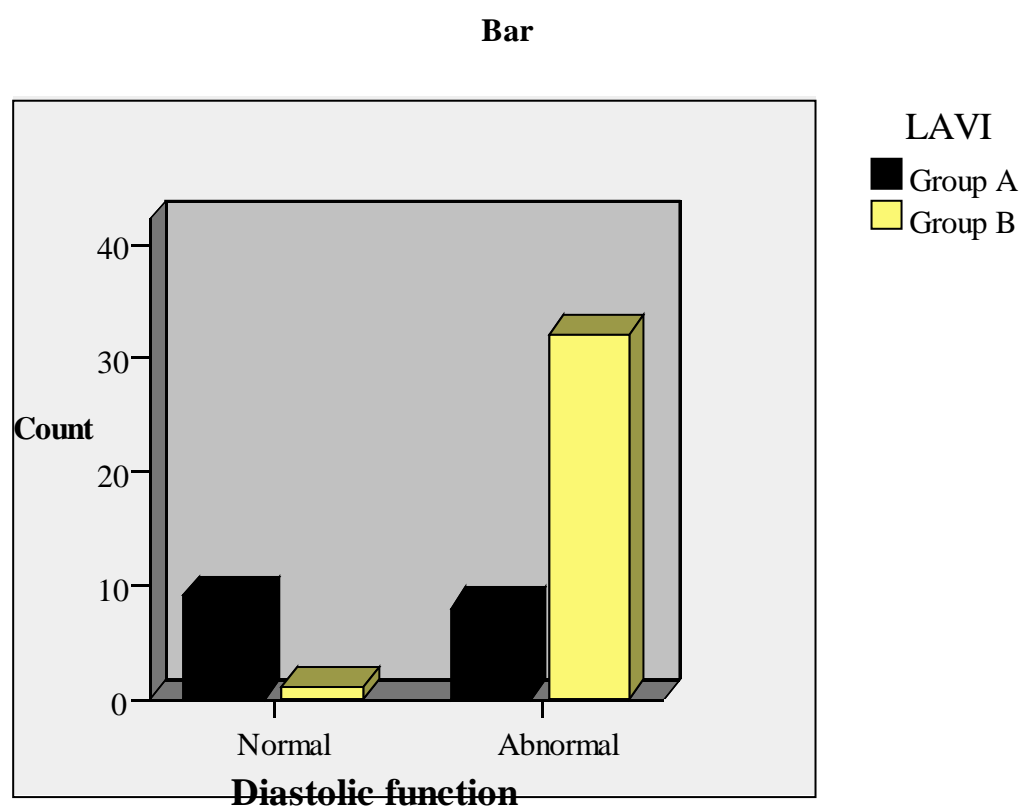
Bar

Figure (10): Comparison of diastolic function between the studied groups (A, B).

Dobutamine stress echo (DSE) findings:

The two groups (A, B) underwent dobutamine stress echo (DSE), it considered abnormal (+ve study) if significant new wall motion abnormalities (WMAs) were noted with stress. *(Fioretti et al., 1991)*.

As shown in table (7) and figure (11) we found that:

Group A included 17 patients (34%) showed 4 patients (23.5%) had +ve study and 13 patients (76.5%) had a normal DSE.

Group B included 33 patients showed 26 patients (78.8%) had +ve study and 7 patients (21.2%) had a normal DSE.

Table (7): comparison of DSE results between the studied groups (A, B).

Variables	Left atrial volume index				OR	95% CI	*p*
	Group A (n=17)		Group B (n=33)				
	n	%	n	%			
Dobutamine stress echo							
Abnormal	4	23.5	26	78.8	12.071	2.985 - 48.819	<0.001*
Normal	13	76.5	7	21.2			

This table shows that:

When we compared between the two groups as regard DSE results, there was significant statistical difference. (P = <0.001)
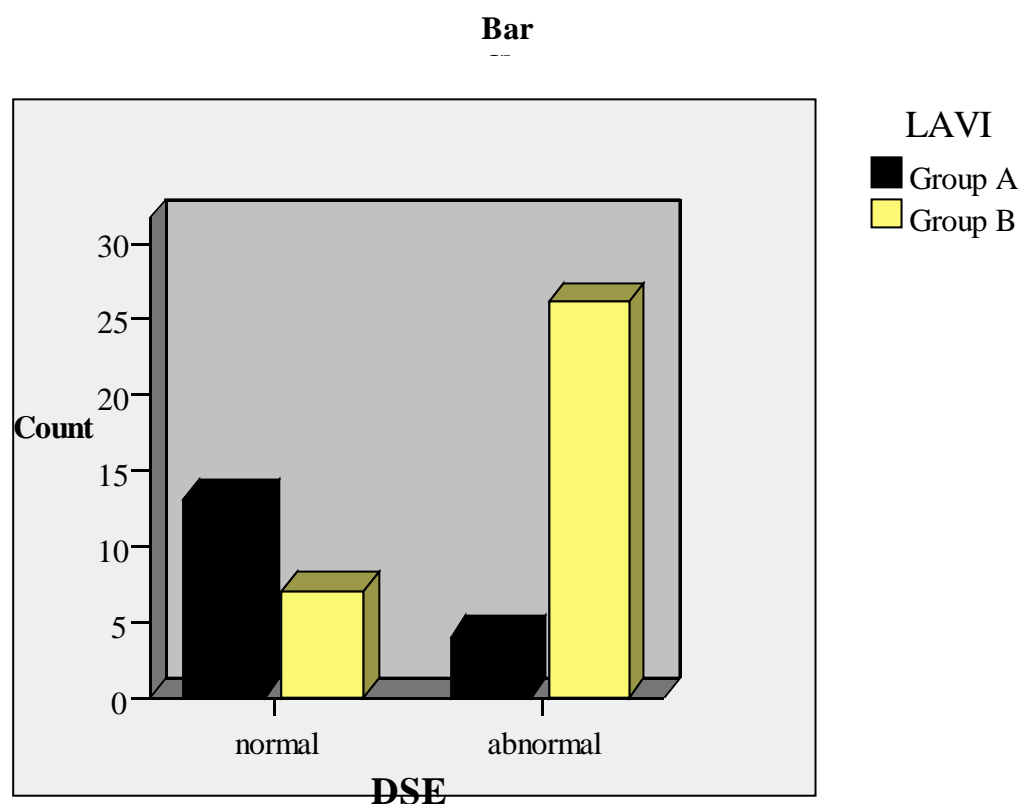

Figure (11): Comparison of DSE results between the studied groups (A, B).

*Coronary angiographic findings

The two groups (A, B) underwent coronary angiography using judkin's technique. It considered as abnormal (according to severity "classified as severe") if there was any anatomical lesion≥ 70% in the coronaries and ≥ 50% in left main coronary. (***Brian et al., 2004***)

As shown in table (8) and figure (12) we found that:

Group A included 17 patients showed 7 patients (41.1%) had an abnormal coronary angiogram and 10 patients (58.9%) had a normal coronary angiogram.

Group B included 33 patients showed 32 patients (96.9%) had an abnormal coronary angiogram and 1 patient (3.1%) had a normal coronary angiogram.

Table (8): comparison of coronary angiographic results between the studied groups (A, B).

Variables	Left atrial volume index				OR	95% CI	p
	Group A (n=17)		Group B (n=33)				
	n	%	n	%			
Coronary angiogram							
Abnormal	7	41.1	32	96.9	45.71	5.003 - 417.69	<0.001*
Normal	10	58.9	1	3.1			

This table shows that:

When we compared between the two groups as regard the coronary angiographic results, there was significant statistical difference.
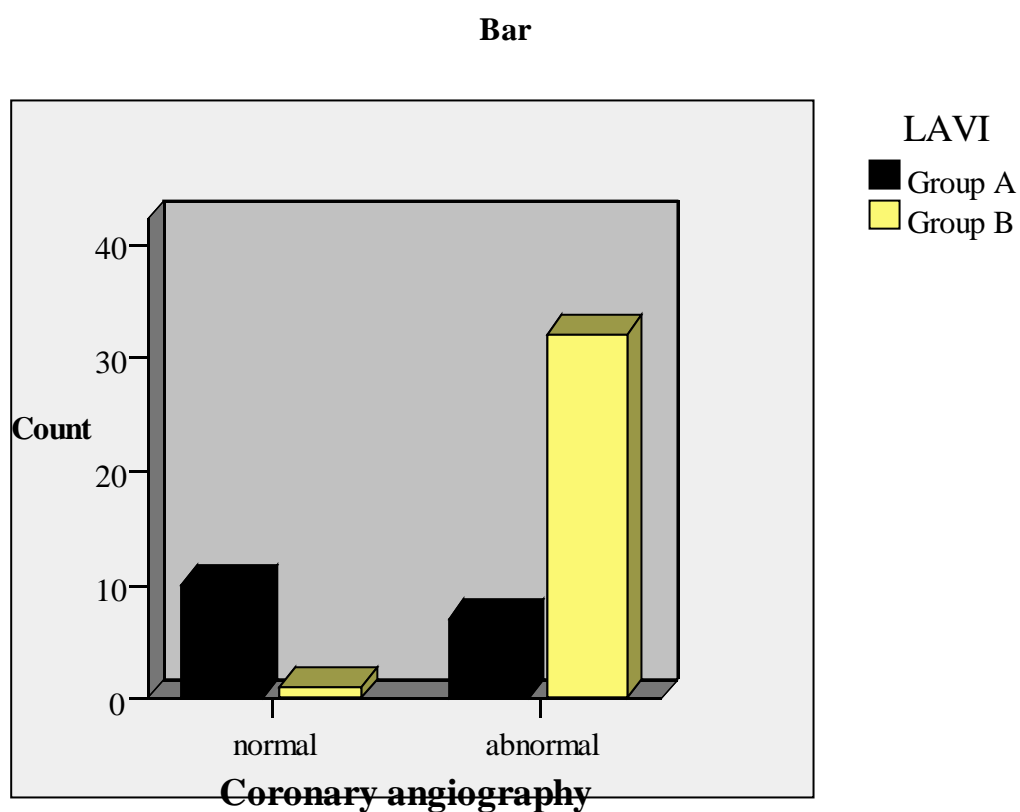
(P = <0.001)

Bar

Figure (12): Comparison of coronary angiographic results between the studied groups (A, B).

Correlation between coronary angiographic's results and DSE results between the studied groups (A, B).

The two groups were studied statistically according to the correlation between the coronary angiographic`s results and DSE results at one table as shown in table (9) and figure (13).

We found that:

Group A included 17 patients (34%) showed 10 patients (58.8%) had a normal coronary angiography, these 10 patients divided into 7 patients with normal DSE study and 3 patients with abnormal DSE study.

Group A included 17 patients (34%) showed 7 patients (41.2%) had abnormal coronary angiography, these 7 patients divided into 6 patients with normal DSE study and 1 patient with abnormal DSE study.

Group B included 33 patients (66%) showed only 1 patient (3%) had a normal coronary angiography and abnormal DSE study.

Group B included 33 patients (66%) showed 32 patients (97%) had abnormal coronary angiography, these 32 patients divided into 7 patients with normal DSE study and 25 patients with abnormal DSE study.

Coronary angiography&DSE&LAVI

Coronary Angiography		LAVI		Total
		Group A	**Group B**	
normal DSE	normal	7	0	7
	abnormal	3	1	4
	Total	10	1	11
abnormal DSE	normal	6	7	13
	abnormal	1	25	26
	Total	7	32	39

Table (9): *Correlation between coronary angiographic's results and DSE results between the studied groups (A, B).*

This table shows that:

When we compared between the two groups as regard DSE results and coronary angiographic's results there was significant statistical difference.

(P = <0.001)

The predictive value of LAVI:

From the previous table *(table 9)* we can get the following:

-The +ve predictive value for abnormal LAVI to abnormal DSE in abnormal coronary angiography is (78.1%).

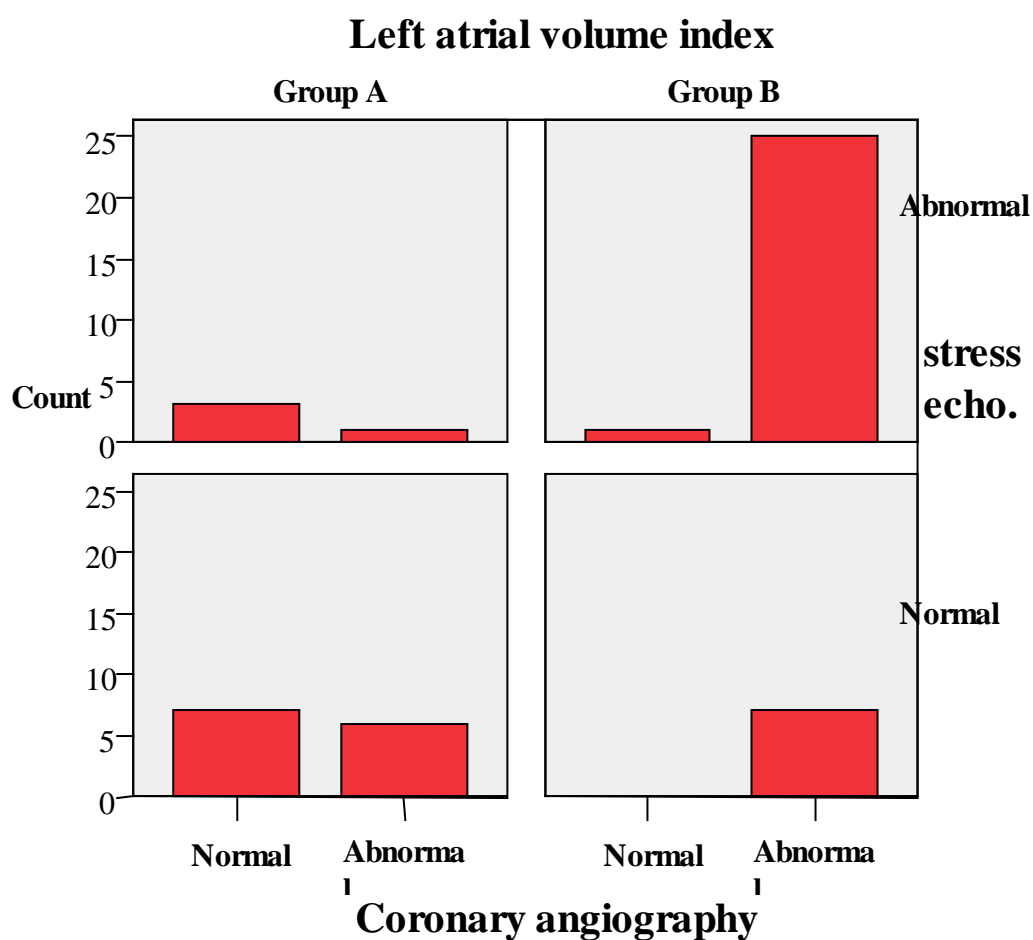-The -ve predictive value for normal LAVI to normal DSE in normal coronary angiography is (70%).

Figure (13): *Correlation between coronary angiographic's results and DSE results between the studied groups (A, B).*

Patient no. 1 in master table:

A 58 years old female patient, diabetic, dyslipidaemic, suffering from diastolic dysfunction and had abnormal coronary angiogram.
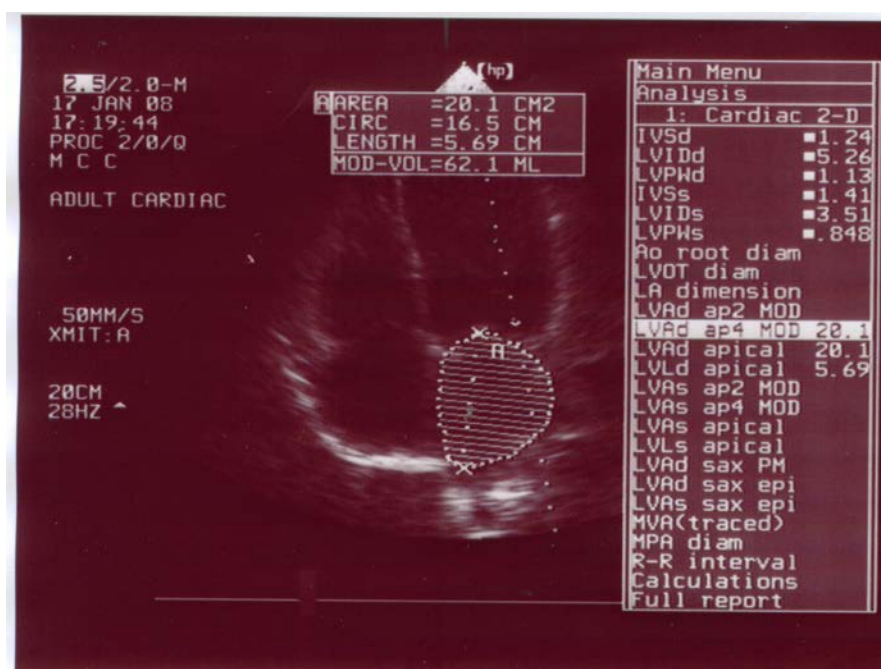

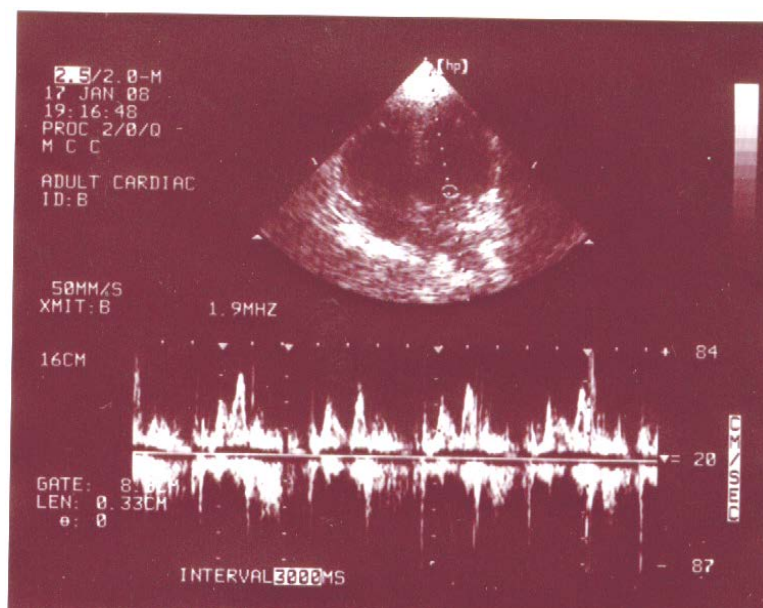*Figure (14): resting echocardiogram showing LAV=62.1 ml*

LAVI = 35.2 ml/m²

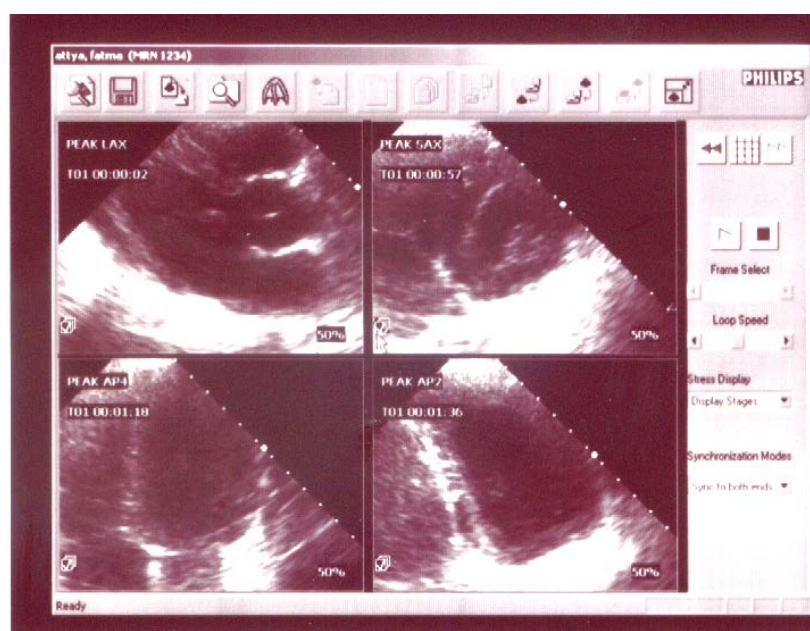*Figure (15): resting echocardiogram showing diastolic dysfunction (reversed E/A ratio).*

Figure (16): DSE showing new WMA at peak level with dobutamine infusion (dose: 40 µ/kg/min). "Positive study"

Patient no. 41 in master table:

A 61 years old male patient, not diabetic, not dyslipidaemic, normal diastolic function and had a normal coronary angiogram.
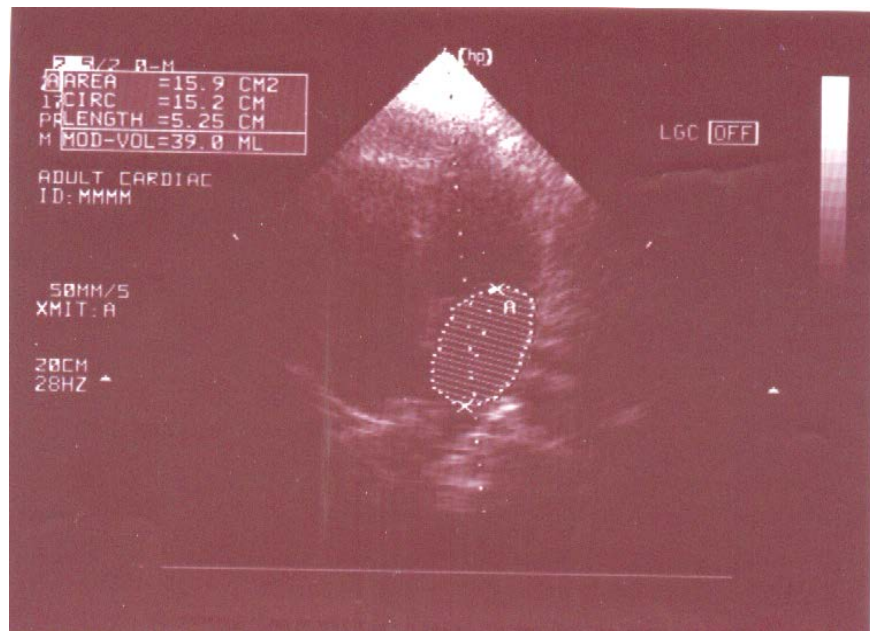

Figure (17): resting echocardiogram showing LAV=39 ml
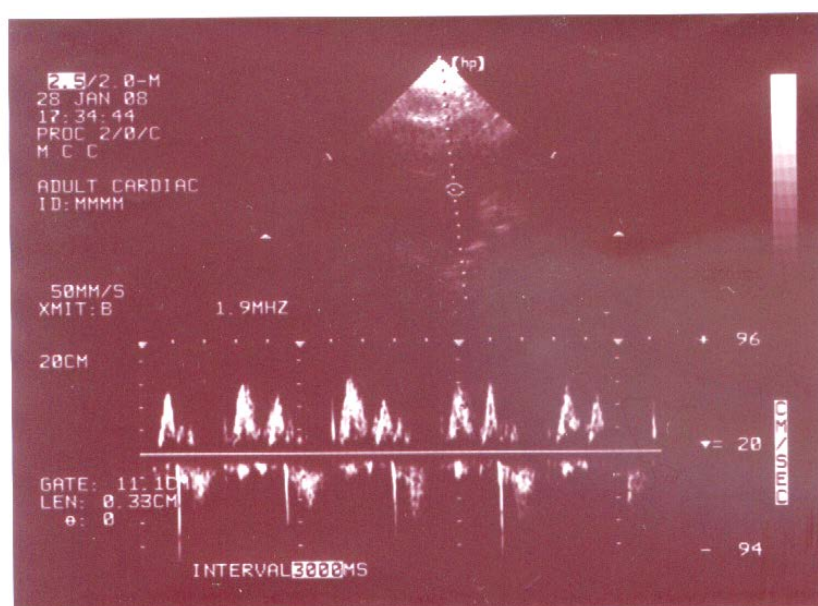
LAVI = 18.2 ml/m²

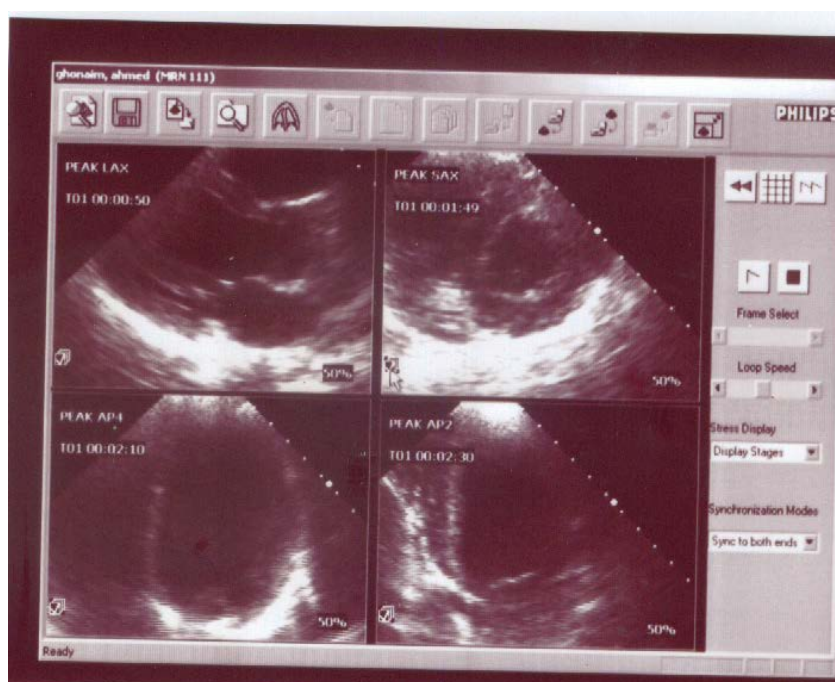*Figure (18): resting echocardiogram showing normal diastolic function.*

Figure (19): DSE showing no WMA at peak level with dobutamine infusion (dose: 40 µ/kg/min). "Negative study"