Results

Fifty patients previously diagnosed by mitral valve prolapse had been reevaluated clinically and by various laboratory methods.

Analysis of their various findings revealed the following results.

Patient's characteristics:

They were 22(44%) males and 28(56%) females table (1), fig (3), their ages ranged from 18 to 41 years (mean 27.18 ±6.36 years), their weights ranged from 55 Kg to 77 Kg (mean 68.5 ±13.4 Kg), their height ranged from 155 cm to180 cm (mean 168.9 ± 10.36 cm), their body surface area ranged from 1 to 1.9 (mean 1.6 ± 0.39 m2) table (2).

Table (1): Gender distribution.

sex	N (%) 50(100%)
Males	22 (44)
Females	28 (56)

Fig. (3): Gender distribution.

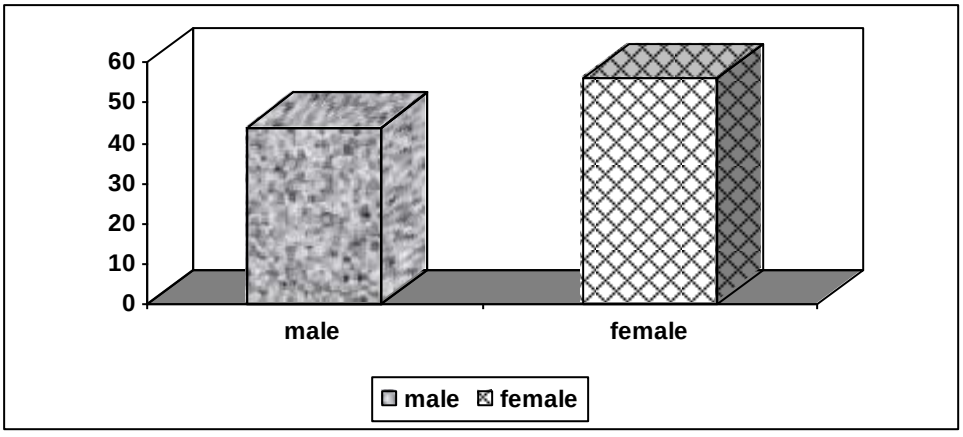


Table (2) ***Patients characteristics:***

Variables	Range (Mean ± SD)
AGE in years	18-41 (127.18 ± 6.36)
Weight in Kg	50-77 (68.5 ± 13.4)
Height in Cm	155-180 (168.9 ± 10.36)
BSA	1-1.9 (1.6 ± 0.39)

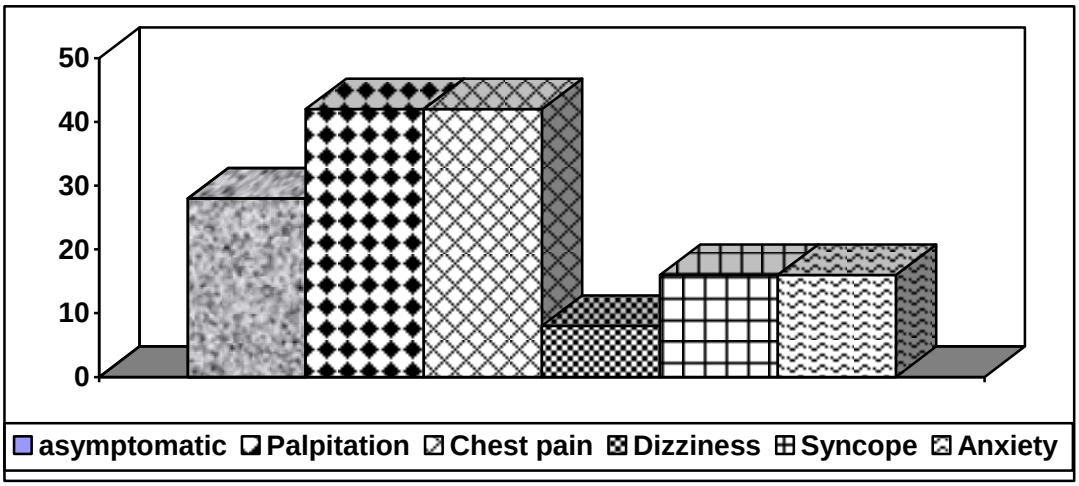
Frequency of complain in the patients.

Fourteen patients (28%) were asymptomatic, palpitation were in 21 patients (42%), chest pain in 21 patients (42%), dizziness in 4 patients (8%), syncope in 8 patients (16%) and anxiety in 8 patients (16%) table (3), fig. (4).

Table (3) ***Frequency of complain.***

complain	**N (%)** **50(100%)**
asymptomatic	14 (28)
Palpitation	21 (42)
Chest pain	21 (42)
Dizziness	4 (8)
Syncope	8 (16)
Anxiety	8 (16)

Fig. (4): Frequency of complain.



Auscultatory findings in the patients

By auscultation 6 patients (12%) had a mid-systolic click, while 14 patients (28%) had a mid-systolic click and a late systolic murmur, 30 patients (60%) neither had click nor murmur table (4).

Table (4) ***Auscultatory findings.***

Auscultatory findings	**N (%) 50(100%)**
Mid-systolic click (MSC)	6 (12)
Mid-systolic- click& Late systolic murmur	14 (28)
Neither click-nor murmur	30 (60)

X-Ray findings in the patients

Forty three patients (86%) had normal chest X-ray, scoliosis was found in one patient (2%), straight back in 4 patients (8%) and only 3 patients (6%) had pectus excavatum table (5).

Table (5) ***X-Ray findings.***

X-Ray findings	**N (%)** **50(100%)**
Normal	43 (86)
Scoliosis	1 (2)
Straight back	4 (8)
Pectus excavatum	3 (6)

Resting ECG findings in the patients

The ECG was normal in 40 patients (80%), but abnormalities in the resting ECG included T-wave inversion in the inferior leads was found in 6 patients (12%), ST segment depression was in 3 patients (6%) and only in one patient (2%) had (AF) table (6).

Table (6) ***Resting ECG findings***

Resting ECG findings	**N (%)** **50(100%)**
Normal	40 (80)
T- wave inversion	6 (12)
St-segment depression	3 (6)
(AF)	1 (2)

Echocardiographic Data

Table (7) shows the echocardiographic data of the patients:

Prolapse of mitral leaflets were seen in 36 patients (72%), 6 of them (12%) had marked prolapse , 14 patients (28%) had moderate prolapse, while 16 patients (32%) had mild degree of prolapse .

Thickness of the leaflets (more than 5mm) was in 3 patients (6%) while 94% (47 patients) were normal.

Mean leaflets displacement ranged from 2.22 $\pm$ 2.09, isolated posterior mitral leaflet involvement were found in 10 patients (20%) while 16 patients (32%) had anterior mitral leaflet involvement and both leaflets were involved in 10 patients (20%).

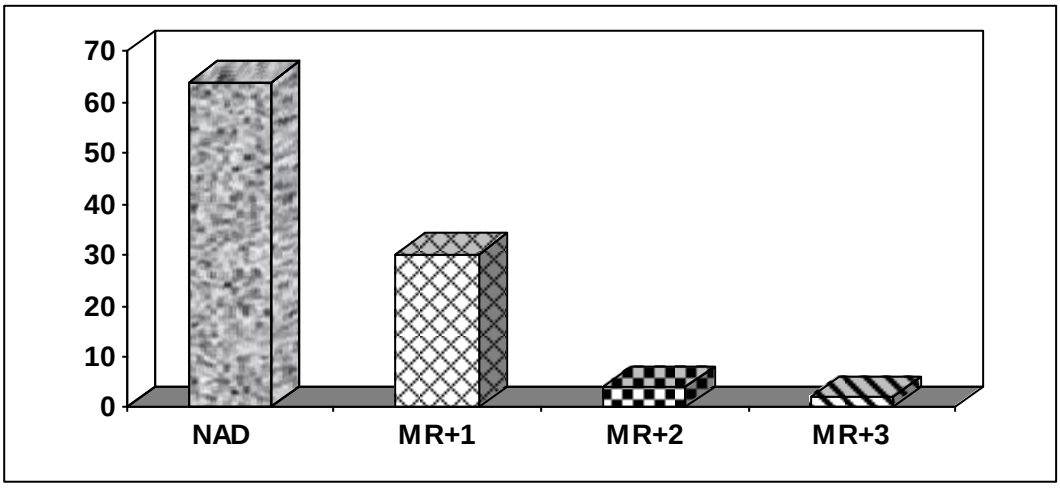
Mitral regurgitation was detected in 18 patients (36%), 15 of them (30%) had mild degree of regurge, 2 patients (4%) had moderate degree of regurge while only one patient (2%) had sever degree of regurge fig. (5).

None of our patients had associated aortic and/or tricuspid valve prolapse.

Table (7) Echocardiographic data.

Variables	***N(%)*** **50(100%)**
Degree of prolapsed leaflet	
Marked	6 (12)
Moderate	14 (28)
Mild	16 (32)
None	14 (28)
Leaflet thickness	
> 5mm	3 (6)
< 5mm	47 (94)
Leaflet displacement	
Leaflet displacement	Range 0-7mm Mean (2.22±2.09)
Involved prolapsed leaflet	
Anterior	16 (32)
Posterior	10 (20)
Both	10 (20)
None	14 (28)
Echo Doppler mitral regurge	
NAD	32 (64)
MR+1	15 (30)
MR+2	2 (4)
MR+3	1 (2)
Associated Aortic and/or tricuspid prolapse	
None	0

Fig. (5) : ***Echo Doppler evidence of mitral regurge.***



Diagnosis:

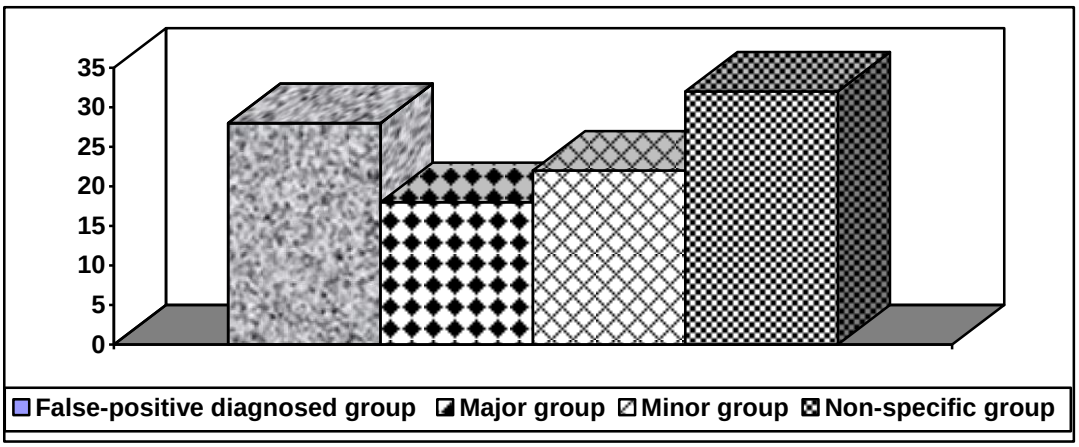
According to the echocardiography of the fifty patients, they were classified to major criteria group, minor criteria group, non-specific group and false-positive diagnosed group which have no criteria for MVP.

The actual percent of mitral valve prolapse was 18% (9 patients) which met major criteria, while 11 patients (22%) met minor criteria, 32% (16 patients) met non-specific criteria and 28% (14 patients) were false-positive results table (8), fig.(6).

Table (8) ***Diagnosis:***

Diagnosis	**N(%)** **50(100%)**
False-positive diagnosed group	14 (28)
Major criteria group	9 (18)
Minor criteria group	11 (22)
Non-specific group	16 (32)

Fig. (6): Diagnosis of the patients.



Patients were divided to:

MVP group: They are patients with major criteria for MVP diagnosis.

Questionable MVP group: They are patients with minor criteria, and arouse suspicion for MVP diagnosis.

No MVP group: They are patients with normal mitral valve apparatus and patients with non-specific criteria which is considered to be a normal variant.

Echocardiographic and clinical characteristics of patients in the three groups are presented in table (9).

The majority of patients in the three groups were symptomatic (mitral valve prolapse syndrome), frequency of complain found more in the MVP group fig (7). Mid-systolic click and late systolic murmur was significant in the MVP group (78%) fig (8).

X-ray abnormalities in the form of scoliosis, pectus excavatum and straight back were significant more (44%) in MVP group.

Moderate and sever mitral regurgitation were significantly more in MVP group (22%) and (11%) respectively fig (9).

Table (9): Study of the relation between certain parameters in the different groups.

Group / Variables	MVP group (9) 18%	Questionable MVP group (11) 22%	No MVP group (30) 60%	P. value
Age	18-40	20-37	19-35	**0.251**
Sex	F -3(33%) M-6(67%)	F -7(63%) M-4(36%)	F -18(60%) M -12(40%)	**0.051**
Weight	50-70	52-70	50-77	**0.237**
Hight	155-165	156-160	165-180	**0.526**
BSA	1-1.7 1.2±0.36	1.5-1.7 1.20±0.47	1-1.9 1.34±0.37	**0.407**
Complain				
Asymptomatic	none	none	14(47%)	**0.001****
Symptomatic	9(100%)	11(100%)	16(53%)	
Palpitation	7(78%)	6(55%)	8(26%)	
Chest pain	6(67%)	6(55%)	9(30%)	
Dizziness	3(33%)	1(9%)	None	
Syncope	2(22%)	2(18%)	4(13%)	
Anxiety	3(33%)	2(18%)	3(10%)	
Auscultation				
Msc	2(22%)	4(36%)	none	**0.001****
Msc & Lsm	7(78%)	7(63%)	none	
Netheir click nor murmur	none	none	30(100%)	
X-ray				
NAD	5(56%)	8(73%)	30(100%)	**0.003****
Abnormalities	4(44%)	4(36%)	none	
ECG				
NAD	6(67%)	7(63%)	27(90%)	**0.095**
Abnormalities	3(33%)	4(36%)	3(19%)	
Leaflet Displacement	7-4 5.44±1.44	4-3 3.18±0.18	1-2 1.37±0.51	**0.017***
Leaflet thickness				
>5mm	3(33%)	none	none	**0.002****
<5mm	6(67%)	11(100%)	30(100%)	
Mitral regurge				
NAD	2(22%)	none	30(100%)	**0.001****
+1	4(44%)	11(100%)	none	
+2	2(22%)	none	none	
+3	1(11%)	none	none	

* Significant **High Significant

Fig. (7) : Frequency of complain in the different groups.

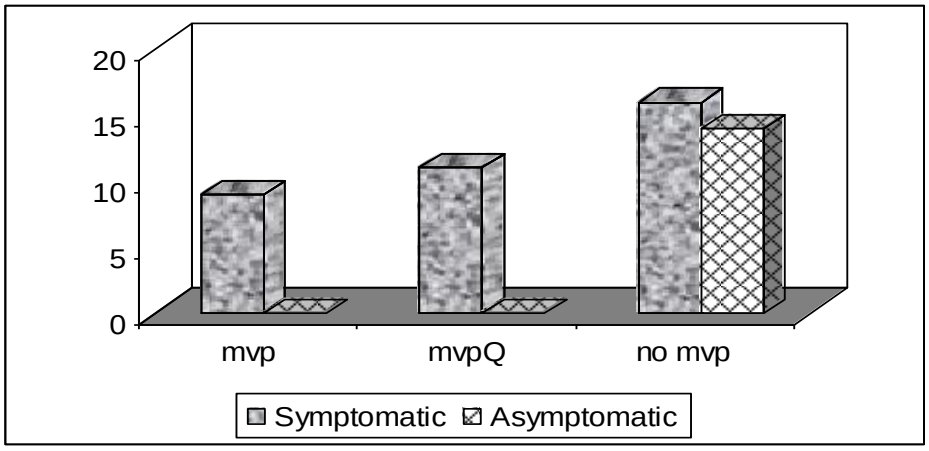


Fig. (8) : Auscultatory findings in the groups.

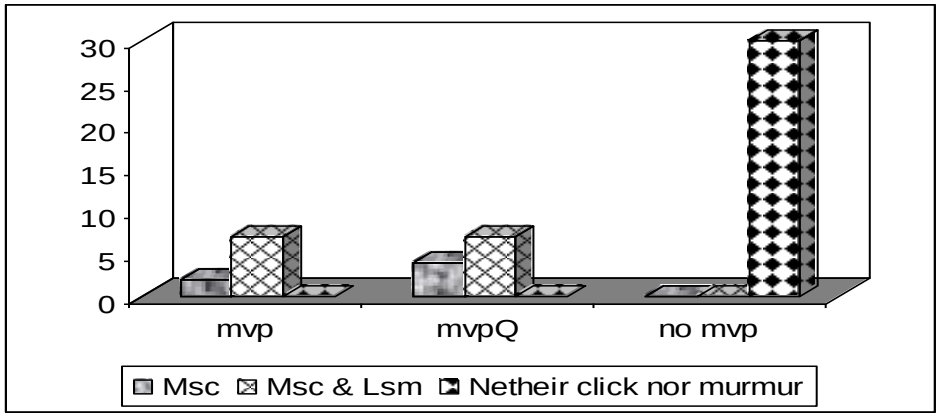
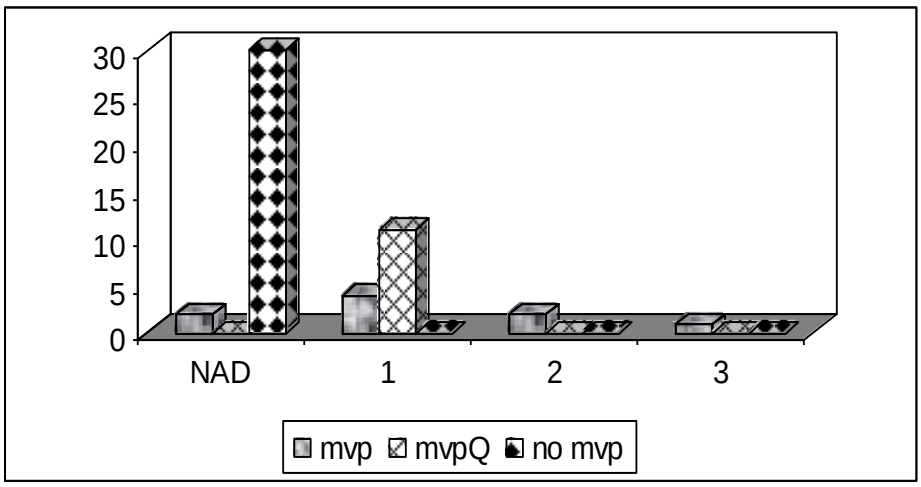


Fig. (9) :Echo Doppler mitral regurge.



Patients were further divided into two groups:

The actual diagnosed group: Patients with major criteria for MVP diagnosis.

The over-diagnosed group: Patients without any of the major criteria for MVP diagnosis.

Echocardiographic and clinical characteristics of patients in the two groups are presented in table (10).

Men were more in the actual diagnosed MVP and they were leaner based on their BSA.

The majority of patients in the two groups were symptomatic (mitral valve prolapse syndrome), frequency of complain found more in the actual diagnosed MVP group fig (10).

Mid-systolic click and late systolic murmur was significant in the actual diagnosed MVP group (78%) fig (11).

X-ray abnormalities in the form of scoliosis, pectus excavatum and straight back were significant more in actual diagnosed MVP group.

Moderate and sever mitral regurgitation were significantly more found in actual MVP group (22%) and (11%) respectively fig (12).

Table (10) : Study of the relation between the actual percentage of MVP and the over-diagnosed MVP patients .

Group / Variables	Actual diagnosed MVP group 9(18%)	Over-diagnosed group (41) 82%	P. value
Age	18-40	19-37	**0.941**
Sex	F -3(33%) m-6(67%)	F -25(61%) M -16(39%)	**0.787**
Weight	50-77	50-70	**0.699**
Hight	160-180	155-165	**0.057**
BSA	1-1.7 1.2±0.36	1.9-1.5 1.34+0.03	**0.014***
Complain			
Asymptomatic	None	14(34%)	**0.038***
Symptomatic	9(100%)	27(66%)	
Palpitation	7(78%)	14(34%)	
Chest pain	6(67%)	15(37%)	
Dizziness	3(33%)	1(2.4%)	
Syncope	2(22%)	6(15%)	
Anxiety	3(33%)	5(12%)	
Auscultation			
MSC	2(22%)	4(10%)	**0.001****
Msc & Lsm	7(78%)	7(17%)	
Netheir click nor murmur	none	30(73%)	
X-ray			
NAD	5(56%)	38(93%)	**0.008****
Abnormalities	4(44%)	4(10%)	
ECG			
NAD	6(67%)	34(83%)	**0.269**
Abnormalities	3(33%)	7(17%)	
Leaflet Displacement	7-4 5.44±1.44	0-4 3.18±0.15	**0.028***
Leaflet thickness			
>5mm	3(33%)	None	**0.001****
<5mm	6(67%)	41(100%)	
Mitral regurge			
NAD	2(22%)	30(73)	**0.005****
+1	4(44%)	11(27%)	
+2	2(22%)	None	
+3	1(11%)	None	

* Significant **High Significant

Fig. (10) : Frequency of complain.

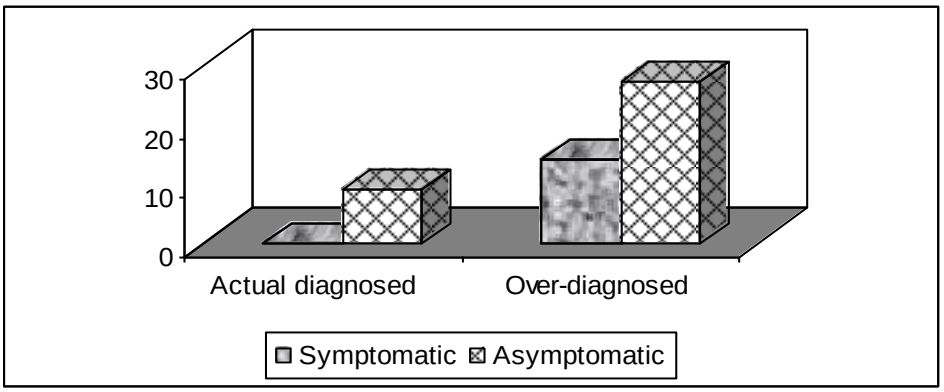


Fig. (11) : Auscultation in the 2 groups.

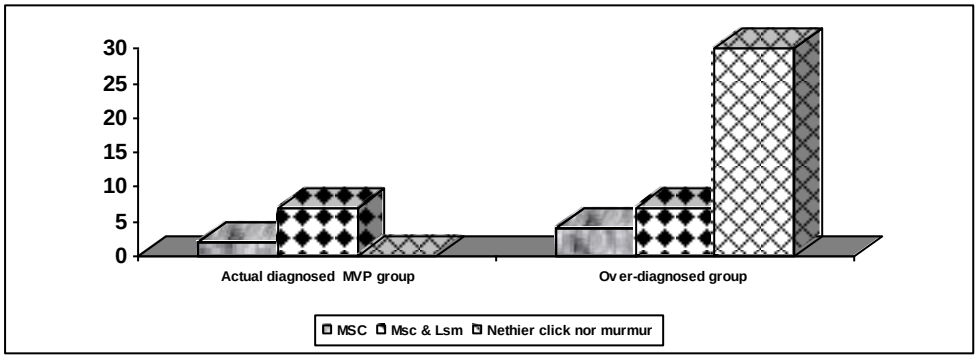
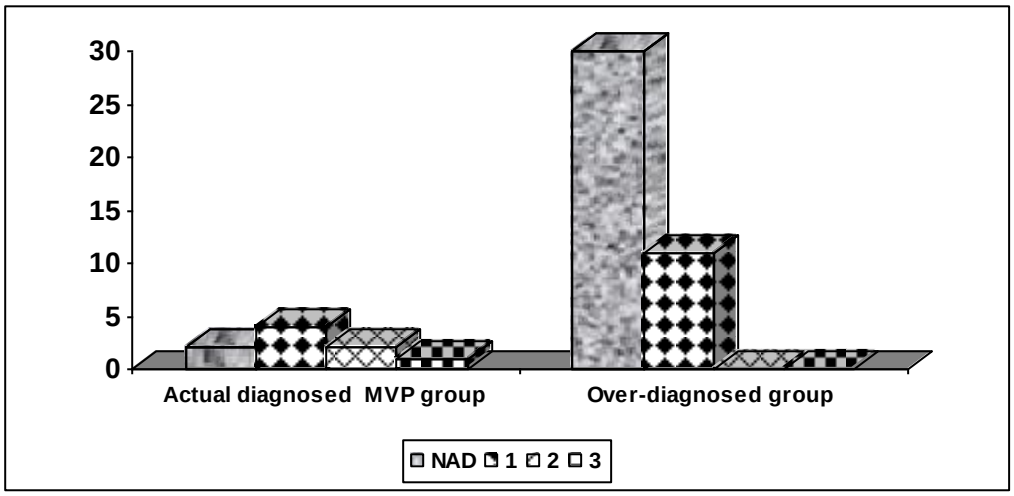


Fig. (12) : Mitral regurge in the 2 groups.



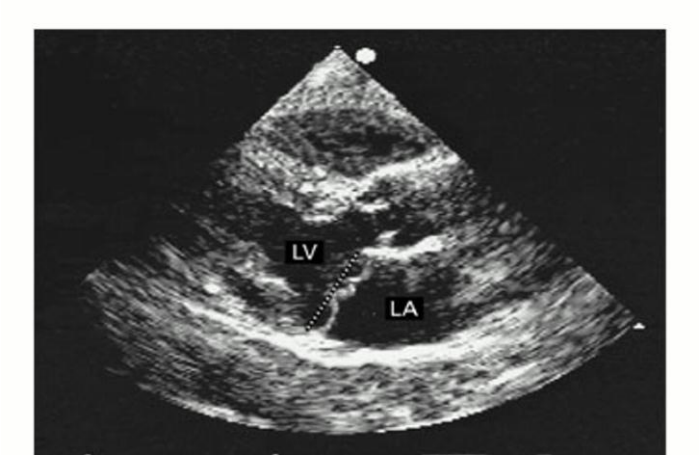


Fig 13- Parasternal long-axis view shows the mitral leaflets markedly prolapsing into the left atrium (patient 44)

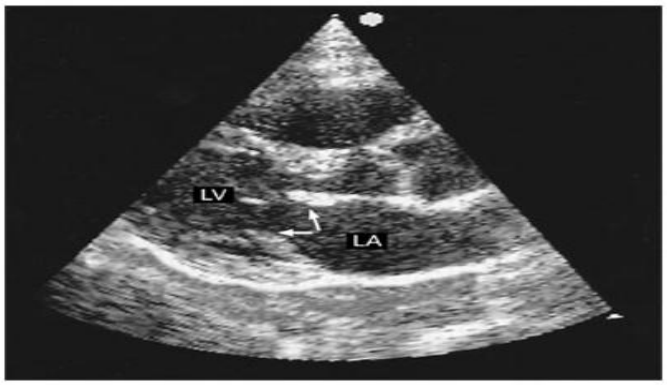


Fig (14). Parasternal long-axis view demonstrates leaflet thickness (more than 5mm) (patient 50).

Fig (15). Parasternal long-axis view shows moderate prolapse of the posterior mitral leaflet (patient 15).

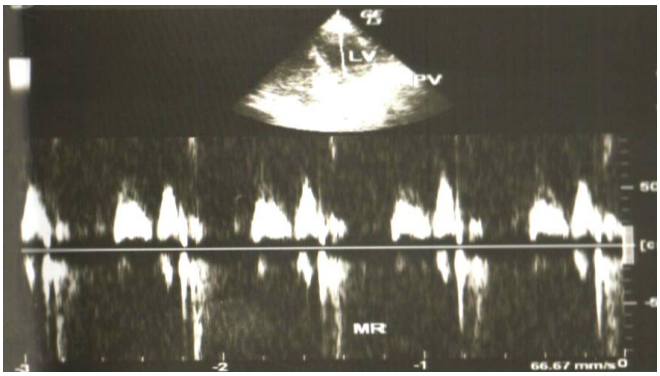


Fig 16- Pulsed echoDoppler mitral regurgitation for the above patient showing grade +1 mitral regurge .