RESULTS

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The study included 48 patients With thalassemia major selected From the hematolgy clinic of new children hespital cairo university

The patients were divided into tow groups , non chelated (n =24) and chelated (n =24) groups . the females in the non chelated group were 12 and in the chelated group were 12, the males in the non chelated group were 12 and in the chelated group were 12 . the age of the patients ranged from 5,5 to 14 years

Blood transfusion was given to all patents when hemoglobin reached or decreased below 7 grams / dl, every patient received 20 ml /kg the maximum was 500 ml . the frequency of transfusion was nearly the same in the tow groups , it was every 3-4 weeks.

The dose of desferrioxamine was 20 mg /Kg given subcutaneously over a period of 8-10 hours 5 days per week , using the pye portable syringe driver . the range of the chlation therapy was from 4 months to 4 years with a mean of 2 years. the age of starting cheiation ranged from 4 years to 13 years with a mean of 9.4 years .

Table 1

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showed the clincal data of non chelated and chelated patients .

It shows that the mean age of non chelated and chelated mals 8.67 ± (2.77) years and 8.63 ± (2.74) years respectivly, and of non chelated and chelated females 8.33 ± (2.60) years and 8.67 ± (2.22) years respectivly .

It showed that the mean height of non chelated and chelated males 124 ± (14 . 56) cm and 130 ± (10 .5) cm respectivly and of the non chelated and chelated females 119 ±(14 . 23) cm and 122 ± (12 .17) cm respectivly,the height of all patients was above the 5th percentil for age .

Hepatomegaly was present in all the thelassimic patiets, the size of the liver ranged from 4.5 to 9 cm below the costal margin in the midclavicular line with a mean of 6 cm

Splenomegaly was found in all patients , and splenectomy was done to 16 , 67 % of non chelated males and to 8.33% of chelated males ,

No splenectomy in the non cheleted and chelated femeles , the siz of the spleen ranged from 4.5 to 12 cm with a mean of 7.2 cm.

Sytolic murmur on the mitral area was detected in 41.6 % and 33.33% of non cheleted and chleted males respe ctively and in 50% and 25 % of non cheleted and cheleted females respectively

pericardial rub not present in any patient .

Table 1

clinical data of the all studied patients

patients	non chelted males	chelated males	non chelted females	chelated Females
number	12	12	12	12
age (years) range mean ± SD	5-14 8.67 2.77	6-14 8.63 2.74	5-14 8.33 2.60	6-13 8.67 2.22
height(cm)range mean ± SD	100-147 124 14.56	120-157 130 10.5	101-149 119 14.23	105-141 122 12.17
Hepatomegaly %	100%	100%	100%	100 %
splenomegaly %	100%	100%	100%	100%
pericardil rub	—	—	—	—
murnurs %	41.67%	33.33%	50 %	25%

Tables 2a and 2b

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Showed the echocardiographic measurements of non chelated and chelated males,

In non chelated males (n =12)
the measuments Were inereased (above normal limites) in the following percent of patients :LA 66.67, AO 33.33 % , RV 16 ,67 %, PA 25 % ,LVPW 8.33 %, Ivs 16.67 % and LVEDD 83.33 % .

In chelated males (n =12)
The measurements were increasd (above normal limits) in the following percent of patients
LA 83.33 , Ao 16.87 % , RV 16.87 , PA 25 %,
LVPW 8.33 %, IVS 25 % and LVEDD 58.33 %

Table 2C and fig.1

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Showed statistical analysis of mean ,range and SD of echocardiograbhic data among non chelated and chelated males .PA,LVEDD and LVESD were significantly greater in non chelated males than chelated males ($P < 0.05$) LA, RV, LVPW and IVS were greater in non chelated than chelated males but it were not statistically significant ($p > 0.05$) .

table 2a

Echocardiographic measurements of non chelated males

cardiac measuremert	number of petients	Range	mean	±SD
LA	12	2.2-3.8	2.941	0.537
AO	12	1.7-2.6	2.117	0.241
RV	12	1.3-2.1	1.675	0.328
PA	12	2-2.6	2.258	0.156
LVPW	12	0.5-1	0.675	0.129
IVS	12	0.6-1.3	0.733	0.197
LVEDD	12	3.7-6	4.833	0.763
LVESD	12	2.5-4.5	3.250	0.627

measurements in centimete

table 2b

Echocardiographic measuremants of chelated males

cardiac measuremert	number of pettients	Range	mean	±SD
LA	12	2.1-3.6	2.808	0.498
AO	12	1.7-3.2	2.108	0.421
RV	12	1.4-1.9	1.6	0.181
PA	12	1.4-2.5	2.017	0.374
LVPW	12	0.5-0.9	0.625	0.129
IVS	12	0.5-1	0.7	0.154
LVEDD	12	3.5-5.2	4.292	0.462
LVESD	12	2.3-3.2	2.717	0.333

measurements in centimeter

Table 2C

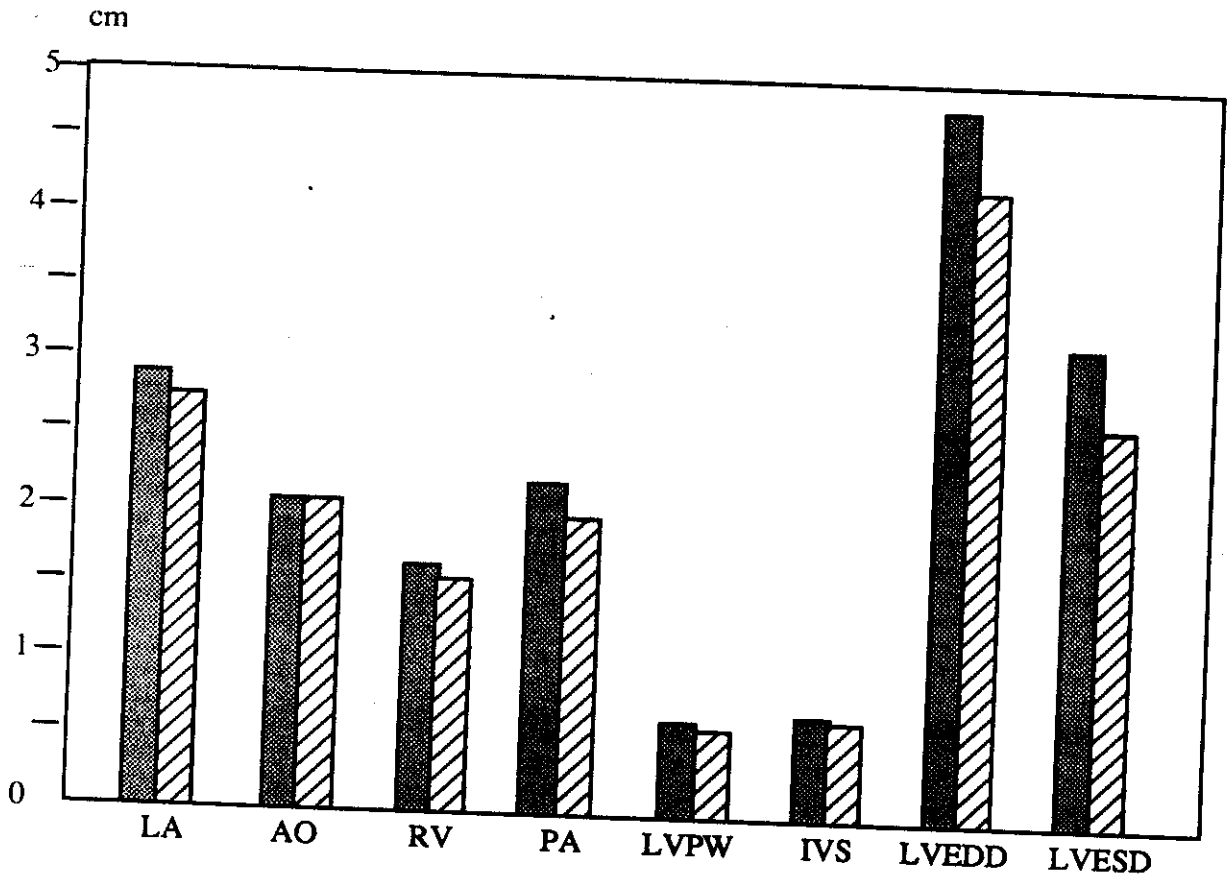
Echocardiographic data of non chelated and chelated males

myocardial measuerments		non chelated	chelated	t-test	p.value
LA	range	2.2-2.8	2.1-3.6	0.63	>0.5
	mean	2.941	2.808		
	±SD	0.537	0.498		
AO	range	1.7-2.6	1.7-3.2	0.06	>0.05
	mean	2.117	2.108		
	±SD	0.241	0.421		
RV	range	1.3-2.1	1.4-1.9	0.69	>0.05
	mean	1.675	1.6		
	±SD	0328	0.181		
PA	range	2-2.6	1.4-2.5	2.07	<0.05
	mean	2.258	2.017		
	±SD	0.156	0.374		
LVPW	range	0.5-1	0.5-0.9	0.95	>0.05
	mean	0.675	0.625		
	±SD	0.129	0.129		
IVS	range	0.6-1.3	0.5-1	0.46	>0.05
	mean	0.733	0.7		
	±SD	0.197	0.154		
LVEDD	range	3.7-6	3.5-5.2	2.103	<0.05
	mean	4.833	4.292		
	±SD	0.763	0.462		
LVESD	range	2.5-4.5	2.3-3.2	2.6	<0.05
	mean	3.250	2.717		
	±SD	0.627	0.333		

measurements in centimeter

Fig (1)

mean myocardial measurements among non chelated and chelated males



Tables 3a and 3b

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Showed the echocardiograpgic measurements of non chelated and chelated females ;

in non chelated females (n=12)

The measurments were increased (abov normal limites) in the following percent of patients ,

LA 58.33% , A0 8.33% RV 16.67% ,PA 25 %

LVPW 8.33% , IVS 16.67% and LVEDD 58.33

in chelated females (n=12) the measurements were Increased above normel lemites in the following percent of pentients

LA 58.33 ,RV 25% , PA 16 .67 % , IVS 8.33% LVEDD 33.33%

Tables 3c and fig. 2

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Showed statistical analysis of mean , range and SD of echocardiographic measurments among non chelated and chelated females . LVPW , LVEDD and LVESD were signifcantly greater in non chelated females than chelated females ($P < 0.05$) .

LA ,AO ,RV PA and IVS were greater in non chelated females than chelated females but it were not statistically significant ($P > 0.05$ 0) .

Table 3a

Echocardiogrephic measuremants of non chelated females

cardiac measurements	nunber of patients	range	mean	± SD
LA	12	2-3.9	2.858	0.646
AO	12	1.8-204	2.033	0.202
RV	12	1.3-2	1.575	0.250
PA	12	1.5-2.6	2.075	0.374
LVPW	12	0.5-0.9	0.683	0.111
IVS	12	0.5-0.9	0.7	0.121
LVEDD	12	3.7-5.1	4.5	0.469
LVESD	12	2.5-3.5	2.967	0.339

measurements in centimeter

Table 3b

Echocardiogrephic measuremants of chelated females

	nunber of patients	range	mean	± SD
LA	12	2-3.2	2.633	0.373
AO	12	1.8-2.3	1.933	0.156
RV	12	1.4-2	1.558	0.245
PA	12	1.3-2.5	2	0.357
LVPW	12	0.5-0.7	0.6	0.074
IVS	12	0.5-0.8	0.633	0.115
LVEDD	12	3.5-5.1	4.05	0.504
LVESD	12	2.2-3.2	2.517	0.327

measurements in centimeter

Table 3c

Echocardiogrephic measuremants of non chelated and chelated females

myocardial measurements	non chelated	chelatd	t-test	p.value
LA range mean ±SD	2-3.9 2.858 0.646	2-3.2 2.633 0.373	1.05	>0.05
AO range mean ±SD	1.8-2.4 2.033 0.202	1.8-2.3 1.933 0.156	1.36	>0.05
RV range mean ±SD	1.3-2 1.575 0.227	1.4-2 1.558 0.245	0.16	>0.05
PA range mean ± SD	1.5-2.6 2.075 0.374	1.3-2.5 2 0.357	0.5	>0.05
LVPW range mean ± SD	0.5-0.9 0.683 0.111	0.5-0.7 0.6 0.074	2.16	<0.05
IVS range mean ±SD	0.5-0.9 0.7 0.121	0.5-0.8 0.633 0.115	1.38	>0.05
LVEDD range mean ±SD	3.7-5.1 4.5 0.469	3.5-5.1 4.05 0.504	2.265	<0.05
LVESD range mean ±SD	2.5-3.5 2.967 0.339	2.2-3.2 2.517 0.327	3.31	<0.05

measurements in centimeter

Fig (2)

Mean Myocardial Measurements among chelated and non chelated Females

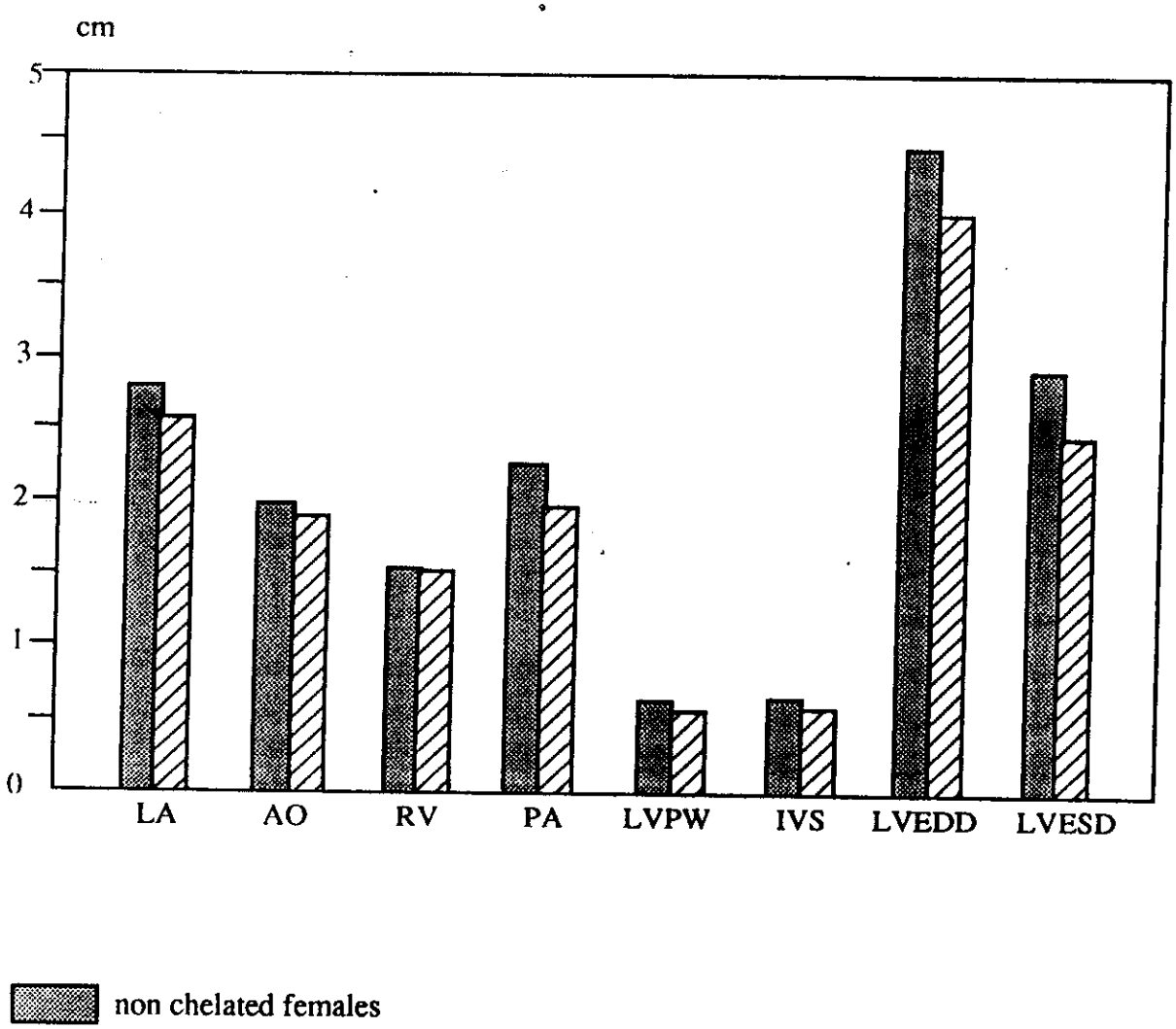

Table 4a and 4b

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Showed the left ventricular mass to height ratio in non chelated and chelated males ,

in non chelated meles n =12 the ratio was increased in all patient 100%, in chelated males (n=12) the ratio was increased in 91.68% of the patients .

Table 4c and fig.3

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Showed statistical analysis of range mean and SD of left ventricular mass to height ratio among non chelated and chelated males ,the ratio was significantly greater in non chelaled males than chelated males ($P < 0.05$).

Table 4a

Left ventricular mass to height ratio (Lvm/H) in non chelated males

cardiac measurement	number of petients	Range	mean	±SD
LVM/H	12	0.53-1.22	0.908	0.259

Table 4b

Left ventricular mass to height ratio (Lvm/H)in chelated males

cardiac measuremert	number of pettients	Range	mean	±SD
LVM/H	12	0.30-1.33	0.691	0.267

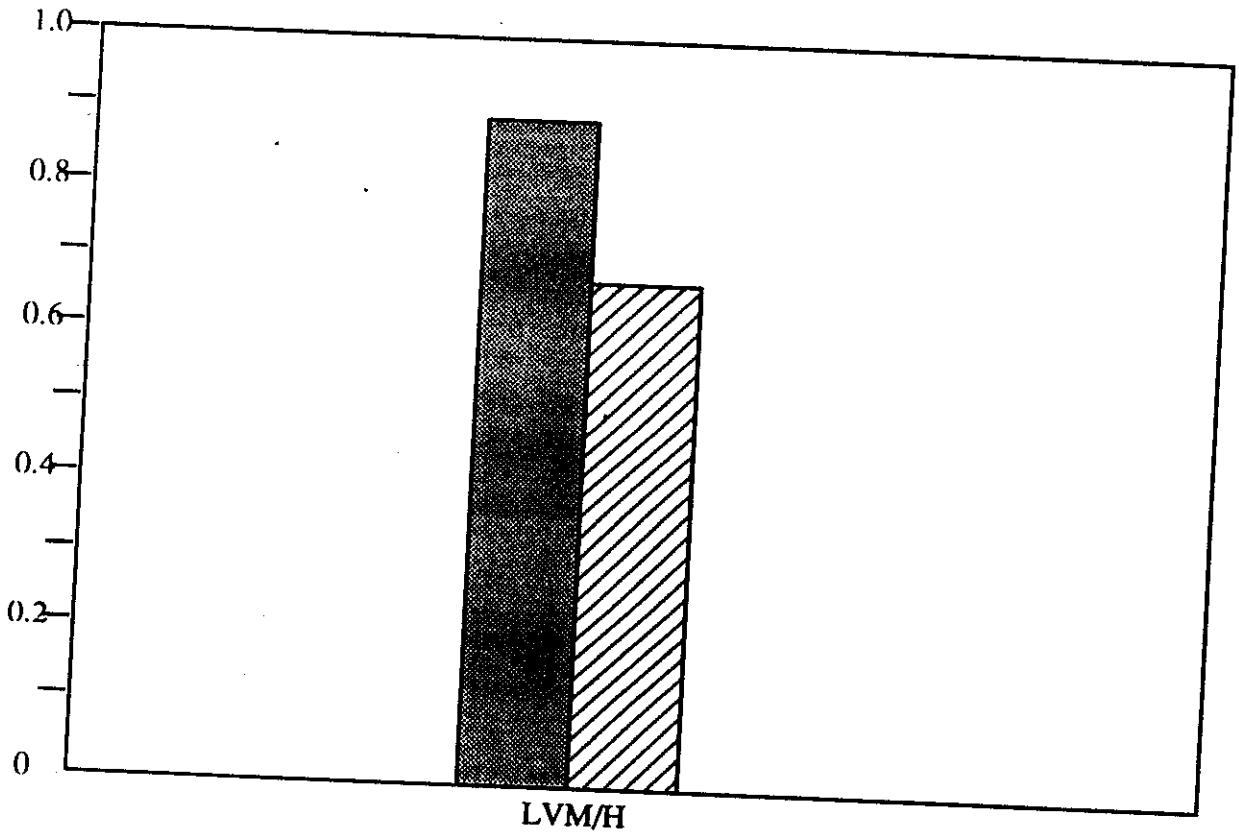
Table 4c

statistical analysis of left ventricular mass to heigh tratio among non chelated and chelated males

cardiac measurements	non chelated	chelated	t-test	p.value
LVM/H range mean ± SD	0.53-1.22 0.908 0.259	0.30-1.33 0.691 0.267	2.01	<0.05

Fig (3)

Mean left ventricular mass to height ratio (LVM/H) among non chelated and chelated males



Tables 5a and 5b

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Showed the left ventricular mass to height ratio in non chelated and chelated females .

In non chelated females (n=12) the ratio was increased in all patients 100% .

In chelated femeles the ratio was increased in all patients 100%

Table 5c and fig. 4

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Showed statistical analysis of range , mean and stander devietion of left ventricular mass to height ratio among non chelated and chelated females , the ratio was significantly greater in non chelated females than chelated females ($P < 0.05$).

Table 5a

Left ventricular mass to height ratio (LVM/H) in non chelated females

cardiac measuremert	number of pettients	Range	mean	±SD
LVM/H	12	0.57-1.38	0.864	0.233

Table 5b

Left ventricular mass to height ratio (LVM/H) in chelated females

Cardiac measurement	Number of patients	Range	Mean	±SD
LVM/H	12	0.33-0.95	0.588	0.198

Table 5c

statistical analysis of left ventricular mass to height ratio among non chelated and chelated females

cardiac measurements	non cheated	chelad	t-test	p.value
LVM/H range	0.57-1.38	0.33-0.95		
mean	0.864	0.572	3.119	<0.05
±SD	0.233	0.186		

Fig (4)

Mean left ventricular mass to height ratio (LVM/H) among non chelated and chelated females

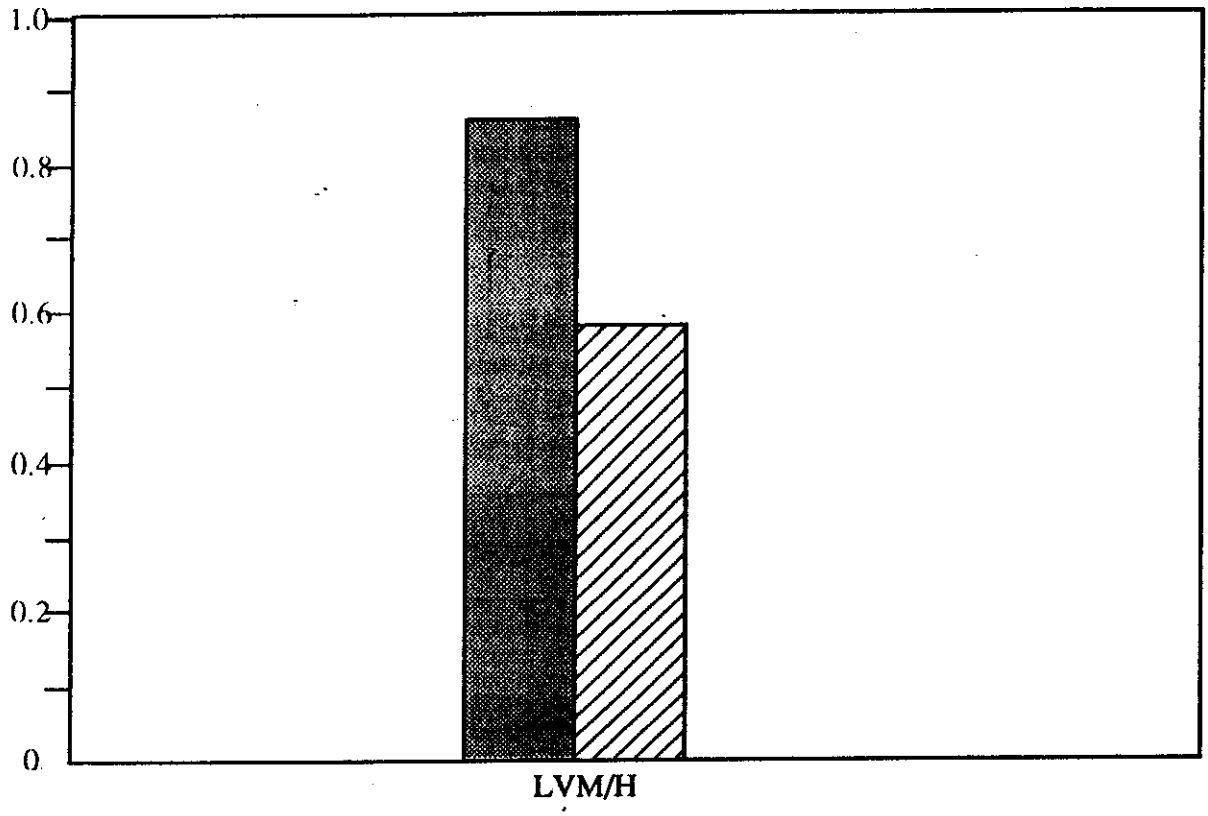

Table 6a and fig. 5

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Showed statistical analysis of EF % and FS among non chelated males (n=12) and chelated males (n=12)

The EF% and FS Were greater in chelated males than non chelated males but were not statistically significant P > 0. 05.

Table 6b and fig. 6

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Showed statistical analysis of EF% and FS among non chelated femeles (n=12) and chelated femeles (n=12) the EF% and FS Were greater in chelated females than non chelated femeles and it were significant P < 0.05 .

Table 6a

Statistical analysis of EF% and FS among non chelated and chelated males

myocardial measurement	non chelated	chelated	t- test	p.value
LVFS % range mean ±SD	39-78 68.583 10.492	70-81 74.417 3.423	0.183	>0.05
FS range mean ±SD	15-40 32.917 6.748	33-43 36.75 3.019	1.565	>0.05

Fig (5)

Mean cardiac function measurements among non chelated and chelated males

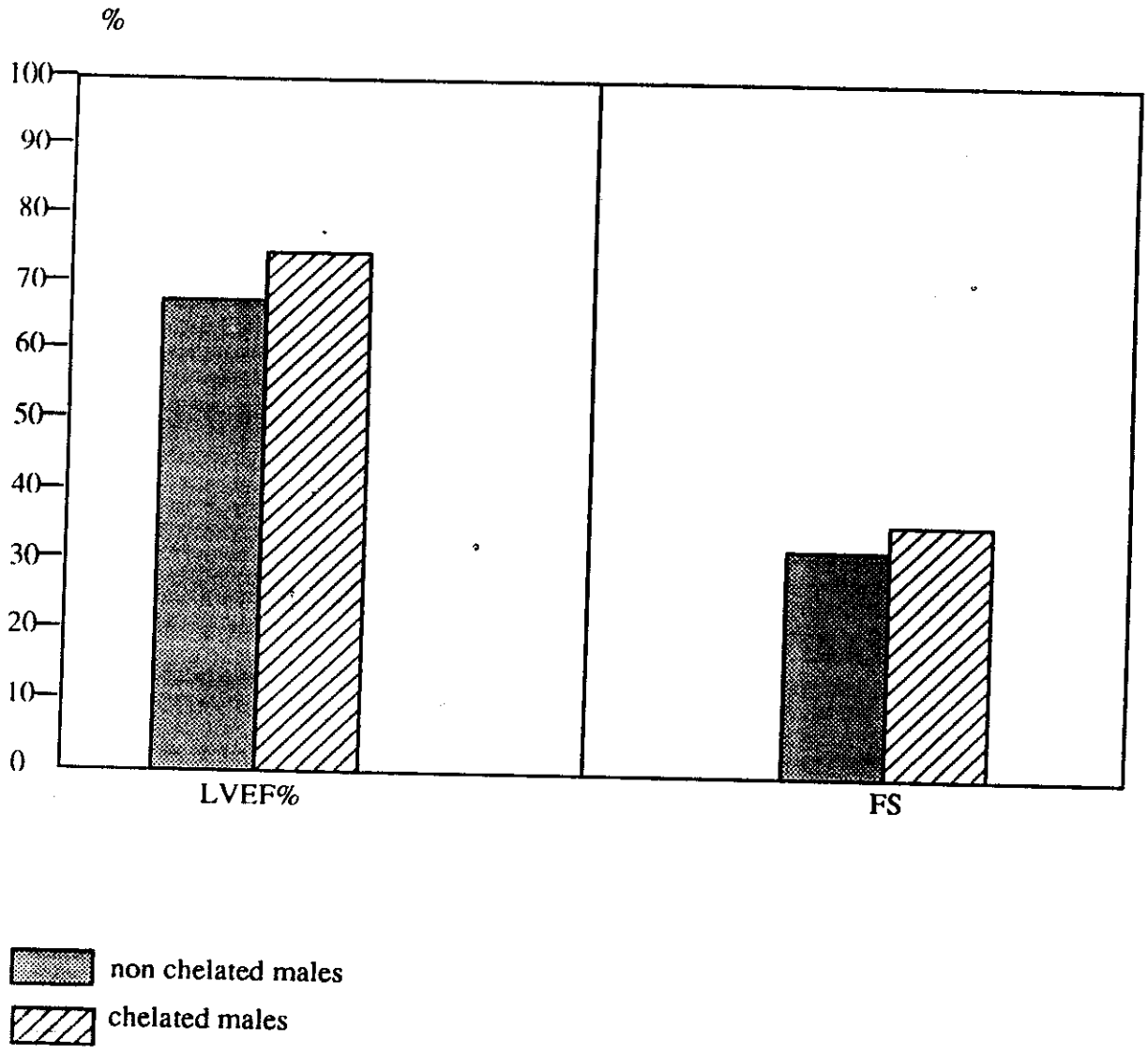

Table 6b

statistical analyses of EF % and FS among chelated and non chelated females

myocardial measurment	non chelated	chelated	t- test	p.value
LVEF % range	59-78	72-84	2.43	<0.05
mean	70.917	75.833		
±SD	5.775	3.996		
FS range	26-40	34-45	2.365	<0.05
mean	34.083	37.75		
±SD	4.166	3.388		

Fig (6)

Mean cardiac function measurements among non chelated and chelated females