RESULTS

I. Population characteristics:

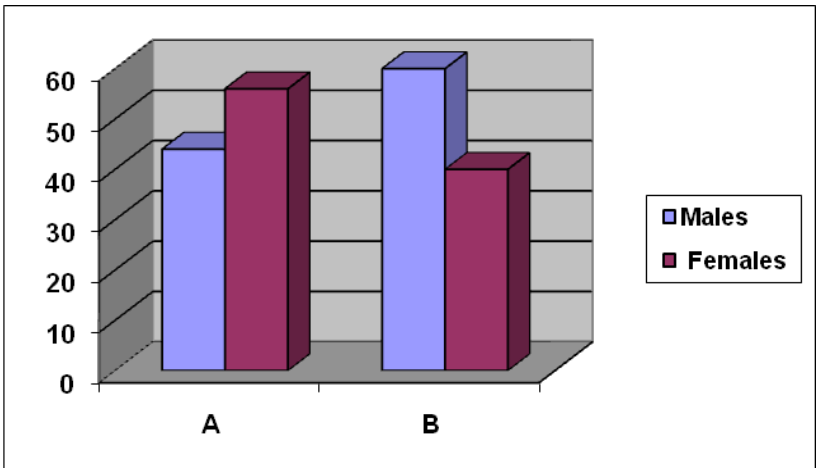
i. According to Gender :

(It is shown in table 1)

Group A included 11 males & 14female versus 15males &10 females in group B .The difference between the two groups was statistically non-significant p>0.05**.**it may be due to the random selection of the patients according to sex.

Table 1(population characteristics according to gender)

St. group	***Group A***		***Group B***		***total***		
sex	*%*	*No.*	*%*	*No.*	*%*	*no*	X^2 *1.28*
Males	*44*	*11*	*60*	*15*	*52*	*26*	
Females	*56*	*14*	*40*	*10*	*48*	*24*	*p>0.05*
Total	*100*	*25*	*100*	*25*	*100*	*50*	



Graph 1 (population characteristics according to gender)

ii. Age & duration of AF in selected patients

(It is shown in table 2)

1) **Age:**

The age ranged from 40 to 65 years with mean 49.8± 6.5 years in group A, it ranged from 38 to 60 years with mean age 49.5 ± 6.9years in group B.

There was non-significant difference between the two groups in mean age (t =0.16 .p>0.05)

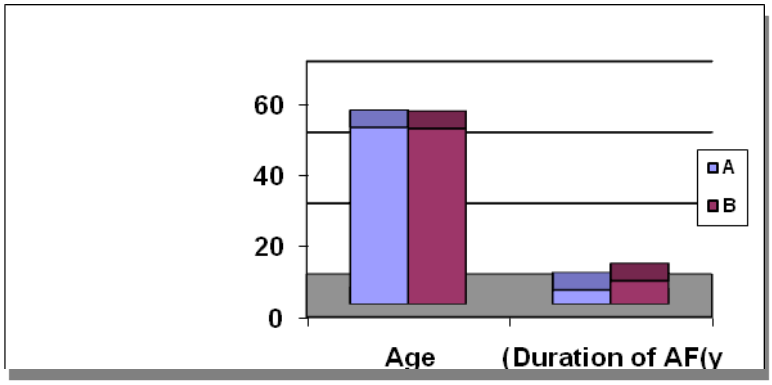
2) **Duration of AF:**

In group A, duration of AF ranged from2 to 6 years with mean duration 4.04±3.7 years, while in group B, AF duration ranged from 1 to 10 years with mean 6.6± 2.6years

There was highly significant difference between both groups regarding mean of AF duration (4.04±3.7years versus 6.6±2.6 years).p<0.01

Table 2(mean age & duration of AF among the study group)

	Group A N=25 $\bar{X}$±SD	***Group B N=25 $\bar{X}$±SD***	*t*	*p*
Age(years)	49.8±6.5	49.5±6.9	0.16	>0.05
Duration of AF(years)	4.04±3.7	6.6±2.6	22.83	<0.01



Graph 2(mean age & duration of AF among the study groups)

II. Grouping of patients according to different clinical criteria

- **Hypertension , DM, criteria of ventricular dysfunction *:***

- **Hypertension** (12% in group A v. 64% in group B), Also there was significant difference between the in presence of IHD, DM (0%, 8% V 100%&92%) respectively

- There were also 3 patients suffering from **DM** in group A versus5 patients in group B with p>0.05,but much difference were present between the 2 groups in comparing presence of pulmonary congestion signed as presence of bilateral basal crepitation with test of significance p<0.05

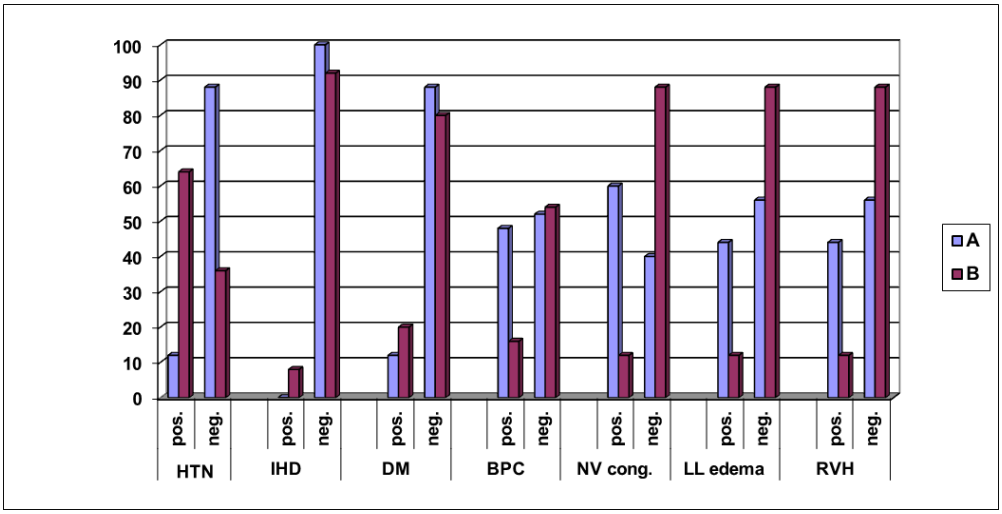
- Also, during comparing both groups in presence of neck venous (**N.V.) congestion**, it was noticed that 15 patient in group A having N.V. congestion versus 3 patients in group B with test of significance p<0.001.in comparison of both group in presence **LL. Edema**, it was noticed that 11patients in group A versus 3 patient having bilateral LL. Edema with test of significance p<0.05

- In comparing both groups regading **clinical RVH**, It was found

that 11 patients in group A having RVH versus 3 patients in group B, with test of significance $p<0.05$.

(**Table 3**) Distribution of different clinical criteria among the study groups

		Group A		**Group B**		Total		Test of
		%	No.	%	No.	%	No.	
HTN	+ve.	12	3	64	16	38	19	$X^2 = 12.22$
	-ve.	88	22	36	9	62	31	P<0.001
IHD	+ve.	0	0	8	2	4	2	X^2=0.52
	-ve.	100	25	92	23	46	48	P<0.05
DM	+ve.	12	3	20	5	16	8	X^2= 0.15
	-ve.	88	22	80	20	84	42	P< 0.05
BPC	+ve.	48	12	16	4	32	16	X^2= 4.05
	-ve.	52	13	54	21	68	34	p<0.05
NV cong.	+ve.	60	15	12	3	36	18	X^2=10.5
	-ve.	40	10	88	22	64	32	P<0.05
LL edema	+ve.	44	11	12	3	28	14	X^2=4.86
	-ve.	56	14	88	22	72	36	P<0.05
RVH	+ve.	44	11	12	3	28	14	X^2=4.86
	-ve.	56	14	88	22	72	36	P<0.05



(graph 3) Distribution of different clinical criteria among the study groups

III. Echocardiographic Results:

(As shown in table 4a & table 4b)

i. Left ventricular dimensions & functions:

The mean **LVEDD** was 50.4±4.2mm. in group A versus 50.6±5.6mm. in group B. the difference between the two groups was statistically non significant , p >0.05 .

The mean **LVESD** was 36.4±4.8 mm. in group A versus 36. 7±6.7 mm . in group B. the difference between the two groups was statistically non-significant, P> 0.05.

The mean of **FS %** in group A was 29+2.3 versus 27.9+4.4 in group B. The difference between the two groups was statistically non-significant, p>0.05.

The mean of **EF%** in group A was 64.8±6.1 versus 60.7±9.5 in group B. the difference between the two groups was statistically non significant

with p>0.05.

ii. Left ventricular wall thickness:

In group A, the mean of **IVSD** was11.2±1.7mm versus 11.5±2.4 in group B. The difference between the two groups was statistically non-significant with p>0.05

In group A, the mean of **PWD** was 9.6±2.1mm versus 10.9±2.2mm in group B. The difference between the two groups was statistically significant, p<0.05

iii. Right and left atrial diameters:

In group A, the mean of LAD was 59.2±8,1mm.Versus 50.5±6.3 mm. in group B .the difference between the two groups was statistically significant with P<0.05.

In group A, the mean of RAD was 42.2±7.6mm. versus 45.7±4.1mm in group B .the difference between the two groups was statistically significant , p<0.05.

iv. RVD & MPAP:

In group A, the mean of RVD was 25.9±6.7mm. versus 21.1±4.5mm. in group B. the difference between the two groups was statistically significant with p<0.05.

In group A, the mean of MPAP was 33.2±6.4mmHg versus 27.7±7.9mmHg in group B .The difference between the two groups was highly statistical significant with p<0.01.

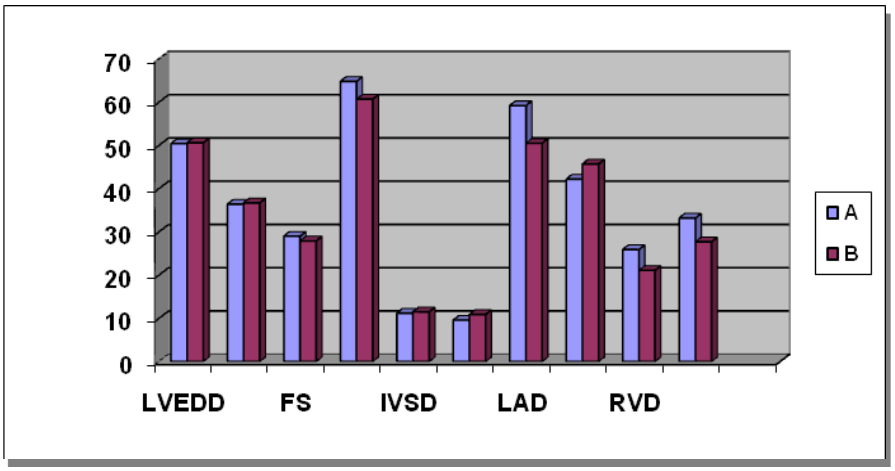
v. Presence of Valvular heart disease.

In group A, there was 8 patients with MR versus 6 patients in group B. the difference between the two groups was statistically non significant p>0.05.

In group A, there was 7 patients with TR versus 8 patients with TR in group B .the difference between the two groups was statistically non significant, p>0.05.

(Table 4a) Transthoracic echo variables

	Group A N=25 X± SD	**Group B N=25 X±SD**	**t.**	**p**
LVEDD(mm)	**50.4±4.2**	**50.6±5.6**	**0.14**	**>0.05**
LVESD(mm)	**36.4±4.8**	**36.7±6.7**	**0.18**	**>0.05**
FS(%)	**29±2.3**	**27.9±4.4**	**1.11**	**>0.05**
EF(%)	**64.8±6.1**	**60.7±9.5**	**1.82**	**>0.05**
IVSD(mm)	**11.2±1.7**	**11.5±2.4**	**0.51**	**>0.05**
PWD(mm)	**9.6±2.1**	**10.9±2.2**	**2.14**	**<0.05**
LAD(mm)	**59.2±8.1**	**50.5±6.3**	**4.24**	**<0.05**
RAD(mm)	**42.2±7.6**	**45.7±4.1**	**2.03**	**<0.05**
RVD(mm)	**25.9±6.7**	**21.1±4.5**	**2.97**	**<0.05**
MPAP(mmHg)	**33.2±6.4**	**27.7±7.9**	**2.71**	**<0.01**



(Graph 4a) Transthoracic echo variables

vi. Presence of RWMA between both groups

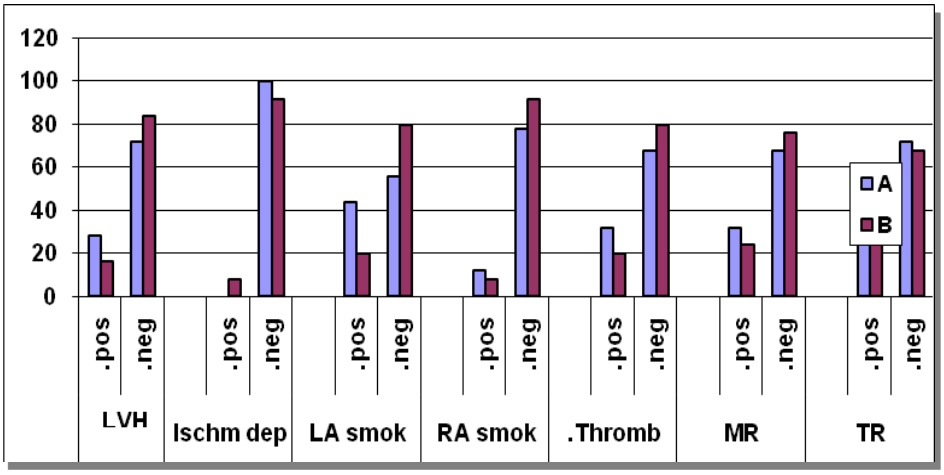
In group A, there was no patients with **RWMA** versus 2patients in group B .The difference between the two groups was statistically non significant with p>0.05.

vii. Presence of criteria of LVH

In group A, there was **criteria of LVH** in 7 patients versus 4 patients in group B. the difference between the two groups was statistically non significant with p>0.05.

(Table 4b) Echo variables in group A& B

		Group A		*Group B*		**Test of significance**
		%	*NO.*	*%*	*NO.*	
LVH	+ve.	28	7	16	4	P>0.05
	-ve.	72	18	84	21	x2=0.47
RWMA	+ve.	0	0	8	2	p>0.05
	-ve.	100	25	92	23	x2=0.52
LA smoke	+ve.	44	11	20	5	p>0.05
	-ve.	56	14	80	20	x2=.2.3
RA smoke	+ve.	12	6	8	2	p>0.05
	-ve.	78	19	92	23	x2=1.34
Thrombi	+ve.	32	8	20	5	p>0.05
	-ve.	68	17	80	20	x2=0.42
MR	+ve.	32	8	24	6	p>0.05
	-ve.	68	17	76	19	x2=0.099
TR	+ve.	28	7	32	8	p>0.095
	-ve.	72	18	68	17	x2=0.095



(Graph 4b) Echo variables in both groups

IV. TEE Evaluation Of Both Atria

1. Presence of atrial thrombi, smoke &spontaneous echo contrast :

(As shown in table 4b, table 5&table 6)

During detection of presence of **atrial thrombi &SEC** using TTE, it was noticed that 8 patients had thrombi in their atria in group A versus 5 patients in group B with test of significance p>0.05.

On the other hand, Group A showed presence of **LA smoke** in11patients versus 5 patients in group B .The difference between the two groups was statistically non significant with p>0.05.

Almost the same difference was noticed in comparing both groups for the presence of **RA smoke** as 6 patients in group A showed smoke versus 2 patients in group B. the difference between the two groups was statistically non significant with p>0.05.

2. Atrial diameters by TEE

The mean of **LAD** was 63.8±10.6mm in group A versus 52.8±6.2mm in group B. the difference between the two groups

was statistically highly significant with $p<0.001$.

but, in comparison of **RAD** between both groups, in group A, the mean of RAD 45.9 $\pm$7.6mm versus 49$\pm$4.7 mm in group B .the difference between the two groups was statistically non significant with $p> 0.05$.

3. LA appendage area & RA appendage area

The mean of **LAA area** in group A was 0.8$\pm$0.3mm^2 in group A versus 0.7$\pm$0.2mm^2 in group B. the difference between the two groups was statistically non significant with $p>0.05$.

On the other hand , **RAA area** 0.5$\pm$0.1mm^2 in group A versus 0.68$\pm$0.1mm^2 in group B .the difference between the two groups was highly significant, with $p<0.001$.

4. LAA , RAA functions

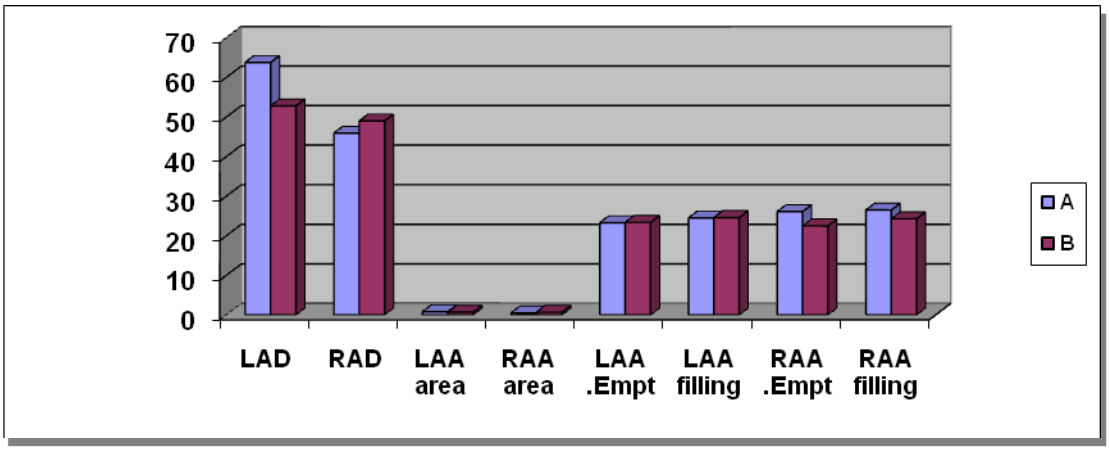
Almost no difference between the 2 groups was noticed in comparison of **LAA functions (emptying velocity& filling velocity)** (23.3$\pm$4.3 &24.5$\pm$5.9cm/s. in group A versus 23.4$\pm$3.1&24.6$\pm$4.4.6cm/s in group B) .the difference between the two groups was statistically non-non significant with $p>0.05$

On the other hand, in comparing RAA functions,

It was found **RAA functions (emptying velocity& filling velocity)** was (26.1+4.8cm/s.&26.5+5.1cm/s.) In group A versus (22.5+3.1cm/s&24.3+3.6cm/s) in group B, respectively. The difference between the two groups was highly significant in RAA emptying velocity with $p<0.01$, while , it was statistically non significant in RAA filling velocity with $p>0.05$.

Table5 Trans-esophageal echo variables among the study groups

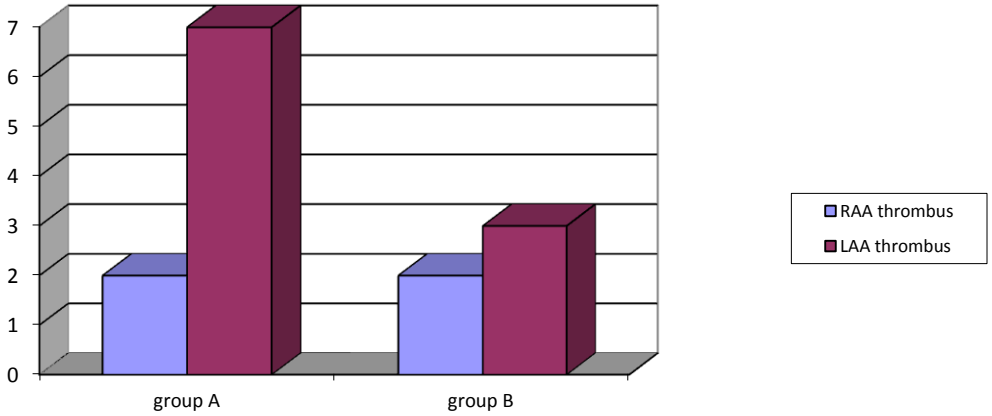
	Group A N=25 X^- +SD	Group B N=25 X^-+SD	t	p
LAD(mm)	63.8±10.6	52.8±6.2	4.48	<0.001
RAD(mm)	45.9±7.6	49±4.7	1.73	>0.05
LAA area(mm^2)	0.8±0.3	0.7±0.2	1.39	>0.05
RAA area(mm^2)	0.5±0.1	0.68±0.1	6.36	<0.001
LAA Emptying.(cm/s.)	23.3±4.3	23.4±3.1	0.09	>0.05
LAA filling(cm/s)	24.5±5.9	24.6±4.7	0.07	>0.05
RAA Emptying (cm/s)	26.1±4.8	22.5±3.1	3.15	<0.01
RAA filling (cm/s)	26.5±5.1	24.3±3.6	1.76	>0.05



(Graph 5) Trans-esophageal echo variables among the study groups

Table (6) Thrombi in RAA and LAA among the study groups

St. group / Thrombus	A N=25 No	%	B N=25 No	%	Z	P
RAA	**2**	**8.0**	**2**	**8.0**	**-**	**-**
LAA	**7**	**28.0**	**3**	**12.0**	**1.2**	**>0.05**
total	**9**	**36.0**	**5**	**20.0**	**1.07**	**>0.05**



(Graph 6) Thrombi in RAA and LAA among the study groups

5. Relation of pulmonary artery pressure according to RAA &LAA thrombus among both groups of the study:

(As shown in table 7)

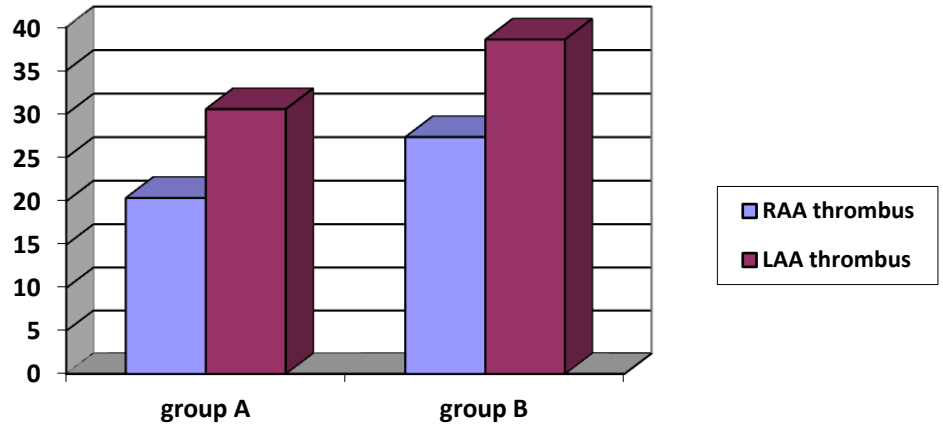
During comparison of PAP in both groups of the study selectively having thrombi in atrial appendages, it was noticed that:

- The mean PAP is slightly higher in group A having RAA thrombi than that in group B (34.5±9.2mmHg.versus 31.5±7.7mmHg.) that was statistically non- significant , p>0.05.

- The mean PAP also was slightly higher in group A having LAA thrombi than that in group B (32.8±4.9mmHg. versus 31.7±9.5mmHg)**.** p>0.05.
- Also, in group A, with comparison of mean PAP in patient having RAA, it was slightly higher than the mean of PAP in patients having LAA thrombi in the same group (34±9.2 versus 32±4.9), but the difference did not reach statistical significance, p>0.05.
- In group B, the same comparison showed that no significant difference in mean PAP in patients those having RAA& LAA thrombi in the same group, p>0.05

Table (7) Pulmonary hypertension versus presence of RAA and LAA thrombi among the study groups

St. group / Thrombus	A X±SD N=25	B X±SD N=25	t	P
Rt AA	**34.5±9.2**	**31.5±7.7**	**0.35**	**>0.05**
Lt AA	**32.8±4.9**	**31.7±9.5**	**0.19**	**>0.05**
t	**0.25**	**0.03**		
P	**>0.05**	**>0.05**		



(Graph 7) Pulmonary hypertension versus presence of RAA and LAA thrmbi among the study groups

6. Mean PAP in both groups according to presence of atrial appendage thrombi

(As shown in table 8)

During comparison of both groups , it was noticed that mean PAP in patients having atrial appendages thrombi in group A is higher than those having atrial appendage thrombi in group B , but this didn't reach statistical significance , $p<0.05$

But, there is highly significant difference in mean of PAP between both groups (33 ± 7.1 mmHg. in group A versus 26.7 ± 7.8mmHg in group B), $p< 0.01$.

Table (8) Pulmonary hypertension versus thrombus detection among the study groups

St. group / Thrombus	Group A X±SD N=25	Group B X±SD N=25	t	P
+ ve	(n=9) 33.2±5.4	(n=5)31.6±7.7	0.41	>0.05
- Ve	(n=16) 33.6±7.1	(n=20)26.7±7.8	2.77	<0.01

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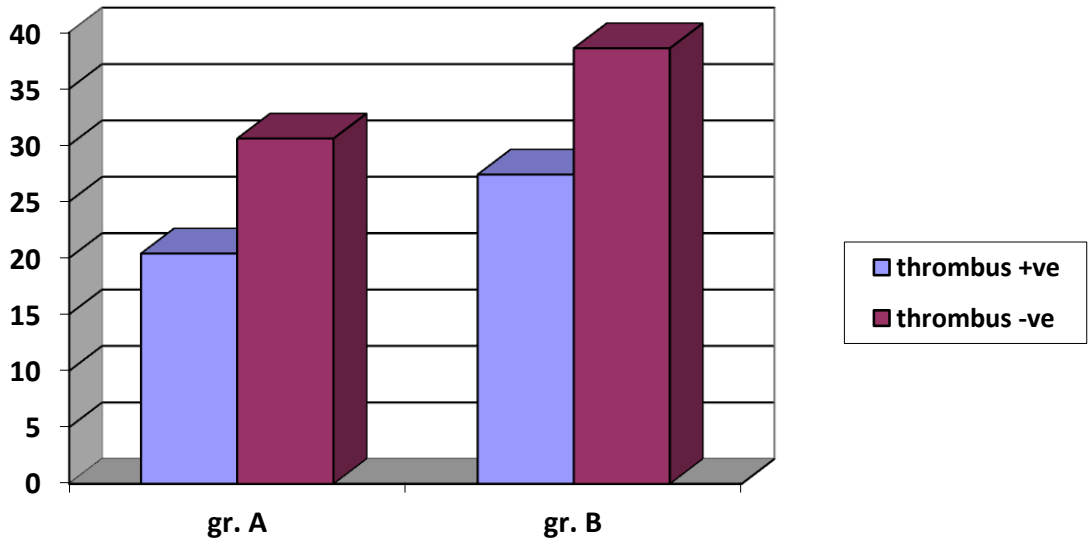
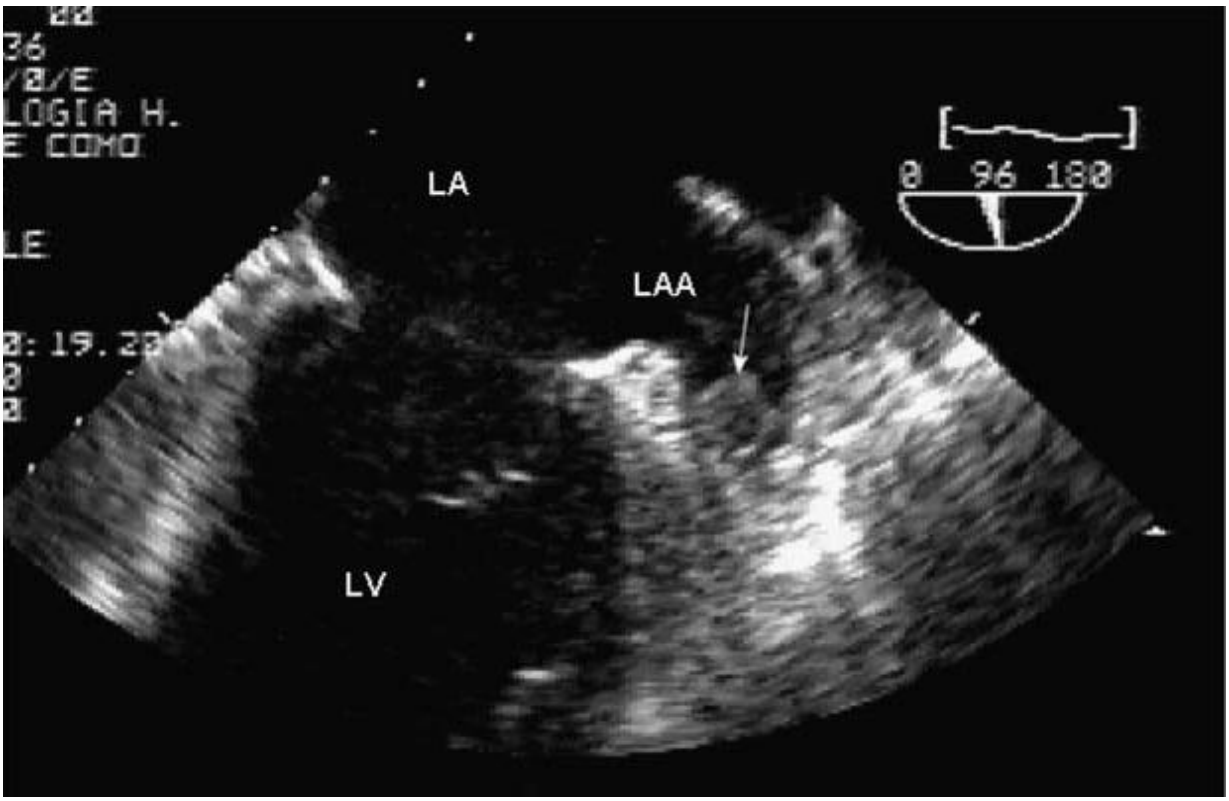


(Graph 8) Pulmonary hypertension versus thrombus among the study groups

Case Demonstration

Case no.9 in group B,

History: 44y.old female, hypertensive, not diabetic with 6 years history of chronic AF

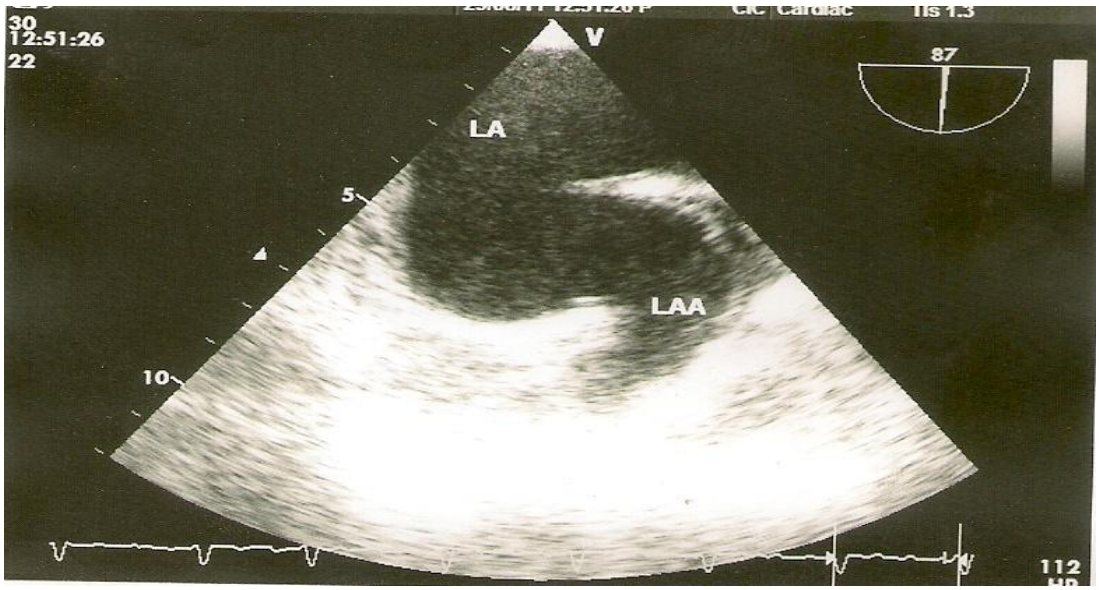


(Figure 6) Shows a thrombus within the left atrial appendage (white arrow) in a patient with chronic AF, not
anticoagulated. LA: left atrium; LAA: left atrial appendage; LV: left ventricle.

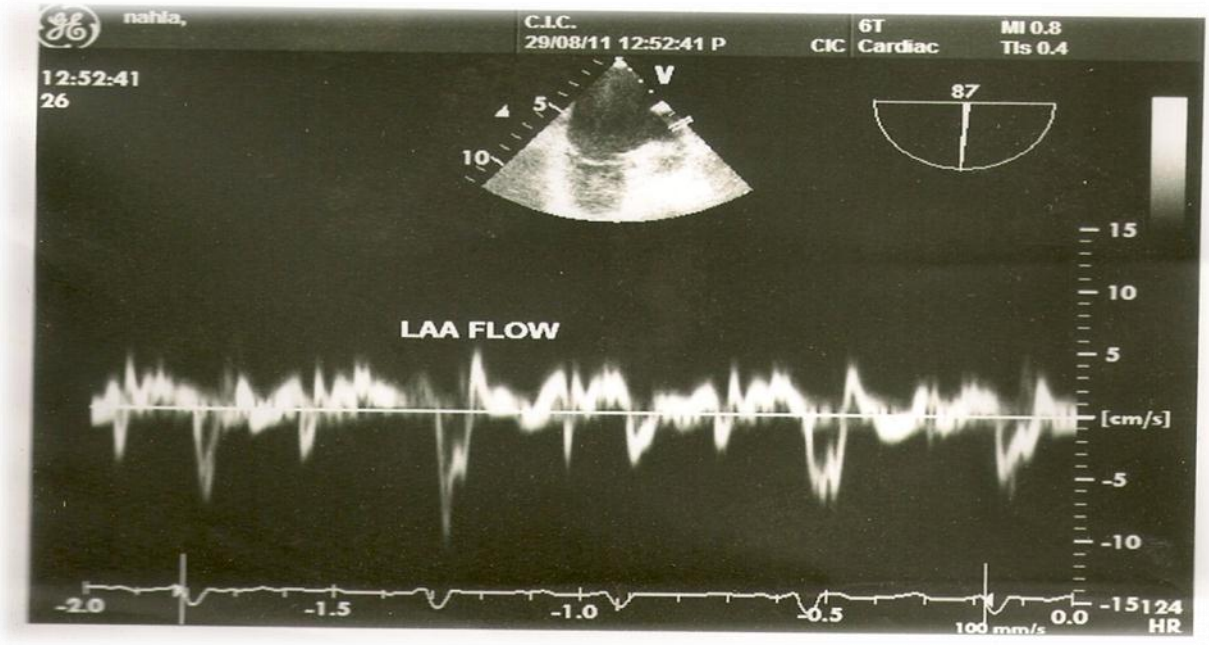
Case Demonstration

Case no15 in group A,

History :female patient 56y.old with 3.5 y with history of tight mitral stenosis &ch.AF of 3.5y duration.



(Figure 7) showing the left atrium and LAA: the examination shows small LAA thrombus and SEC filling the whole LA and it is extending up to the left ventricle.

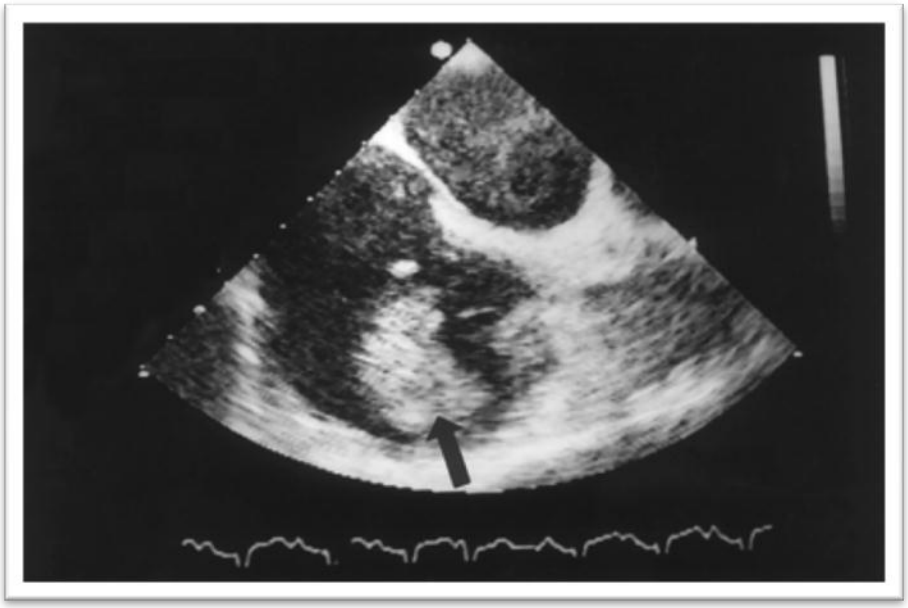


(Figure 8) The same patient, Pulsed wave Doppler on LAA showing slow flow & depressed atrial appendage function.

Case Demonstration

CASE No. 17. Group A

History : 61y. old female with mitral valve disease and 1.5 years chronic AF

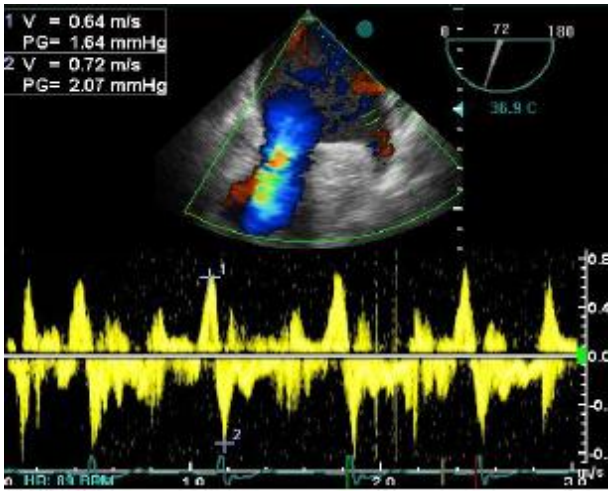


(figure9)RAA thrombus:TEE in vertical (90o) imaging plane demonstrating a 3.5-cm thrombus (black arrow) extending from right atrial appendage into body of right atrium.

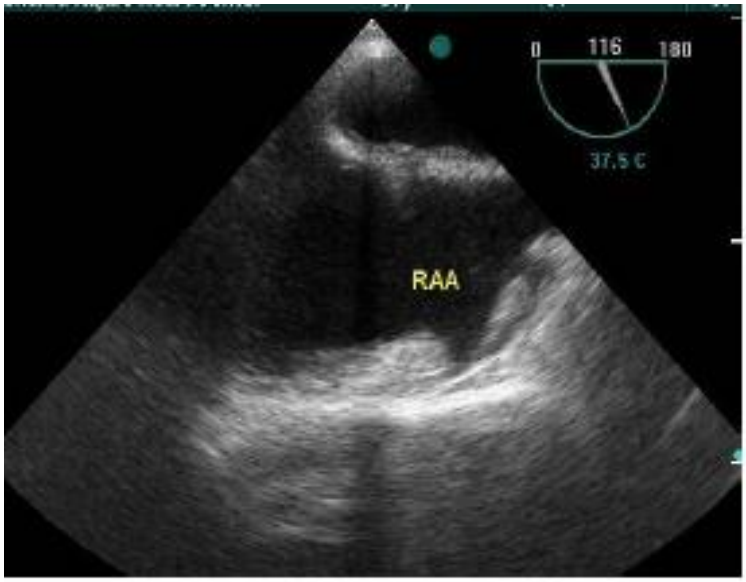
Case Demonstration

A case study of a patient of chronic atrial fibrillation demonestrating flow velocities of both atrial appendages using pulsed wave doppler

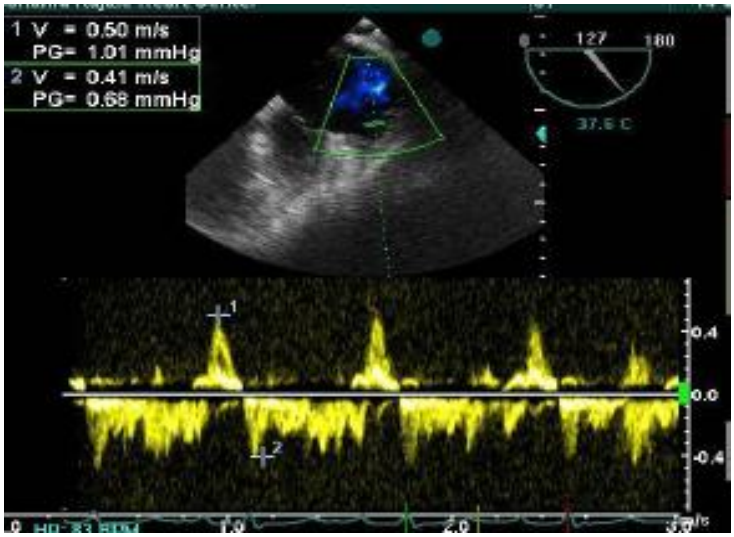
(**Figure 10**)Transesophageal echocardiography of left atrial appendage (LAA) at 70 degrees



(**Figure 11**)Transesophageal echocardiography of left atrial appendage (LAA) at 70 degrees Pulsed Doppler LAA flow profile demonstrating LAA velocities.



(Figure12) Transesophageal echocardiography of right atrial appendage (RAA) at 120 degrees



(Figure 13) Transesophageal echocardiography of right atrial appendage (RAA) at 120 degrees**,** Pulsed Doppler RAA flow profile demonstrating RAA velocities.