RESULTS

Demographic data:

We included in this study 30 patients presenting to Benha university hospital and Benha educational hospital with TIA, they were 21 males and 9 females. 17 of them were at age ranging between 60-75 years with mean 68 and standard deviation 3.65 and of 13 them were at age ranging between 50-59 with mean 55.3 and standard deviation 2.92 .

Among these patient, the most prevalent risk factor was hypertension, being present in 21 of our patients

this was followed by smoking as was present in 13 patients, then diabetes mellitus as was present in 11 patients, while coronary hear disease was found in 7 patients.

The prevalence of different risk factors tabulated (table 1-2)and relation to different degrees of carotid stenosis is studied and tabulated. (table 8-9)

Clinical data:

17 patients in this study had transient weakness of muscle power in one limb only while 10 had transient weakness in both upper and lower limbs in one side and the rest of patient had transient weakness in both upper and lower limbs in one side and transient dysphasia.

Duplex Doppler results:

The carotid vessels of the control cases were examined to reveal the normal carotid intimal thickness (mean was 0.27 mm with standard deviation 0.15) and the normal cardinal Doppler parameters (table 14)

All patients in this study were having different degrees of carotid stenosis 19 of them had mild stenosis with mean 25.5%

and standard deviation 6.04 while 6 had moderate stenosis with mean 48.4 %and standard deviation 5.79 and 4 had severe stenosis with mean 76% and standard deviation 8.22. and one patient had complete right carotid occlusion (table 3).

The location of the plaques within the carotid arteries were studied and tabulated (table 4)

Examination of the carotid intimal thickness in our patients revealed that 4/19 of the patients with mild stenosis showing intimal thickness with mean 1.075 mm and standard deviation .095, and 4/6 of the patients with moderate stenosis showing intimal thickness with mean 1.12 mm and standard deviation .082 , and 3/4 of the patients with severe stenosis showing intimal thickness with mean 1.14 mm and standard deviation .097.

The relation of carotid intimal thickening and the severity of the stenosis were studied and tabulated (table 10)

The plaque morphology were studied and tabulated (table 5-7) and its relation to different degrees of carotid stenosis were studied and tabulated (table 11-13)

The cardinal Doppler parameters measured in all patients (table 14)

Table (1) the age and the sex of the examined patients:

AGE GROUP	> 60		< 60		TOTAL
	NO	%	NO	%	
Male	12	57%	9	43%	21
Female	5	55%	4	45%	9

Male patients are more affected than females and patient above age of 60 are more affected than blow this age.

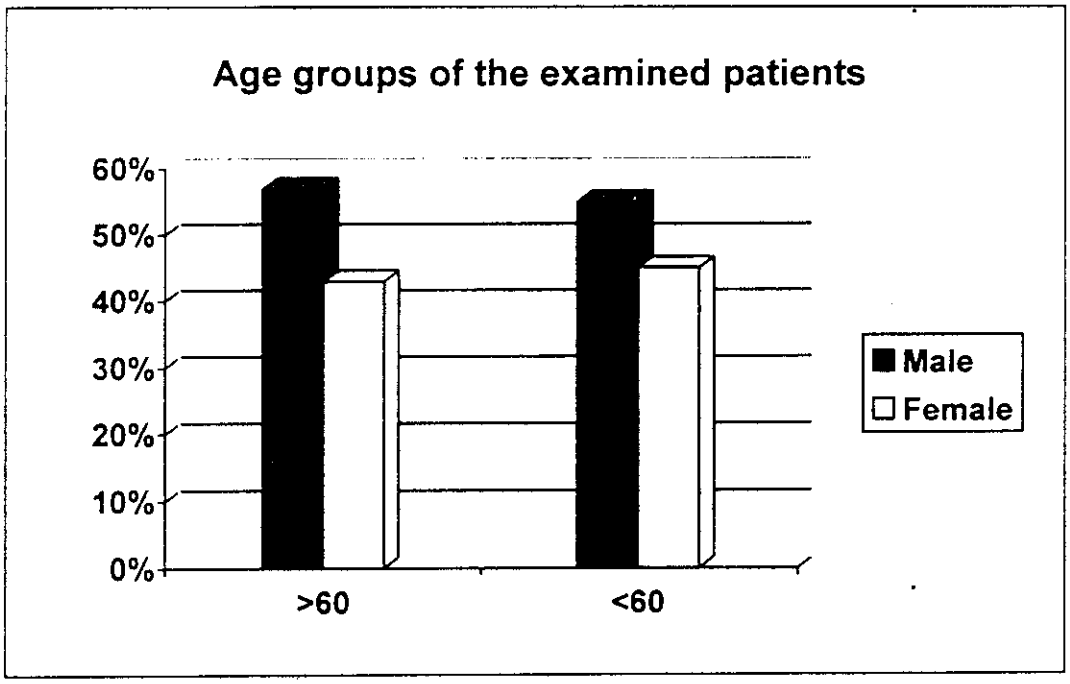
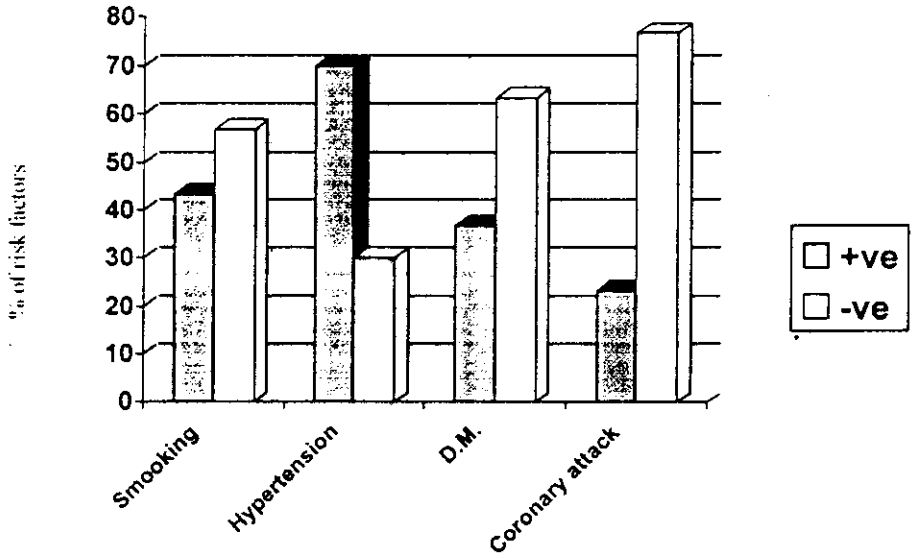


Table (2) the incidence of risk factors for atherosclerosis among the examined patients:

RISK FACTOR	PRESENT		ABSENT	
	NO	%	NO	%
Smoking	13	43.3%	17	56.7%
Hypertension	21	70%	9	30%
D.M.	11	36.6%	19	63.4%
Coronary attack	7	23.3%	23	76.7%

Hypertension is the most frequent risk factor among the patients.



Bar graph 2 incidence of risk factors

Table (3) the number of affected carotid arteries with different degree of stenosis:

DEGREE OF STENOSIS	NO	%
Mild	19	63.3%
Moderate	6	20%
Severe	4	13.4%
Occlusion	1	3.3%

Most of the patients having non significant carotid stenosis.

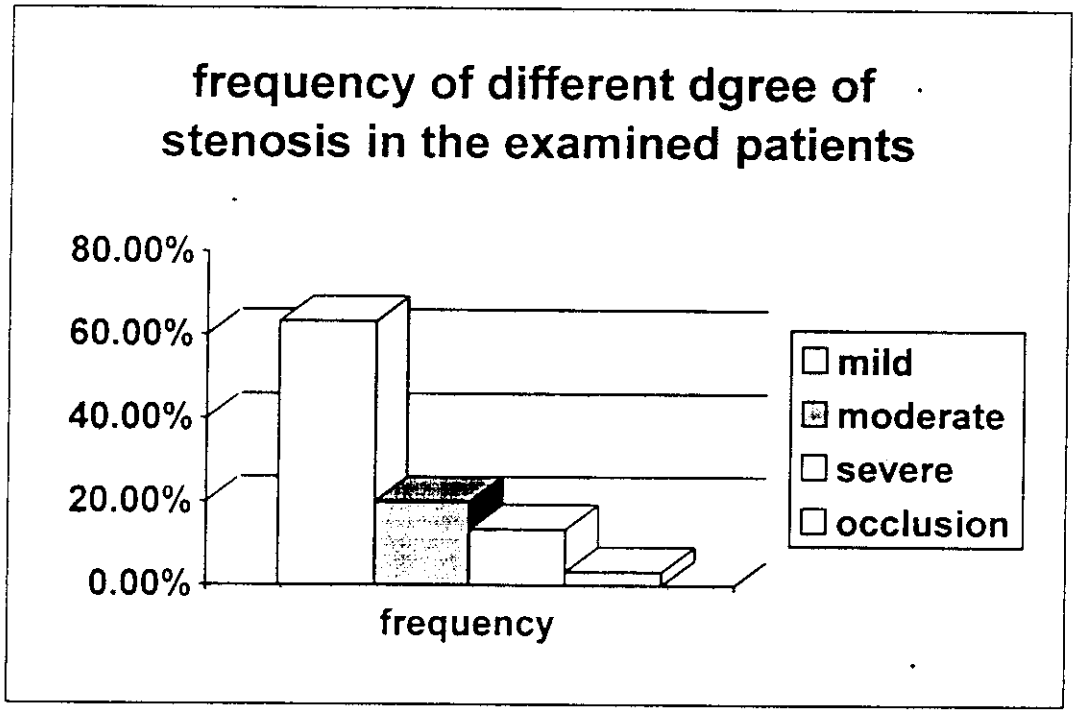


Table (4) the location of the plaque in carotid vessels:

SITE OF PLAQUE	NO	%
Bifurcation	11	36.6%
Bifurcation and ICA	8	26.6%
ICA alone	7	24.4%
CCA	4	13.4%

Bifurcation is the commonest site for plaque formation.

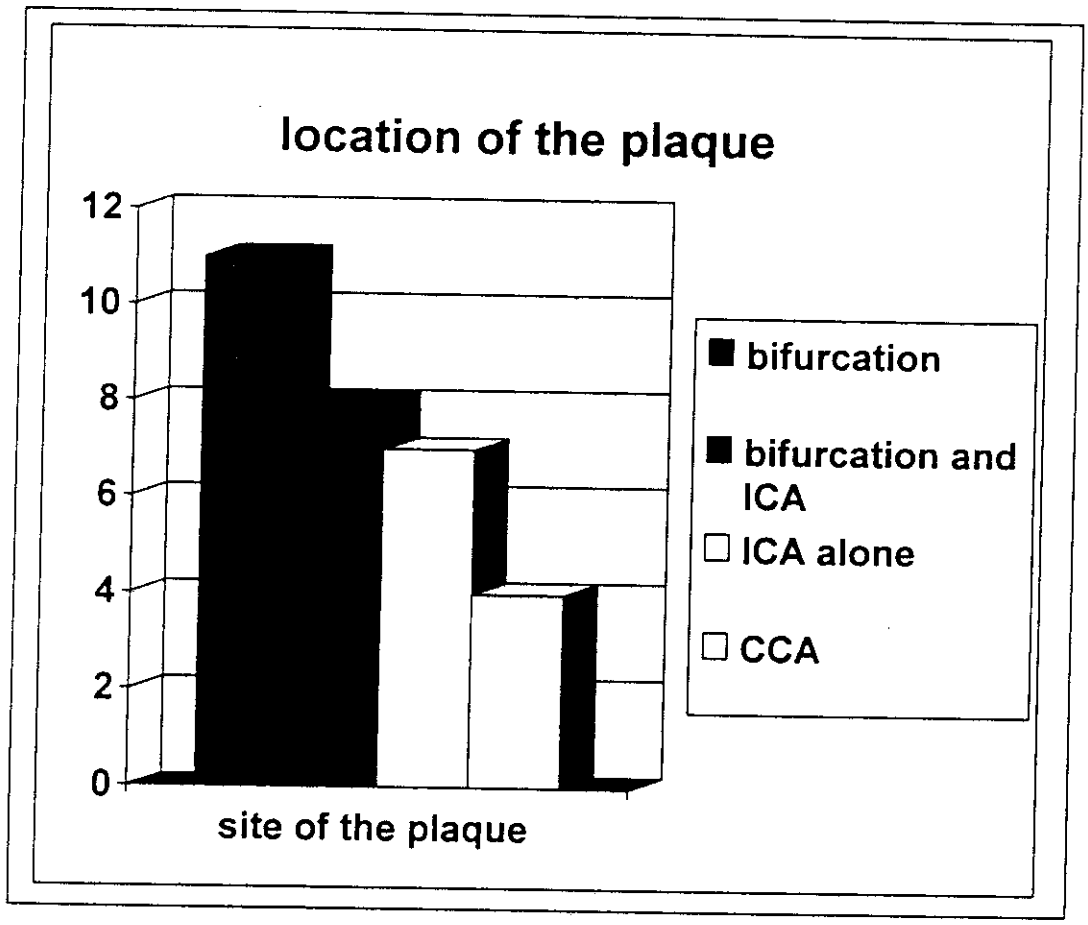


Table (5) the plaque characters:

PLAQUE HOMOGENICITY	NO	%
Homogeneous	8	26.6%
Heterogeneous	22	73.4%

Most of the plaques are heterogeneous.

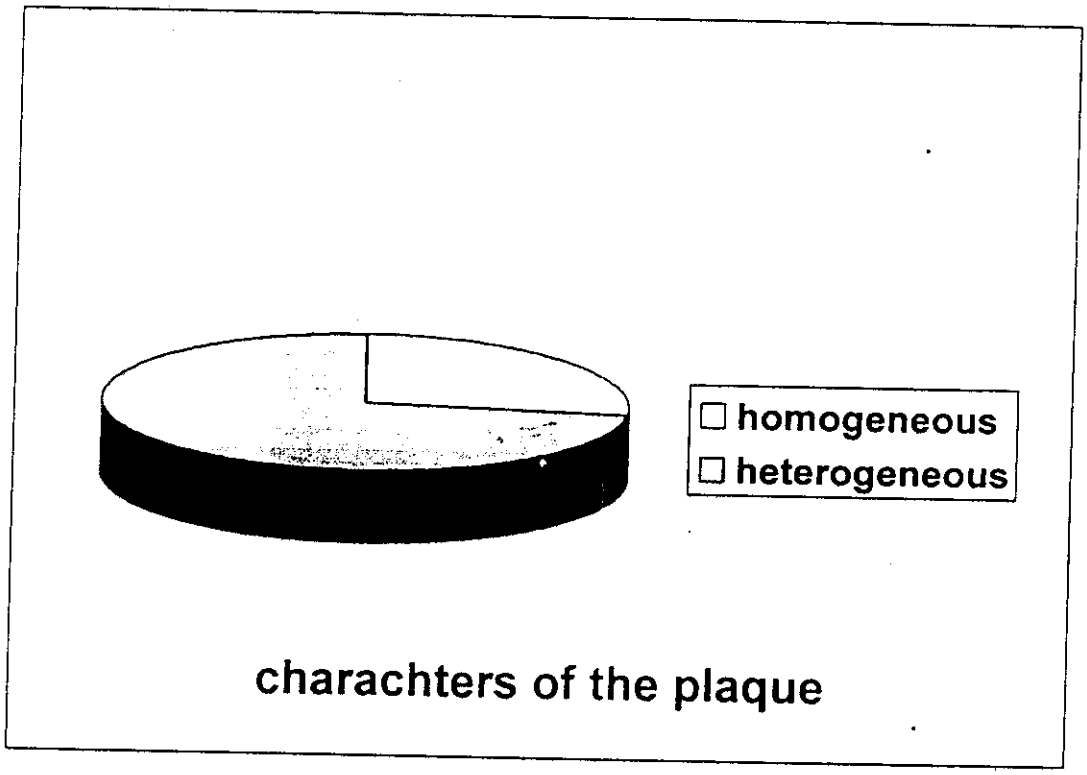


Table (6) the plaque surface:

PLAQUE SURFACE	NO	%
Smooth	12	40%
Irregular	18	60%

Most of the plaques having irregular surface.

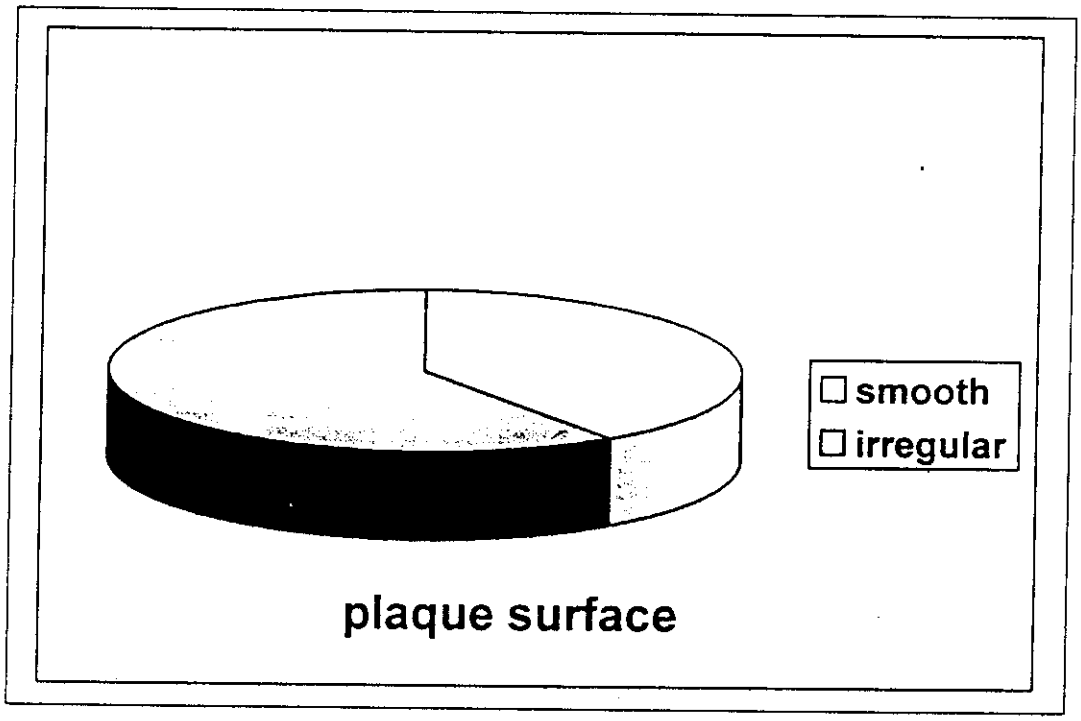


Table (7) the plaque echogenicity:

PLAQUE ECHOGENICITY	NO	%
Hyperechoic	20	66.6%
Isoechoic	4	13.4%
Hypoechoic	6	20%

Most of the plaques are Hyperechoic.

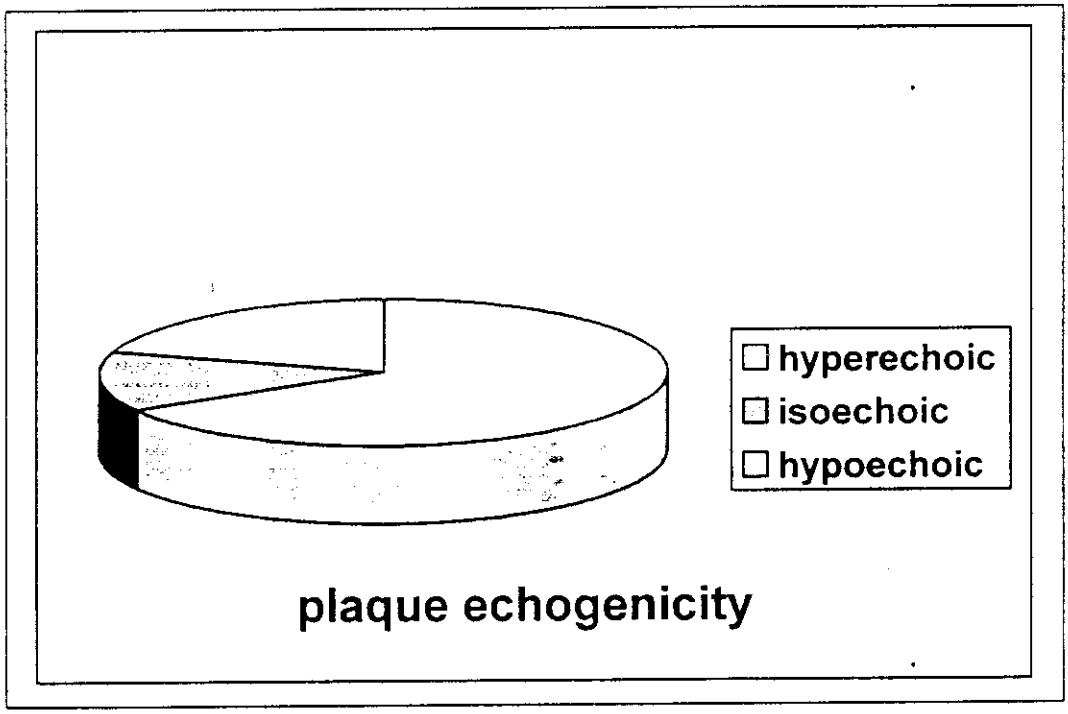


Table (8) the relation between patient age and the degree of carotid stenosis:

LESION SEVERITY	>60 YEARS OLD	<60 YEARS OLD
Mild	36.8%	63.2%
Moderate	66.6%	33.4%
Severe	75%	25%
Occlusion	100%	0%

$Chi^2 = 28.73$ P value < 0.001 (highly significant)

Most of severely stenotic lesions occur in old age above 60.

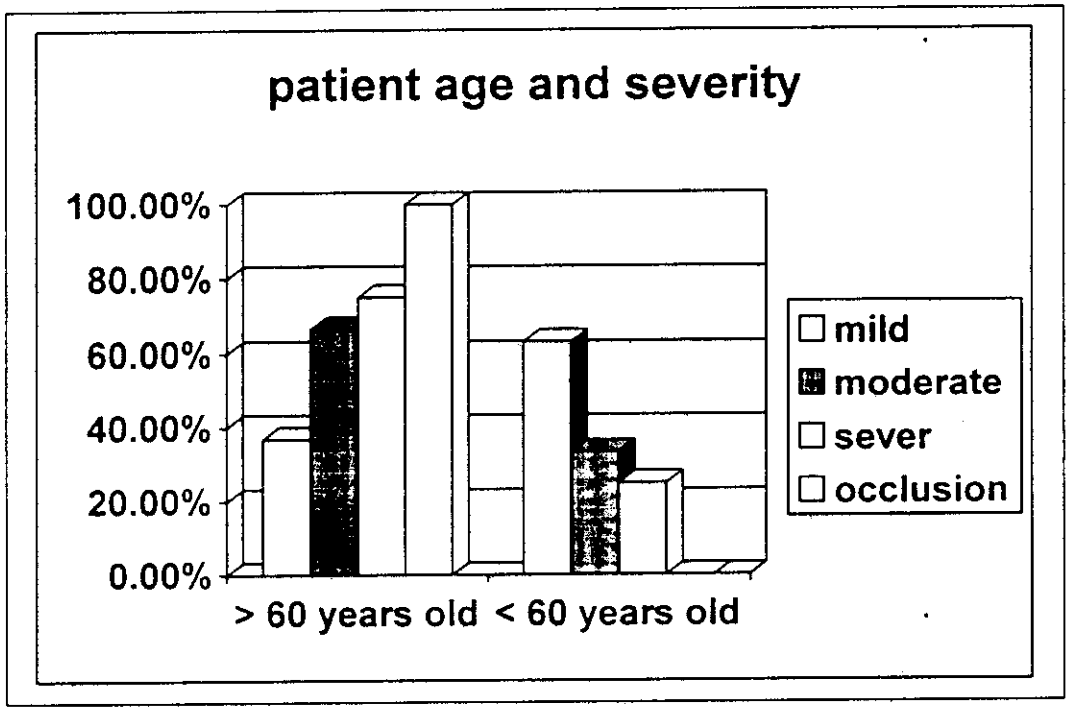


Table (9) the relation between smoking and hypertension and degree of carotid stenosis:

LESION SEVERITY	SMOOKING	HYPERTENSION	D.M.
Mild	31.5%	68.5%	31.5%
Moderate	50%	50%	50%
Severe	75%	75%	50%
+ Occlusion	100%	100%	0%

$Chi^2 = 5.36$ P value = 0.252

Occlusion is not included in the analysis

Most of severely stenotic lesions were hypertensive and smokers.

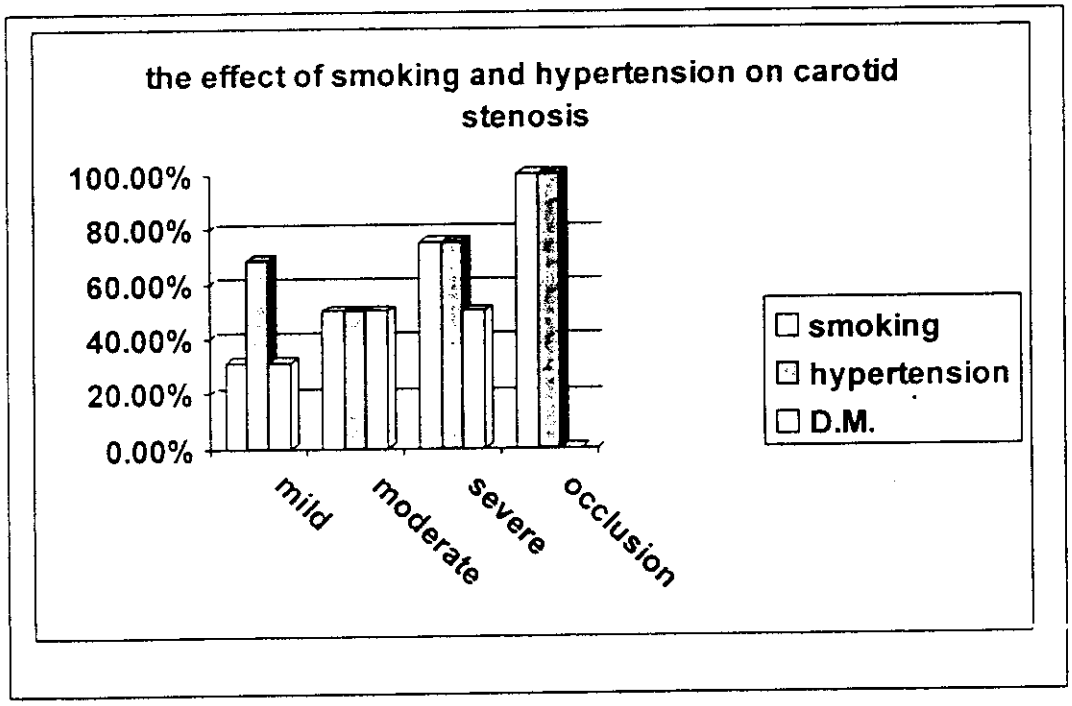


Table (10) the relation between wall thickness and severity of stenosis:

DGREE OF STENOSIS	NO of affected carotids	NO of patients with Thickened wall
Mild	19	4 (21%)
Moderate	6	4 (66%)
Severe	4	3 (75%)

$Chi^2 = 15.73$ P value < 0.001 (highly significant)

Most of severely stenotic lesions have increased wall thickness.

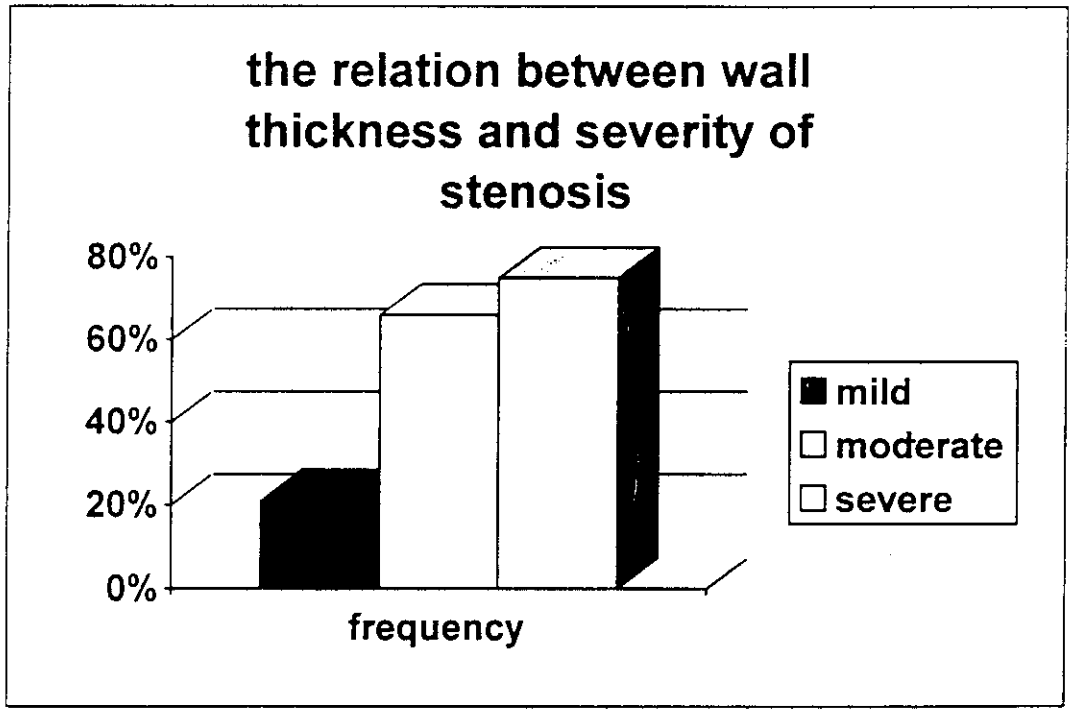


Table (11) the relation between plaque echogenicity and severity of stenosis:

DEGREE OF STENOSIS	HYPOECHOIC	ISOECHOIC	HYPERECHOIC
Mild	5%	10%	85%
Moderate	16%	16%	68%
Severe	75%	25%	0%
Occlusion	100%	0%	0%

$Chi^2 = 56.58$ P value < 0.001 (highly significant)

Most of severely stenotic lesions were hypoechoic.

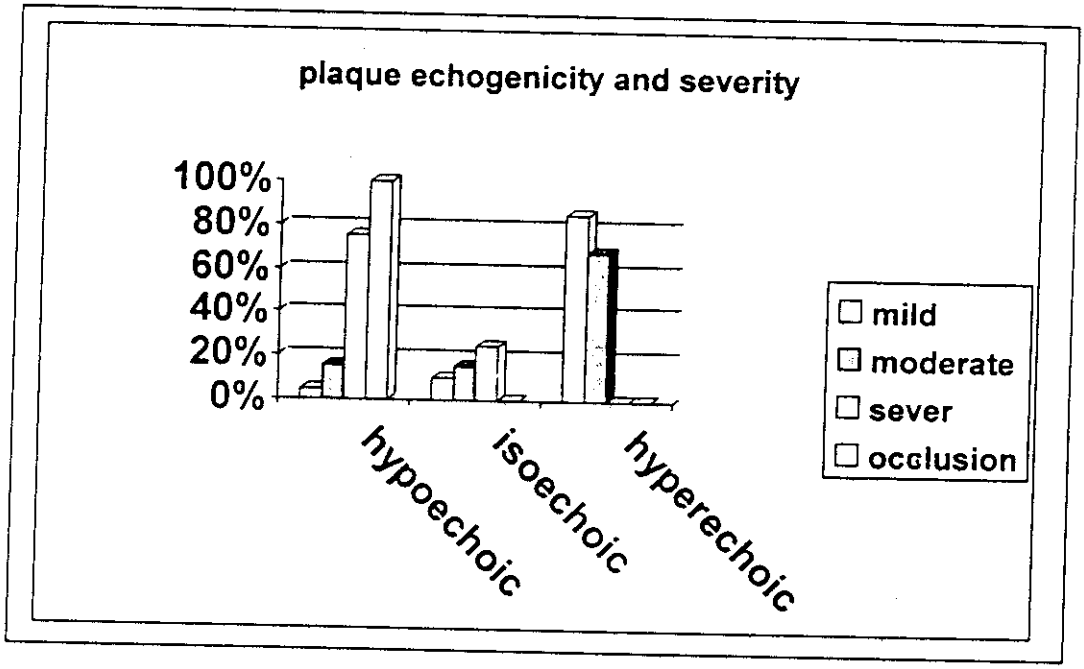


Table (12) the relation between plaque homogenicity and severity of stenosis:

DEGREE OF STENOSIS	HOMOGENEOUS	HETEROGENEOUS
Mild	37%	63%
Moderate	17%	83%
Severe	0%	100%
Occlusion	0%	100%

$Chi^2 = 48.96$ P value < 0.001 (highly significant)

Most of severely stenotic lesions were caused by heterogeneous plaques.

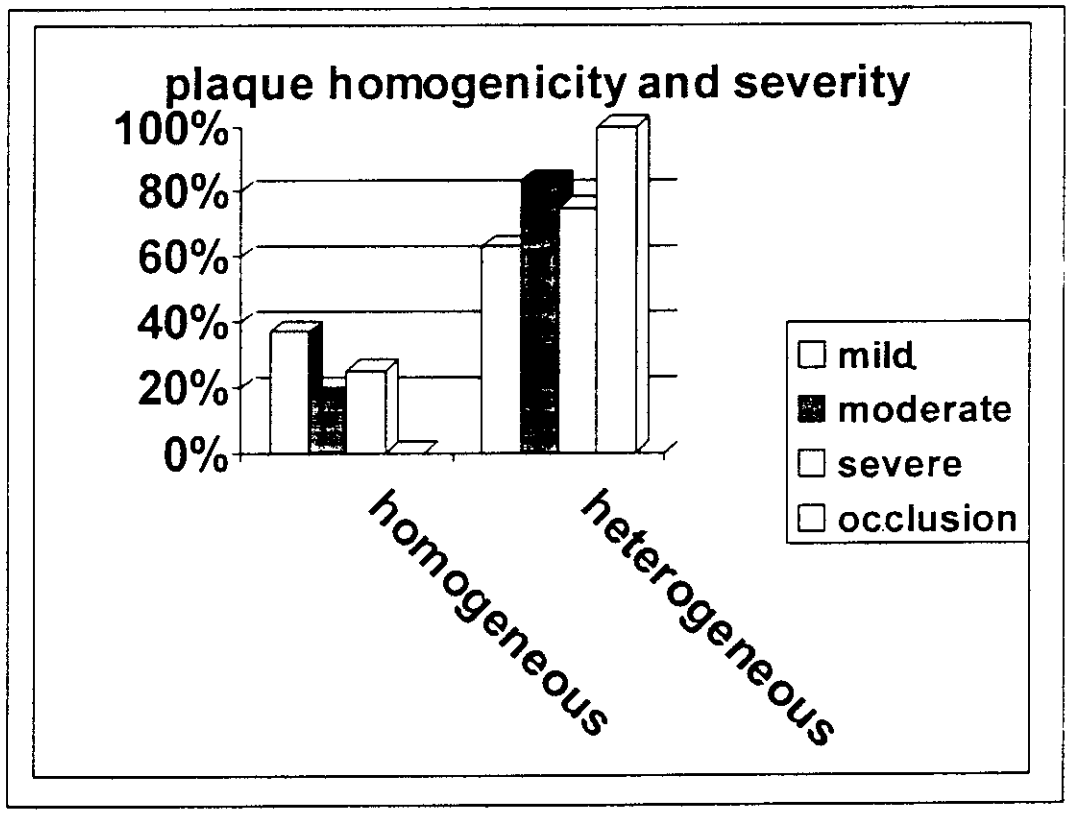


Table (13) the relation between plaque surface and severity of stenosis:

DEGREE OF STENOSIS	SMOOTH	IRREGULAR
Mild	**47%**	**53%**
Moderate	**33%**	**67%**
Severe	**25%**	**75%**
Occlusion	**0%**	**100%**

$Chi^2 = 17.34$ P value < 0.001 (highly significant)

Most of severely stenotic lesions having plaques with irregular surface.

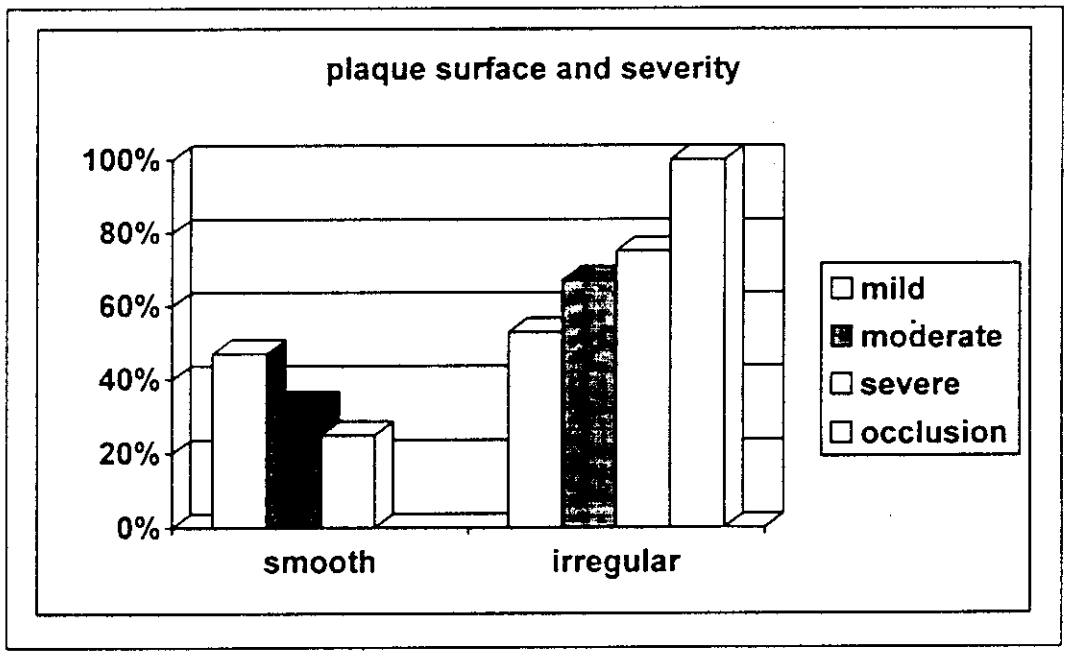


Table (14) Average systolic and diastolic velocities & ratios at different degrees of stenosis

Degree of stenosis	P.S.V. cm/sec		Ratio		E.D.V. cm/sec		Ratio	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Normal	52	11.2	1.1	.13	11	2.3	1.3	.24
Mild	84	14.3	1.3	.24	12	3.52	1.3	.45
Moderate	122	16.5	1.8	.36	30	4.41	1.5	.65
Severe	220	34.5	2.9	.39	77	4.63	3.4	.41
P value	<0.001**		<0.001**		<0.001**		.0207	

** is highly significant.

P.S.V. ratio are increased with the increase of the degree of stenosis while he E.D.V. ratio shows increase only with the severe stenosis