RESULTS

This study included one hundred patients with chronic stable angina, referred from outpatient cardiology clinic and noninvasive cardiology laboratory at King Abdul Aziz University Hospital Jeddah, underwent elective coronary angiography.

Patients with significant single coronary artery disease, underwent elective stenting of native coronary arteries with either bare metal stent (BMS) or drug eluting stent (DES).

All patients informed about the procedure, the possible complications, and consented.

All the patients were on full anti ischemic treatment, in the form of nitrates, beta blockers and/or calcium channel blockers if the patient still symptomatic or beta blockers are not tolerated or contraindicated. All of them were on statins, aspirin and clopidogrel ***(Robert et al., 2008).***

The study population is divided into two groups based on the type of the deployed stents, drug eluting stent (DES) group and bare metal stent group (BMS).

I – Baseline demographic data and risk factors prevalence of the study population table (1) , Figure (5), (6).

1- Age:

Mean age is 55.07 years, SD ± 10.36. Age range from 37 to 84 years.

2- Sex :

Seventy eight patients are males (78%), and twenty two patients are females (22%).

3- Smoking :

Fifty seven patients (57%) are smokers, fifty five of them are males and two patients are females . Forty three patients are non smokers.

4- Hypertension (HTN):

Fifty five (55%) patients are hypertensive, forty eight of them are males and seven are females.

5- Diabetes mellitus (DM) :

Fifty nine patients are diabetics (59%) , forty six of them are males and thirteen are females.

6- Dyslipidemia

Nineteen patients are dyslipidemic (19 %), fifteen of them are males and four patients are females.

7- Body mass index (BMI) :

Mean BMI is 28.89 ,SD ± 4.82 .

8- Waist circumference :

Mean waist circumference is 99.99, SD ± 9.67 .

Table (1): Baseline demographic data and risk factors prevalence of the study population.

		Number	Percent %
Sex	Male	78	78%
	Female	22	22%
Smoking		57	57%
HTN		55	55%
DM		59	59%
Dyslipidemia		19	19%
		MEAN	± SD
AGE		55.07	10.36
BMI		28.89	4.825
Waist		99.998	9.67

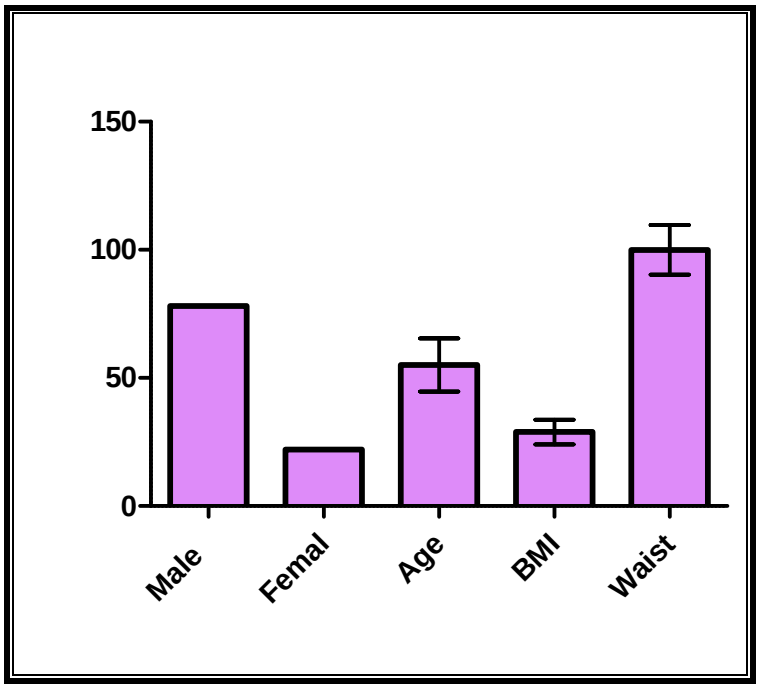

Figure (5): Demographic data of the study population .

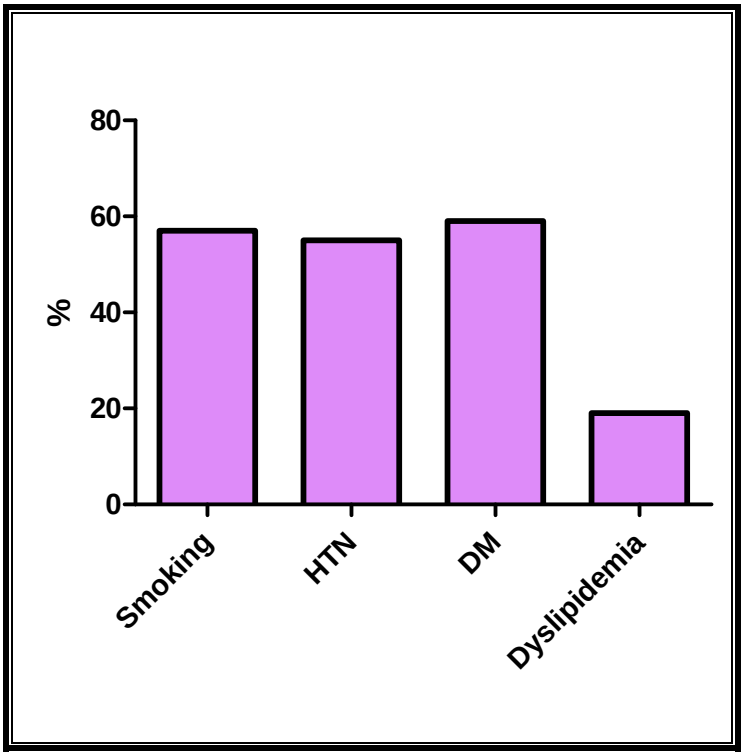

Figure (6): Clinical characteristics of the study population.

II – Echocardiographic data of the study population table (2), figure (7) .

1- Ejection fraction (EF%) :

The mean preprocedural EF% is 57.018, SD ± 6.379, and after 6 month the mean value is 57.114, SD ± 4.548 with no statistical significant difference (P = 0.902) .

2- Wall motion score index (WMSI) :

The mean preprocedural WMSI is 1.9, SD ± 0.212 , and after 6 month the mean value is 1.9, SD ± 0.15 with no statistical significant difference (P =1).

Table (2): Echocardiographic data of the study population.

	Preprocedural		6 month follow up		T test	
	Mean	± SD	Mean	± SD	T	P value
EF %	57.018	6.379	57.114	4.548	0.123	0.9026
WMSI	1.9	0.212	1.9	0.15	0	1

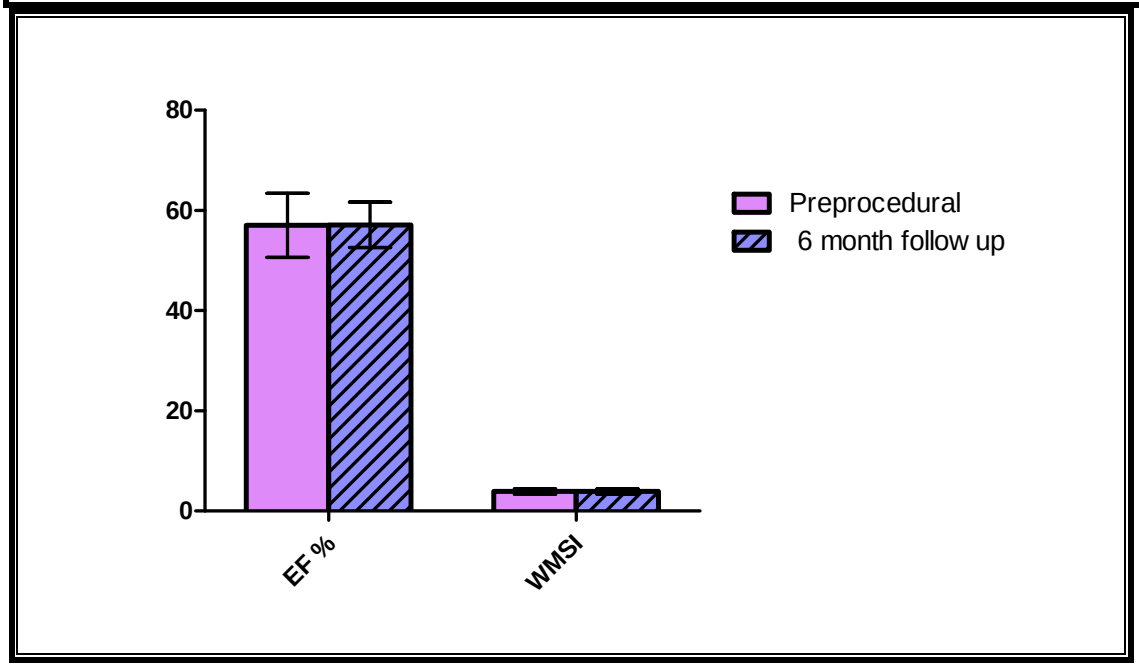

Figure (7): Echocardiographic data of the study population.

III–Baseline angiographic data of the study population table (3), figure (8), (9):

The procedure is successful in all patients, successful procedure is defined as residual stenosis < 20%, full restoration of TIMI III flow, and no procedural complications i.e. : myocardial infarction, death or urgent CABG occurred.

1- Distribution of the diseased vessels :

LAD is affected in fifty one patients (51%), LCX is affected in twenty nine patients (29%), and RCA is involved in twenty one patients (21%).

2- *Type of coronary lesions :*

Fifteen patients are type A lesion, fifty one patients are type B and thirty six patients are type C.

3- Type of deployed stents :

Fifty two (52%) drug eluting stents (DES) are deployed, thirty three of them are sirolimus eluting stent(SES), twelve are paclitaxil eluting stent (PES) and seven are evrolimus eluting stent (EES). Forty eight (48%) bare metal stents(BMS) are deployed .

Table (3): Baseline angiographic finding of the study population .

		Study population	
		Number	**Percent**
LAD		**51**	**51%**
LCX		**29**	**29%**
RCA		**21**	**21%**
Lesion type	**A**	**13**	**13%**
	B	**51**	**51%**

	C	**36**	**36%**
Type of deployed stent	**BMS**	**48**	**48%**
	DES	**52**	**52%**
	SES	**33**	**33%**
	PES	**12**	**12%**
	EES	**7**	**7%**

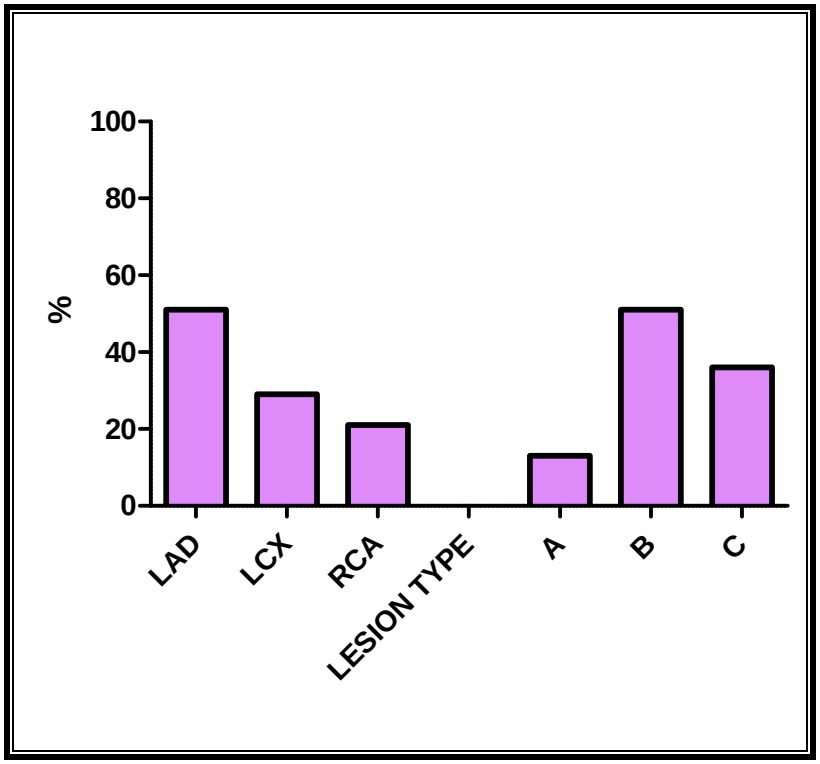

Figure (8): Angiographic characteristics of the study population .

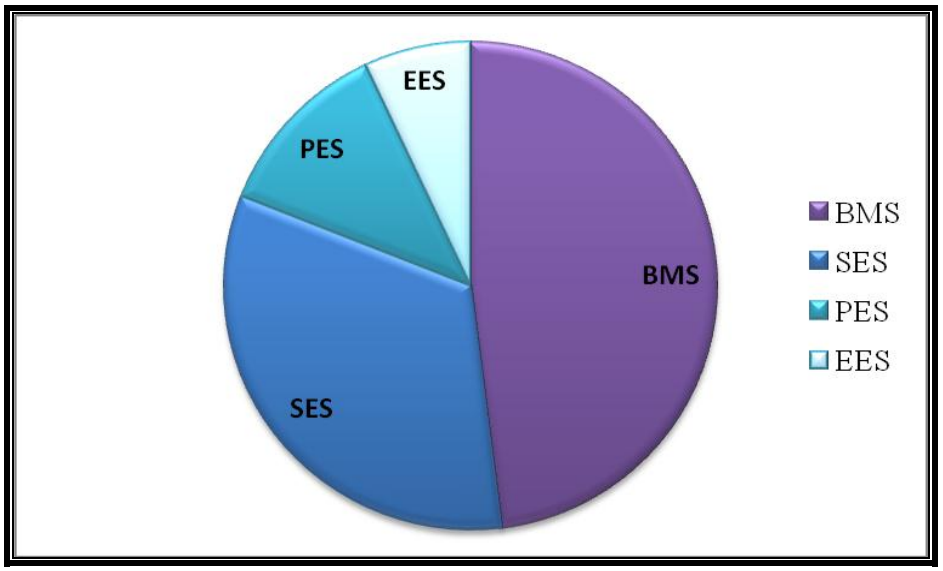

Figure (9): Type of deployed stents .

IV–Baseline demographic data and risk factor prevalence of the study groups table (4), (5), figure (10), (11):

1- Age :

DES group age ranges from 41 to 84 years, with mean value of 57.173 , SD ± 10.442, while for BMS group age ranges from 37 to 81 years, with mean value of 52.479 , SD ± 9.315, with no statistical significant difference (P = 0.2) .

2- Sex :

There is no significant difference between both groups as regarding sex with (P = 0.348) for males and (P = 0.979) for females .

3- Smoking:

In DES group thirty two patients (61.58 %) are smokers , while in BMS group twenty five patients (52.08 %) are smokers, with no statistical significant difference (P = 0.449) .

4- Hypertension:

In DES group twenty two patients (42.31%) are hypertensive, while in BMS group twenty six patients (54.17%) are hypertensive, with no statistical significant difference (P = 0.324) .

5- Diabetes mellitus :

In DES group thirty one patients (59.6 %) are diabetics , while in BMS group fifteen patients (31.25%) are diabetics, with highly significance statistical difference (P = 0.0008) .

6- Dyslipidemia :

In DES group nine patients (36.53%) are dyslipidemic ,while in BMS group ten patients (20.38%) are dyslipidemic, with no statistical significant difference (P=0.786) .

7- Body mass index :

In DES group mean value is 29.461, SD ± 5.222, while in BMS group mean value is 28.285, SD ± 4.222, no statistical significant difference (P=0.222) .

Table (4): Demographic data of the study groups .

		DES group	**BMS group**	**Chi-square**	
		Number (%)	**Number (%)**	**X^2**	**P value**
SEX	**Male**	43 (82.69%)	35 (2.91%)	0.88	0.3483
	Female	9 (17.2%)	13 (27.08%)	0.001	0.9791
		MEAN ±SD	MEAN ± SD	T TEST	
				T	P value
AGE		57.173 ± 10.442	52.479 ± 9.315	-2.365	0.02
Waist		101.746 ± 11.057	98.271 ± 7.570	-1.819	0.072

BMI	29.461 ± 5.222	28.285 ± 4.222	-2.823	0.222

Table (5): Risk factors prevalence in study groups .

	DES group	**BMS group**	**Chi-square**	
	Number (%)	**Number (%)**	**X^2**	**P value**
Smoking	**32 (61.58%)**	**25 (52.08%)**	**0.619**	**0.43**
HTN	**22 (42.31%)**	**26 (54.17%)**	**0.97**	**0.322**
DM	**31 (59.6%)**	**15 (31.25%)**	**6.97**	**0.008**
Dyslipidemia	**9 (36.54%)**	**10 (20.38%)**	**0.074**	**0.786**

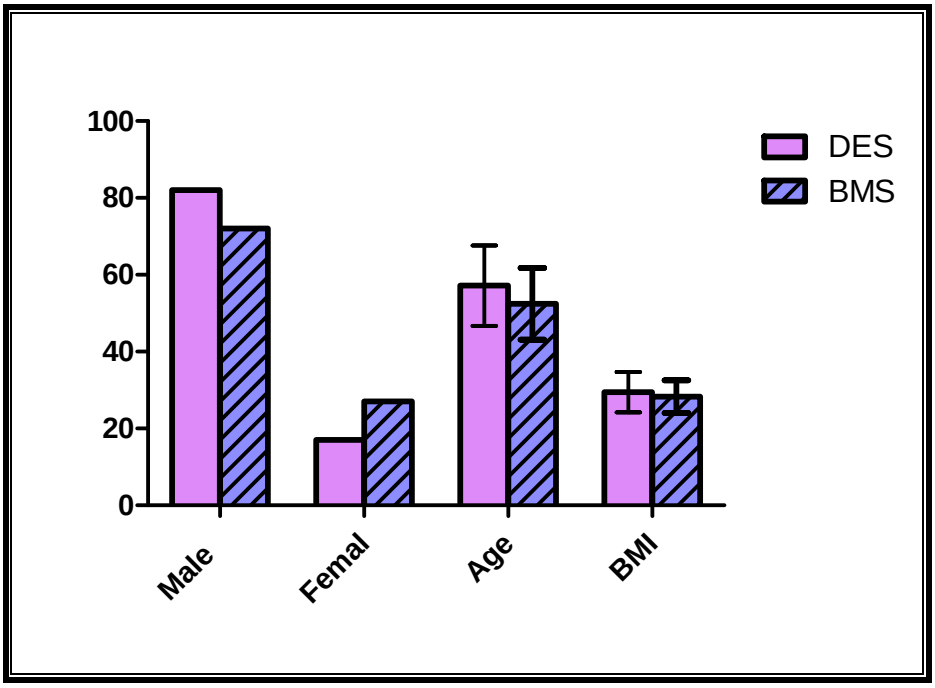

Figure (10): Demographic data of the study groups .

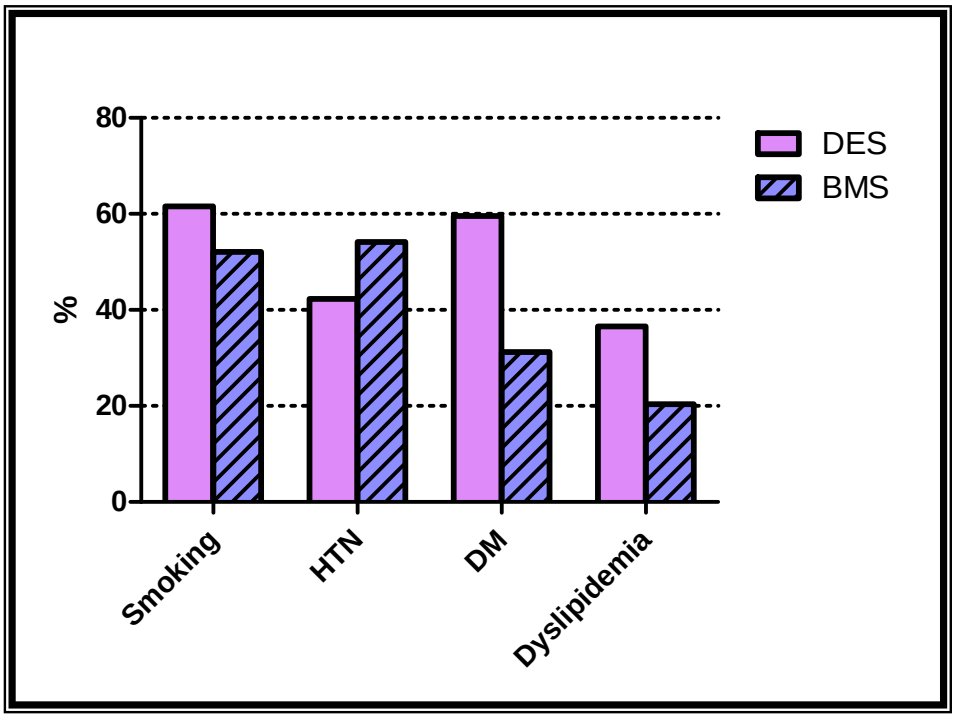

Figure (11): Risk factors prevalence in study groups .

V–Echocardiographic data of DES and BMS groups table (6), (7) figure (12).

1- Comparison between DES and BMS groups as regarding preprocedural Ejection fraction (EF%) and six month follow up:

The mean value of Preprocedural EF% for DES group is 57.173**,** SD ± 7.356**,** while the mean value for BMS group is 56.86**,** SD ± 5.4 .The difference is not statistically significant (P=0.807).

The mean value of EF% at 6 month for DES group is 57.25, SD ± 4.878, while the mean value for BMS group is 56.979, SD ± 4.219 .The difference is not statistically significant (P = 0.768).

In DES stent group no statistical significant difference is found regarding preprocedural EF% and 6 month follow up (P=0.95).

In BMS stent group no statistical significant difference is found regarding preprocedural EF% and 6 month follow up (P=0.90) .

2- Comparison between DES and BMS groups as regarding preprocedural Wall motion score index (WMSI) and six month follow up:

The mean value of Preprocedural WMSI for DES group is 1.91**,** SD ± 0.25**,** while the mean value for BMS group is 1.86**,** SD ± 0.18, with no statistical significant difference (P=0.257).

The mean value of WMSI after 6 month for DES group is 1.9, SD ± 0.16, while the mean value for BMS group is 1.89, SD ± 0.14 ,with no statistical significant difference (P= 0.24).

In DES stent group no statistical significant difference is found regarding preprocedural WMSI and 6 month follow up (P = 0.815) .

In BMS stent group no statistical significant difference is found regarding preprocedural WMSI and 6 month follow up (P = 0.364) .

Table (6): Comparison between DES and BMS groups as regarding preprocedural Ejection fraction (EF%) and six month follow up.

		DES group		BMS group		T test	
		Mean	**± SD**	**Mean**	**± SD**	**T**	**P value**
Preprocedural		57.173	7.356	56.86	5.4	-0.245	0.807
6 month follow up		57.25	4.878	56.979	4.219	-0.296	0.768
T test	**T**	0.0629		0.116			
	P value	0.95		0.9077			

Table (7): Comparison between DES and BMS groups as regarding preprocedural wall motion score index (WMSI) and six month follow up.

		DES group		BMS group		T test	
		Mean	**± SD**	**Mean**	**± SD**	**T**	**P value**
Preprocedural		1.91	0.25	1.86	0.18	1.139	0.257
6 month follow up		1.9	0.16	1.89	0.14	1.17	0.24
T test	**T**	0.234		0.911			
	P value	0.815		0.364			

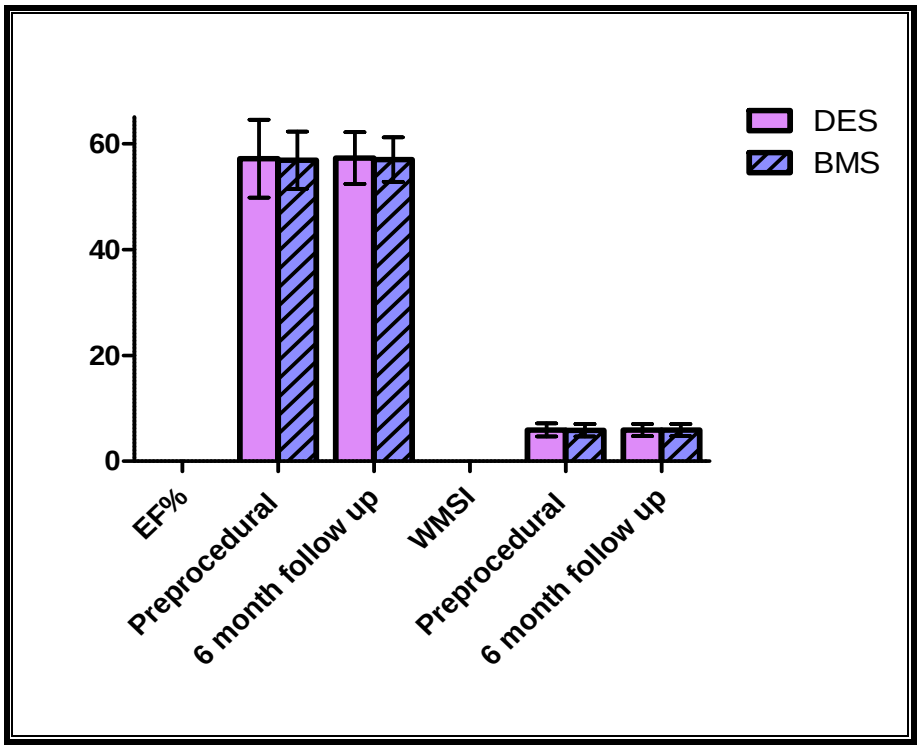

Figure (12): Echocardiographic data of the study groups .

VI–Baseline angiographic characteristics of DES and BMS groups table (8), figure (13), (15):

1- Distribution of the diseased vessels in DES and BMS group:

In DES group twenty six patients have LAD lesions (50%), sixteen patients have LCX lesions (30.76%), and eleven patients have RCA lesions (21.15%).

In BMS group twenty five patients have LAD lesions (52.08%), thirteen patients have LCX lesions (27.08%) and ten patients have RCA lesions (20.83%), the difference is not statistically significant (P = 0.993) for LAD ,(P = 0.835) for LCX and (P = 0.836) for RCA .

2- Lesion type in DES and BMS groups :

In DES group five patients have type A lesion (9.61%), twenty six patients have type B lesion (50%) and twenty one patients have type C lesion (40.38%).

In BMS group eight patients have type A lesion (16.66%), twenty five patients have type B lesion (52.08%) and fifteen patients have type C lesions (31.25%), the difference is not statistically significant (P = 0.641) for type A lesion, (P = 0.895) for type B lesion and(P=0.833) for type C lesion .

3- TIMI flow:

In DES group no patients reported to have TIMI flow I, two patients (3.84%) had TIMI flow II and fifty patients (96.15%) had TIMI flow III.

In BMS group no patients reported to have TIMI flow I, one patient (2.08%) has TIMI flow II and forty seven patients (97.91%) have TIMI flow III, the difference is not statistically significant (P = 0.94) for TIMI flow II and(P = 0.934) for TIMI flow III.

Table (8): Baseline angiographic characteristics of DES and BMS groups .

		DES group	BMS group	Chi-square	
		Number (%)	Number (%)	X^2	P value
LAD		26 (50%)	25 (52.08 %)	0.017	0.8953
LCX		16 (30.76%)	13 (27.08 %)	0.038	0.8462
RCA		11 (21.15%)	10 (20.83 %)	0.269	0.6042
Lesion type	**A**	5 (9.61%)	8 (16.66 %)	0.217	0.6414
	B	26 (50%)	25 (52.08 %)	0.017	0.8953
	C	21 (40.38%)	15 (31.25 %)	0.044	0.8338
TIMI flow	**I**	0	0		
	II	2 (3.84 %)	1 (2.08 %)	0.005	0.940
	III	50 (96.15%)	48 (97.91 %)	0.007	0.9347

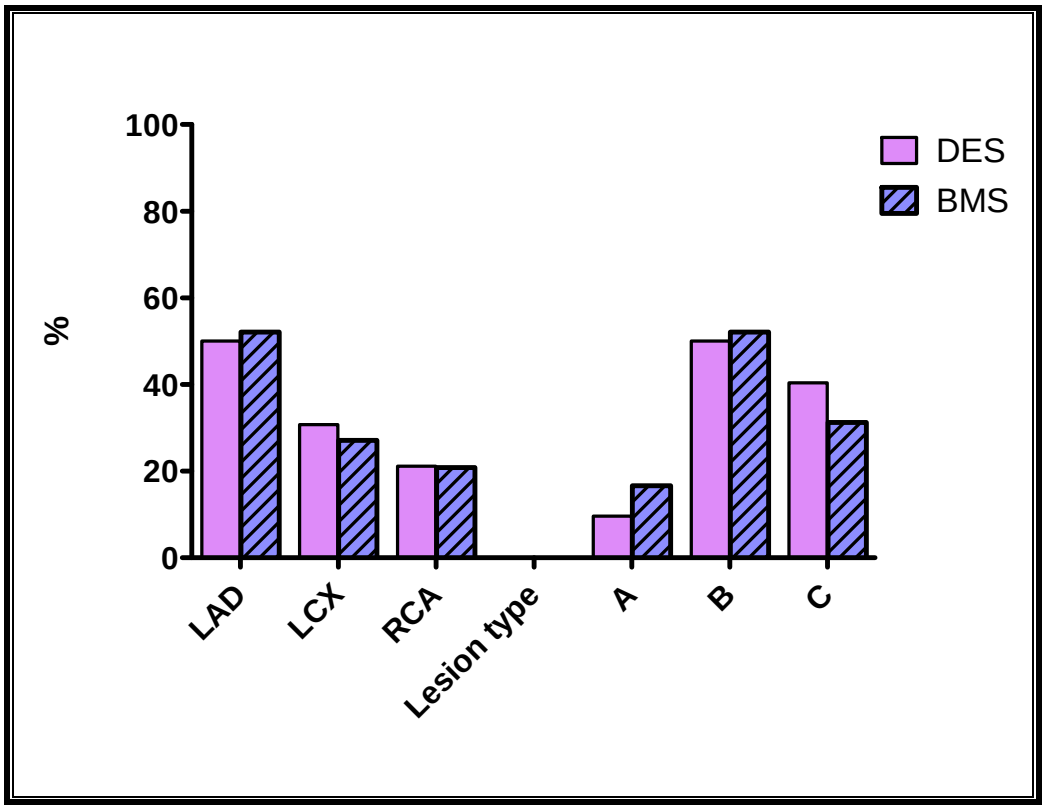

Figure (13): Baseline angiographic characteristics of the study groups

VII–Procedural characteristics of the study groups table (9), figure (14), (15) :

1- Comparison between DES and BMS groups as regarding width of deployed stents:

In The DES group the mean width is 3.01, SD ± 0.38, while in BMS group the mean width is 3.02, SD 0.4, with no statistical significant difference (P = 0.888).

2- Comparison between DES and BMS groups as regarding length of deployed stents:

In the DES group the mean length is 23.19, SD ± 9.34, while in the BMS group the mean length is 20.33, SD ± 6.88, with no statistical significant difference (P=0.086).

3- Comparison between DES and BMS groups as regarding length number of deployed stents / vessel :

In DES group the mean number of deployed stents / vessel is 1.06, SD ± 0.31, while in BMS group the mean number is 1.04, SD ± 0.2, with no statistical significant difference (P=0.769).

4- Comparison between DES and BMS groups as regarding postprocedural TIMI flow :

All patients in DES and BMS groups have post procedural TIMI flow III, with no statistical significance difference (P=1).

Table (9): Procedural characteristics of the study groups.

		DES group		**BMS group**		**T test**	
		Mean	**± SD**	**Mean**	**± SD**	**T**	**P value**
Width of stents		3.01	0.38	3.02	0.4	0.141	0.888
Length of stents		23.19	9.34	20.333	6.88	-1.732	0.086
No. of stents		1.06	0.31	1.04	0.2	0.294	0.769
		Number (%)		**Number (%)**		**P value**	
TIMI flow	**I**	0		0		0	
	II	0		0		0	
	III	52 (100 %)		48 (100 %)		1	

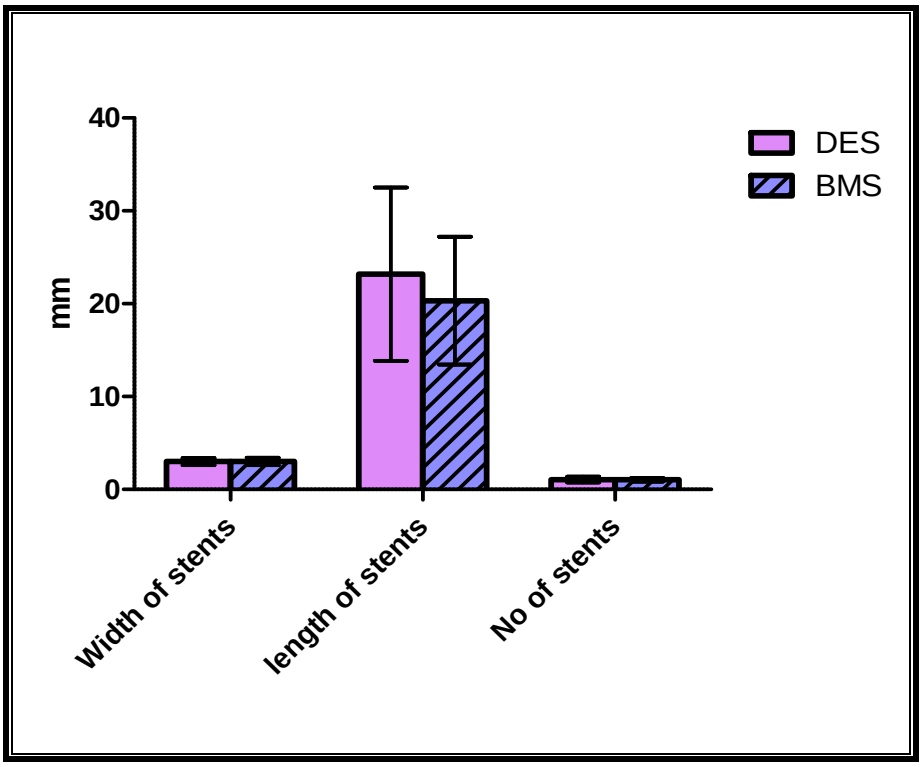

Figure (14): Procedural characteristics of the study groups.

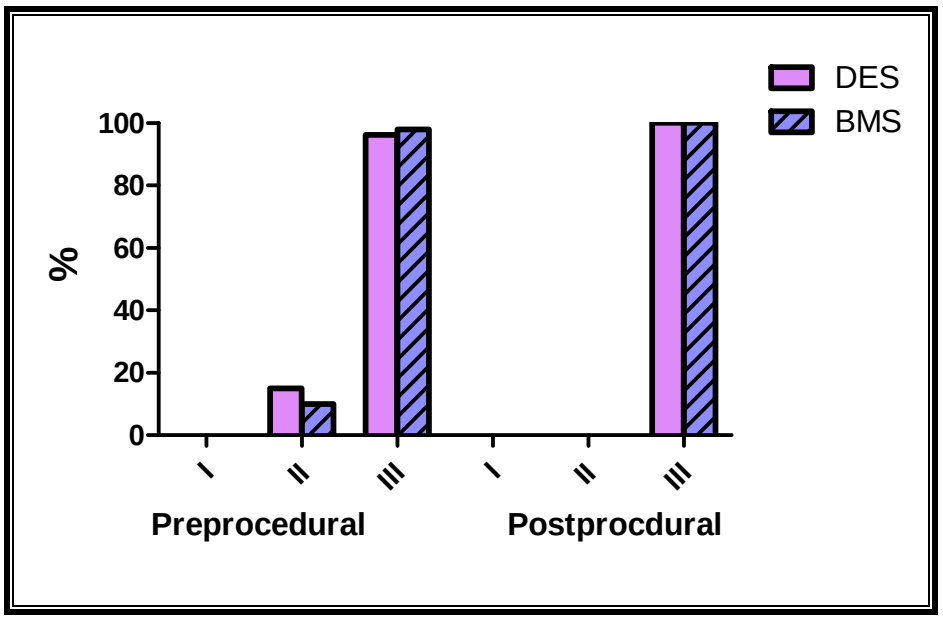

Figure (15): Preprocedural and postprocedural TIMI flow.

Follow up coronary angiography done after 6 month and each group further subdivided according to presence or absence of instent restenosis into two subgroups, restenosis group and patent stent group.

VIII– Clinical and angiographic outcome in DES and BMS groups table (10), figure (16), (17):

1- Comparison between DES and BMS groups as regarding total number of complication:

The total number of complications including angiographic and clinical complications are 11 (21.15%) in DES group, while in BMS group total number of complications are 18 (37.5%) with no statistical significant difference (P = 0.11).

2- Comparison between DES and BMS groups as regarding recurrent ischemia :

Recurrent ischemic symptoms reported in eight patients in DES group (15.38%), while in the BMS group ten patients (20.83%) have ischemic symptoms with no statistical significant difference (P = 0.654) .

In restenosis group, one patient with DES (1.923%) has recurrent ischemia, while four patients with BMS (8.33%) have recurrent ischemia with significant statistical difference (P=0.05).

In patent stent group seven patients with DES stents (13.46%) have recurrent ischemia, while six patients with BMS group (12.5%) have recurrent ischemia with no significant statistical difference (P=0.876).

3- Comparison between DES and BMS groups as regarding death :

One patient died in BMS group sudden cardiac death with no significant statistical difference (P=0.969).

4- Comparison between DES and BMS groups as regarding thrombosis :

One patient with DES had stent thrombosis with no significant statistical difference (P=0.969).

5- Comparison between DES and BMS groups as regarding instent Restenosis :

Two patients in DES group (3.85%) have instent restenosis, while in BMS group seven patient are affected (14.58%), with statistical significant difference (P=0.05) .

Table (10): Clinical and angiographic outcome in DES and BMS groups.

		DES group	BMS group	Chi-square	
		Number (%)	Number (%)	X^2	P value
Total complications		11(21.15%)	18 (37.5%)	2.49	0.11
Death		0	1 (2.08 %)	0.001	0.9692
Recurrent ischemia	**Total number**	8 (15.385%)	10 (20.833%)	0.201	0.654
	Restenosis group	1 (1.923 %)	4 (8.33 %)	3.842	0.05
	Patent stent group	7 (13.46%)	6 (12.5 %)	0.024	0.8768
Thrombosis		1 (1.923 %)	0	0.002	0.9679
Instent restenosis		2 (3.856 %)	7 (14.58 %)	3.85	0.0497

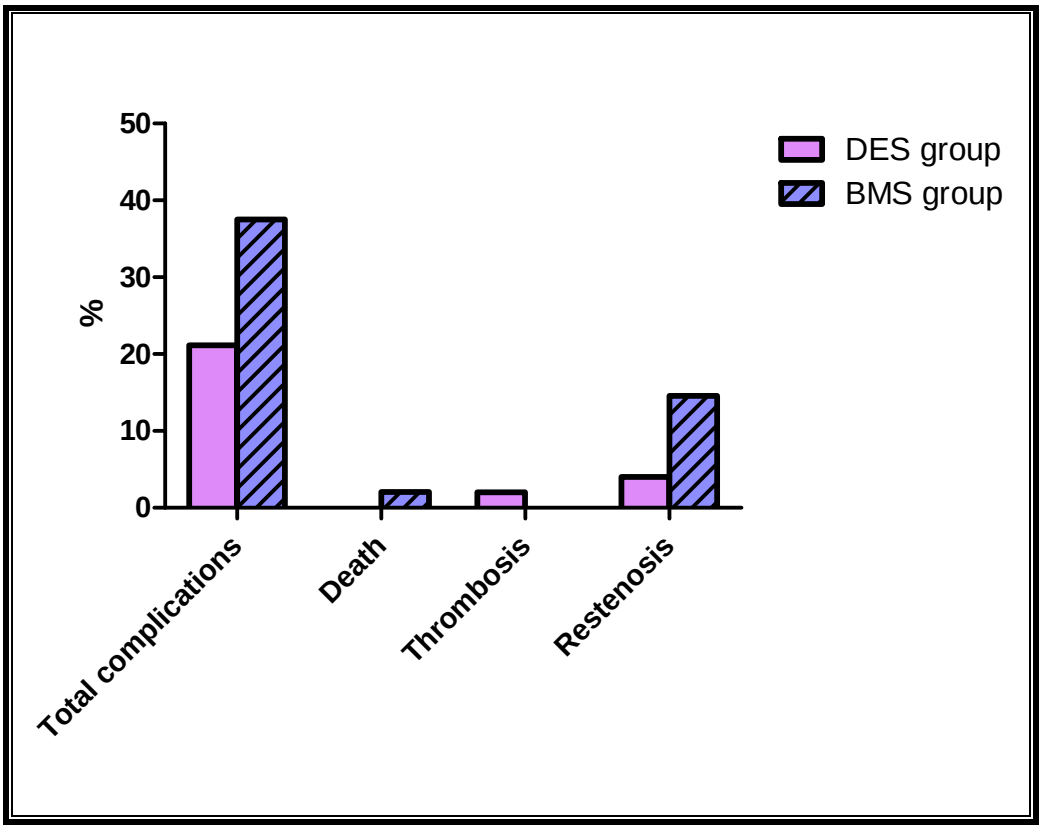

Figure (16): Clinical and angiographic outcome in DES and BMS groups.

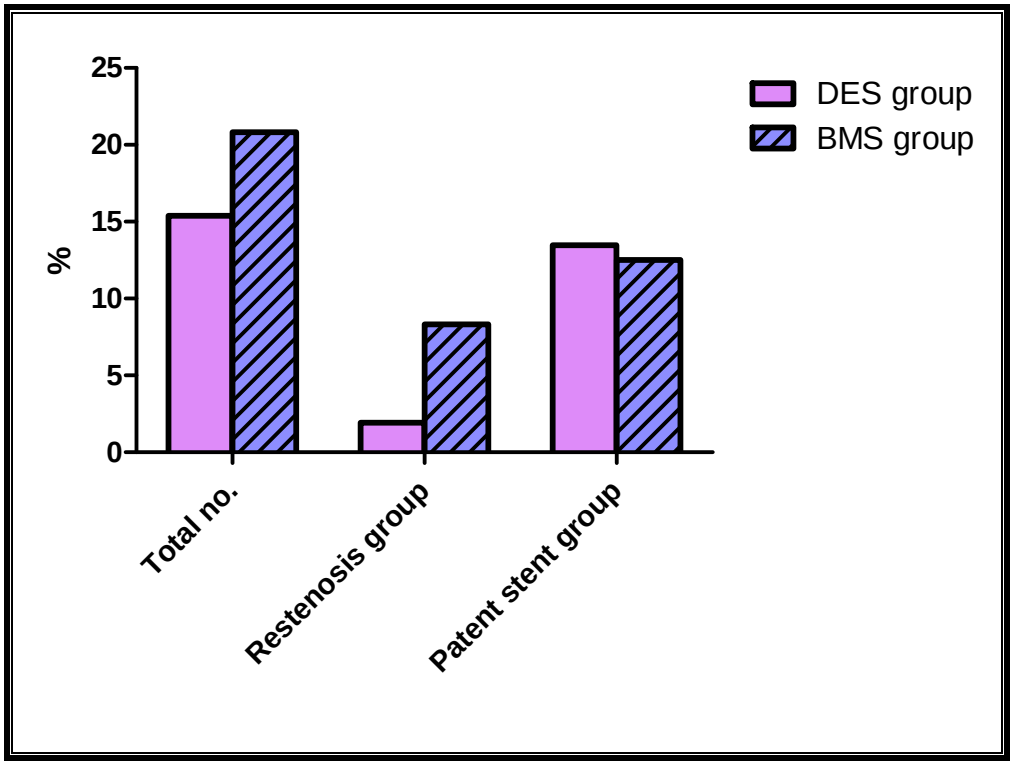

Figure (17): Recurrent ischemia in DES and BMS groups .

IX–Comparison between DES and BMS groups as regarding preprocedural and 24 hours postprocedural hs-CRP table (11), figure (18):

1- Comparison between DES and BMS groups as regarding Preprocedural hs – CRP:

In DES group the mean value of preprocedural hs – CRP is 1.938 , SD ± 0.911 , while in BMS group the mean value is 1.93 , SD ± 0.826 with no significant statistical difference (P=0.963).

2- Comparison between DES and BMS groups as regarding 24 hours Post procedural hs–CRP:

In DES group the mean value of post procedural hs-CRP is 3.636 , SD± 1.038, while in BMS group the mean value is 6.343 , SD ± 0.885 with highly significant statistical difference (P<0.0001).

3- Comparison between DES and BMS groups as regarding preprocedural and 24 hour post procedural hs – CRP:

Post procedural hs CRP is higher in both groups than the preprocedural values . In DES group the preprocedural hs – CRP mean value is 1.938 , SD ± 0.911 while the post procedural mean value is 3.636, SD ± 1.038 .The difference is highly statistical significant (P< 0.0001).

In BMS group the preprocedural hs – CRP mean value is 1.93, SD ± 0.826, while the post procedural mean value is 6.343 , SD ± 0.885 with highly significant statistical difference (P<0.0001).

Table (11): Comparison between DES and BMS groups as regarding preprocedural and 24 postprocedural hs–CRP in the study groups.

hs-CRP (mg/L)	DES group	BMS group	T test

		Mean	± SD	Mean	± SD	T	P value
Preprocedural		1.938	0.911	1.93	0.826	-0.046	0.9635
24 h postprocedural		3.636	1.038	6.343	0.885	16.553	<0.0001
T test	**T**	6.8039		23.049			
	P value	<0.0001		<0.0001			

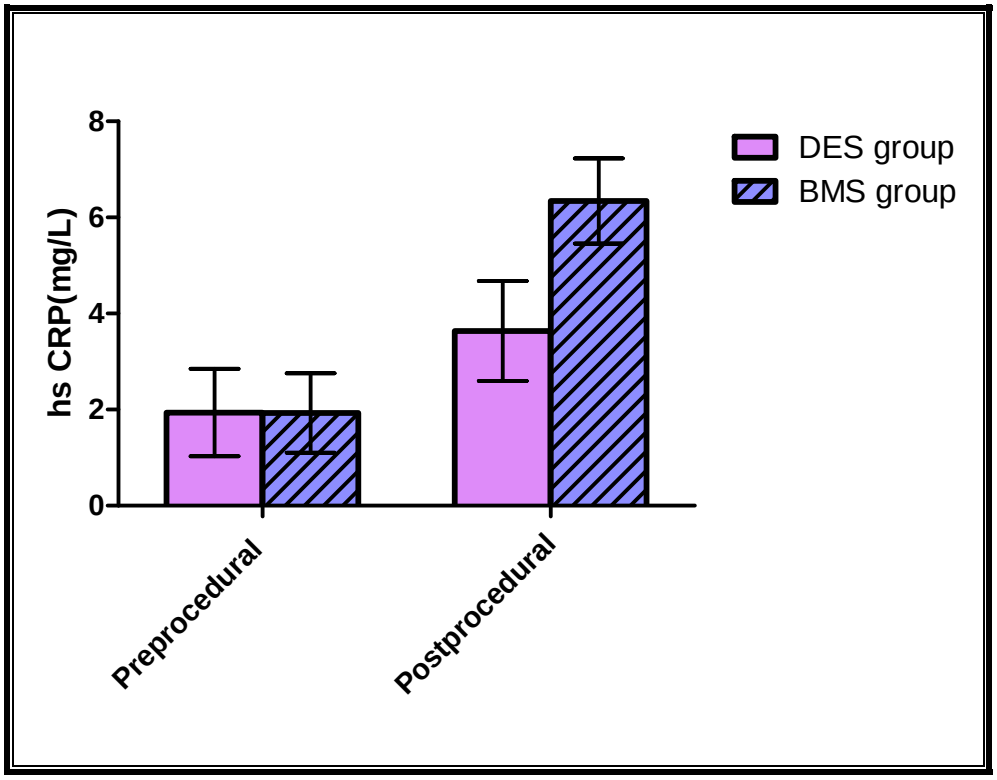

Figure (18): Comparison between DES and BMS groups as regarding preprocedural and 24 hours postprocedural hs-CRP.

X–Comparison between patent stent and restenosis groups as regarding preprocedural and 24 h post procedural hs–CRP in DES group table (12), figures (19):

1- Comparison between patent stent and instent restenosis groups as regarding preprocedural and 24h post procedural hs–CRP in DES group:

There is no statistical significant difference between patent stent and instent restenosis groups as regarding preprocedural CRP. The preprocedural hs–CRP mean value for patent stent group is 1.938 , SD ± 0.911, while the mean value for restenosis group is 2.58, SD ± 0.212 (P=0.336).

The post procedural hs–CRP mean value for patent stents group is 3.081, SD ± 0.853 , while the mean value for restenosis group is 4.6, SD ± 0.565 with statistical significant difference (P=0.02) .

2- Comparison between preprocedural and 24h post procedural hs–CRP in patent stents group in DES :

The preprocedural hs-CRP mean value for patent stent group is 1.938, SD ± 0.911, while the 24h post procedural hs-CRP mean value is 3.081, SD ± 0.853 with highly significant statistical difference (P<0.001).

3- Comparison between preprocedural and 24h post procedural hs–CRP in restenosis group in DES :

The preprocedural hs – CRP mean value is 2.58 , SD ± 0.212, while the post procedural mean value is 4.6 , SD ± 0.565 with highly significant statistical difference (P = 0.017).

Table (12): Comparison between patent stent and restenosis groups as regarding preprocedural and 24h post procedural hs–CRP in DES group.

hs CRP (mg/L)	Patent stent group		Restenosis group		T test	
	Mean	± SD	Mean	± SD	T	P value
Preprocedural	1.938	0.911	2.58	0.212	0.987	0.3286

24 h post procedural		3.081	0.853	4.6	0.565	2.483	0.02
T test	**T**	-6.476		4.734			
	P value	< 0.001		0.017			

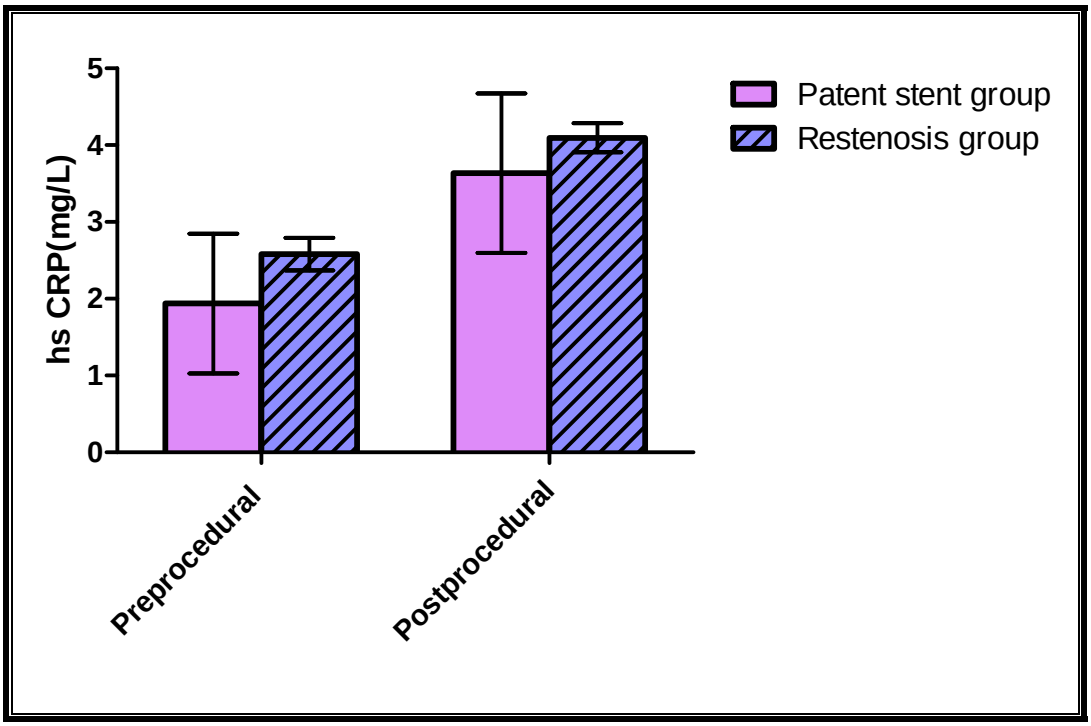

Figure (19): Comparison between patent stent and restenosis groups as regarding preprocedural and 24h post procedural hs–CRP in DES group.

XI–Comparison between patent stent and restenosis groups as regarding preprocedural and six month follow up of serum hs–CRP in DES group table (13), figure (20):

1- Comparison between preprocedural and six month follow up of serum hs–CRP in patent stent group in DES group:

In patent stent group the preprocedural hs – CRP mean value is 1.938 , SD ± 0.911 , and the six month follow up mean value is 2.212 , SD ± 0.725 and the difference is not statistically significance (P=0.099).

2- Comparison between preprocedural and six month follow up of serum hs–CRP in restenosis group in DES group:

In restenosis group the preprocedural hs–CRP mean value is 2.57, SD ± 0.212, and the six month follow up mean value is 15.66, SD ± 1.24 and the difference is statistically significant (P=0.004).

3- Comparison between patent stent and restenosis groups as regarding 6 month follow up of serum hs-CRP in DES group :

In patent stent group the mean value is 2.212 , SD ± 0.725, while in restenosis group the mean value is 15.66 , SD ± 1.24 with highly significant statistical difference (P < 0.0001) .

Table (13): Comparison between patent stent and restenosis groups as regarding preprocedural and six month follow up of serum hs–CRP in DES group.

hs CRP (mg/L)		Patent stent group		Restenosis group		T test	
		Mean	± SD	Mean	± SD	T	P value
Preprocedural		1.938	0.911	2.57	0.212	0.971	0.3361
6 month follow up		2.212	0.725	15.66	1.24	25.241	< 0.0001
T test	T	-1.664		14.716			
	P value	0.099		0.004			

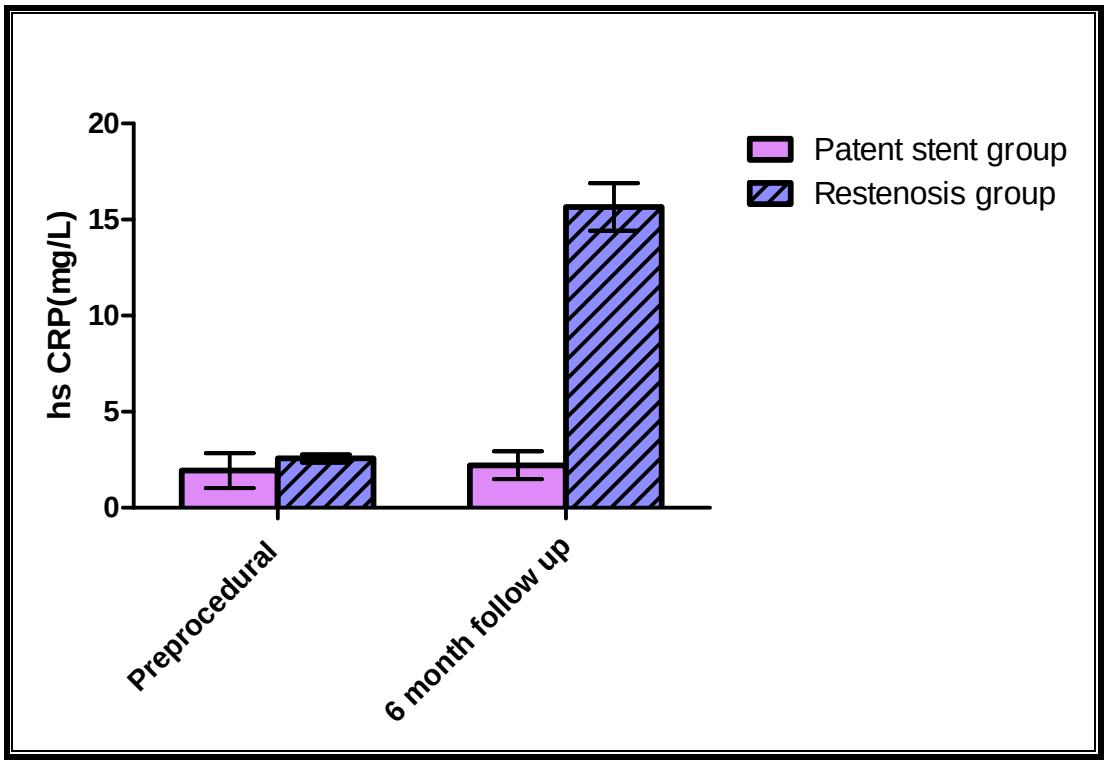

Figure (20): Comparison between patent stent and restenosis groups as regarding preprocedural and six month follow up of serum hs–CRP in DES group.

XII–Comparison between patent stent and restenosis groups as regarding preprocedural and 24h post procedural serum hs–CRP in BMS group table (14), figures (21):

1- ***Comparison between patent stent and restenosis groups as regarding preprocedural and 24h post procedural serum hs–CRP in BMS group:***

The preprocedural hs-CRP mean value for patent stent group is 1.93, SD ± 0.826, while for instent restenosis group the mean value is 1.788, SD ± 0.631, with no significant statistical difference (P=0.667).

The Post procedural hs-CRP mean value for patent stent group is 6.212, SD ± 1.033, while the mean value for instent restenosis group is 7.241, SD ± 0.909, with significant statistical difference (P=0.02).

2- Comparison between preprocedural and 24h postprocedural serum hs-CRP in patent stent group in BMS group:

The pre procedural hs–CRP mean value is 1.93, SD ± 0.826 , while the post procedural mean value is 6.212, SD ± 1.033 with highly significant statistical difference (P < 0.0001) .

3- Comparison between pre procedural and 24h post procedural serum hs-CRP in restenosis group in BMS group :

The pre procedural hs–CRP mean value is 1.788 , SD ± 0.631 , while the post procedural mean value is 7.241 , SD ± 0.909 with highly significant statistical difference (P < 0.0001) .

Table (14): Comparison between patent stent and restenosis groups as regarding preprocedural and 24h post procedural serum hs–CRP in BMS group.

hs-CRP (mg/L)		Patent stent group		Restenosis group		T test	
		Mean	± SD	Mean	± SD	T	P value
Pre procedural		1.93	0.826	1.788	0.631	-0.432	0.6676
Post procedural		6.212	1.033	7.241	0.909	2.472	0.02
T test	T	20.73		13.038			
	P value	< 0.0001		< 0.0001			

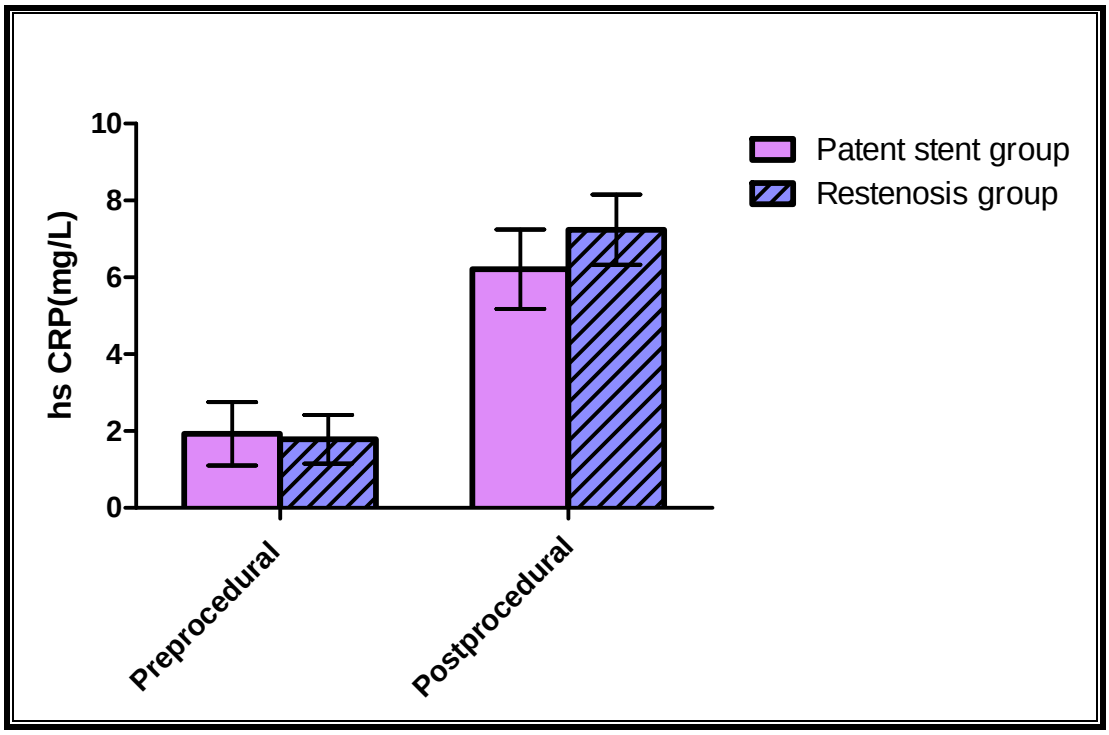

Figure (21): Comparison between patent stent and restenosis groups as regarding preprocedural and 24h post procedural serum hs–CRP in BMS group .

XIII- Prevelance of complications in 24h postprocedural hs-CRP tertiles.

In order to evaluate the role of 24 postprocedural hs-CRP in predicting angiographic and clinical outcome we divided 24 h postprocedural hs- CRP into three tertiles

Tertile I values < 25 th percentile .

Tretile II values 25 th percentile to 75 th percentile .

Tertile III values > 75 th percentile .

1- Prevalence of complications in DES group 24h postprocedural hs-CRP tertiles table (15), figure (22)

Tertile I included 12 patients those with hs-CRP < 3.05 mg/L.

Tertile II included 30 patients those with hs-CRP **>** 3.05 mg/L and < 4.12 mg/L .

Tertile III included 10 patients those with hs-CRP **>** 4.12 mg/L

a- Prevalence of total complications in DES group 24h postprocedural hs-CRP tertiles:

In tertile one nobody has angiographic or clinical complications, three (10%) patients have clinical complications in tertile II and 8 (80%) patients have clinical; and angiographic complication in tertile III with highly significant statistical difference (P < 0.0001).

b- Prevalence of MACEs in DES group 24h postprocedural hs-CRP tertiles:

In tertile I nobody has MACEs, while on tertile II three patients (10%) have MACEs and six patients (60%) in tertile III have MACEs with highly significant statistical difference (P < 0.004).

c- Prevalence of restenosis in DES group 24h postprocedural hs-CRP tertiles:

In tertile I and II nobody has instent restenosis while in tertile III two patients (20%) have instent restenosis with no significant statistical difference (P = 0.07).

Table (15): Prevalence of complications in DES group post procedural hs-CRP tertiles.

		Tertile I	**Tertile II**	**Tertile III**	**Chi square**	
		n = 12	**n =30**	**n = 10**	**X^2**	**P value**
Total Complication	**N**	0	3	8	15.089	0.0001
	%	0	10%	80%		

MACEs	**N**	0	3	6	8.078	0.004
	%	0	10%	60%		
Restenosis	**N**	0	0	2	3.28	0.07
	%	0	0%	20%		

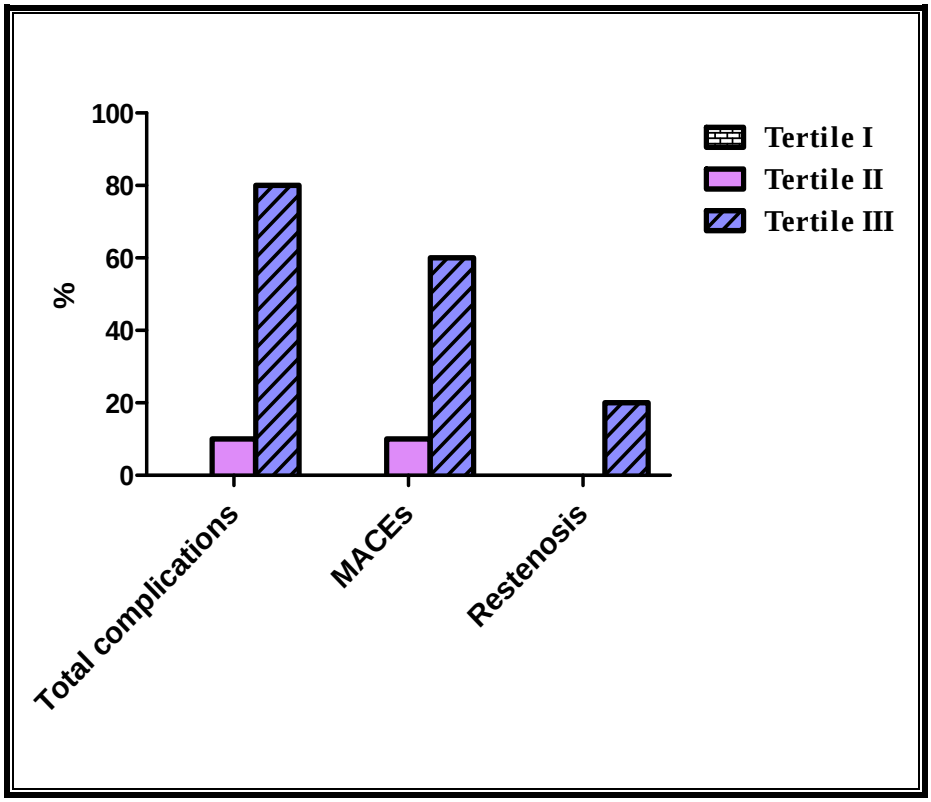

Figure (22): Prevalence of total complications in DES group postprocedural hs-CRP tertiles.

2- Prevalence of complications in BMS group postprocedural hs-CRP tertiles table (16), figure (23).

Tertile I included eight patients those with hs-CRP < 5.33 mg/dL.

Tertile II included fifteen patients those with hs-CRP > 5.33 mg/dL and < 6.51mg/dL.

Tertile III included twenty five patients those with hs-CRP > 6.51mg/dL.

a- Prevalence of total complications in BMS group 24h postprocedural hs-CRP tertiles:

In tertile I nobody has complications, while in tertile II three patients (20%) have clinical and angiographic complications and in tertile III fifteen patients (60%) have clinical and angiographic complication with statistical significant difference (P=0.03).

b- Prevalence of MACEs in BMS group24h postprocedural hs-CRP tertiles :

In tertile I nobody has MACEs, while in tertile II two patients (13%) have MACEs and in tertile III nine patients (36%) have MACEs with no statistical significant difference (P = 0.2) .

c- Prevalence of restenosis in BMS group 24h postprocedural hs-CRP tertiles :

In tertile I nobody has instent restenosis, while in tertile II one patient (7%) has instent restenosis and in tertile III six patients (24%) have instent restenosis with no statistical significant difference (P= 0.3).

Table (16): Prevalence of complications in BMS group 24hpost procedural hs-CRP tertiles.

		Tertile I	**Tertile II**	**Tertile III**	**Chi square**	
		n = 8	**n =15**	**n = 25**	**X^2**	**P value**
Total	**N**	0	3	15	4.55	0.03
Complication	**%**	0	20%	60%		
MACEs	**N**	0	2	9	1.4	0.23

	%	0	13%	36%		
Restenosis	**N**	0	1	6	2.879	0.04
	%	0	7%	24%		

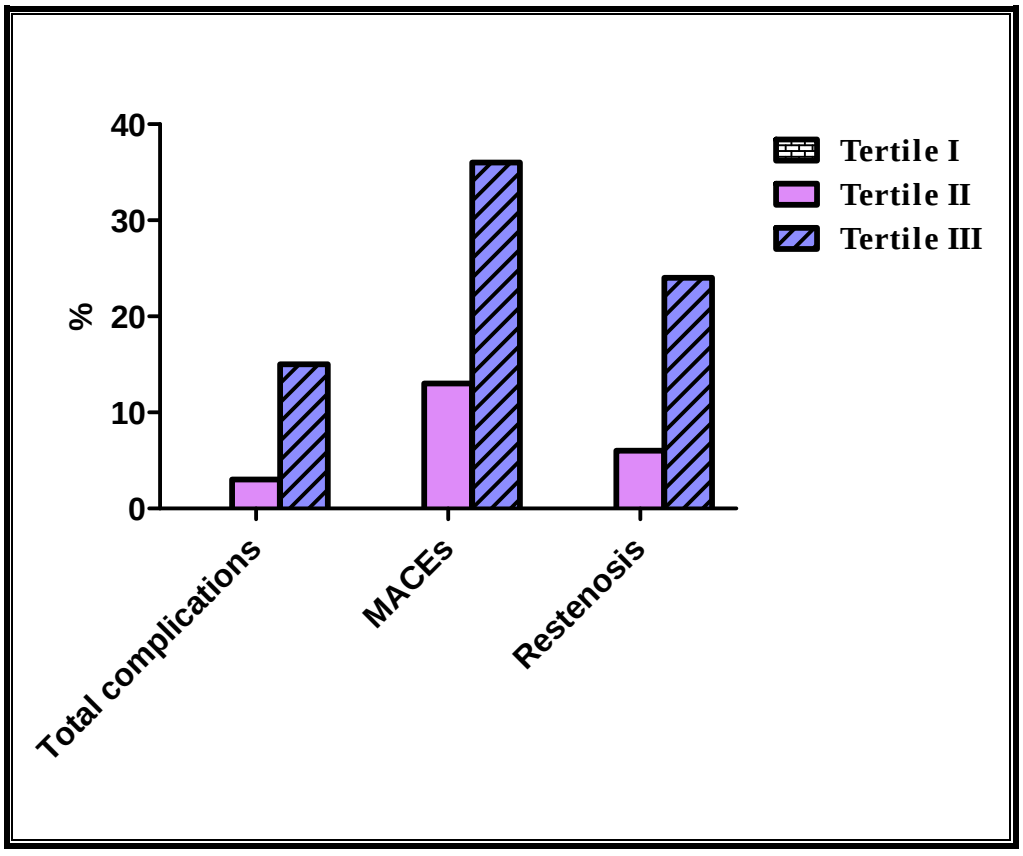

Figure (23): Prevalence of total complications in BMS group postprocedural hs-CRP tertiles.

XIV–Comparison between patent stent and restenosis groups as regarding preprocedural and six month follow up of serum hs–CRP in BMS group. table (17), figures (24):

1- Comparison between patent stent and restenosis groups as regarding preprocedural and six month follow up of serum hs–CRP in BMS group:

The preprocedural hs-CRP for patent stent group mean value is 1.93, SD ± 0.826, while for instent restenosis group the mean value is 1.788, SD ± 0.631, with no significant statistical difference (P = 0.667).

The mean value of Six month follow up of serum hs – CRP is higher in restenosis group 13.176 , SD ± 4.817 , while in patent stent group the mean was 2.036 , SD ± 0.77 with highly significant statistical difference (P < 0.0001).

2- Comparison between pre procedural and six month follow up of serum hs-CRP in patent stent group in BMS group :

The pre procedural hs-CRP mean value is 1.93, SD ± 0.826, while the six months follow up hs-CRP mean value is 2.036, SD ± 0.77 with no statistical significant difference (P=0.546).

3- Comparison between pre procedural and six month follow up of serum hs-CRP in restenosis group in BMS group :

The preprocedural hs-CRP mean value is 1.93, SD ± 0.826, while the six months follow up hs-CRP mean value is 13.176, SD ± 4.817, with highly significant statistical difference (P< 0.0001).

Table (17): Comparison between patent stent and restenosis groups as regarding preprocedural and six month follow up of serum hs-CRP in BMS group .

hs-CRP (mg/L)	Patent stent group		Restenosis group		T test	
	Mean	± SD	Mean	± SD	T	P value

Preprocedural		1.93	0.826	1.788	0.631	-0.432	0.667
6 month follow up		2.036	0.77	13.176	4.817	-14.474	< 0.0001
T test	**T**	0.601		6.261			
	P value	0.5495		< 0.0001			

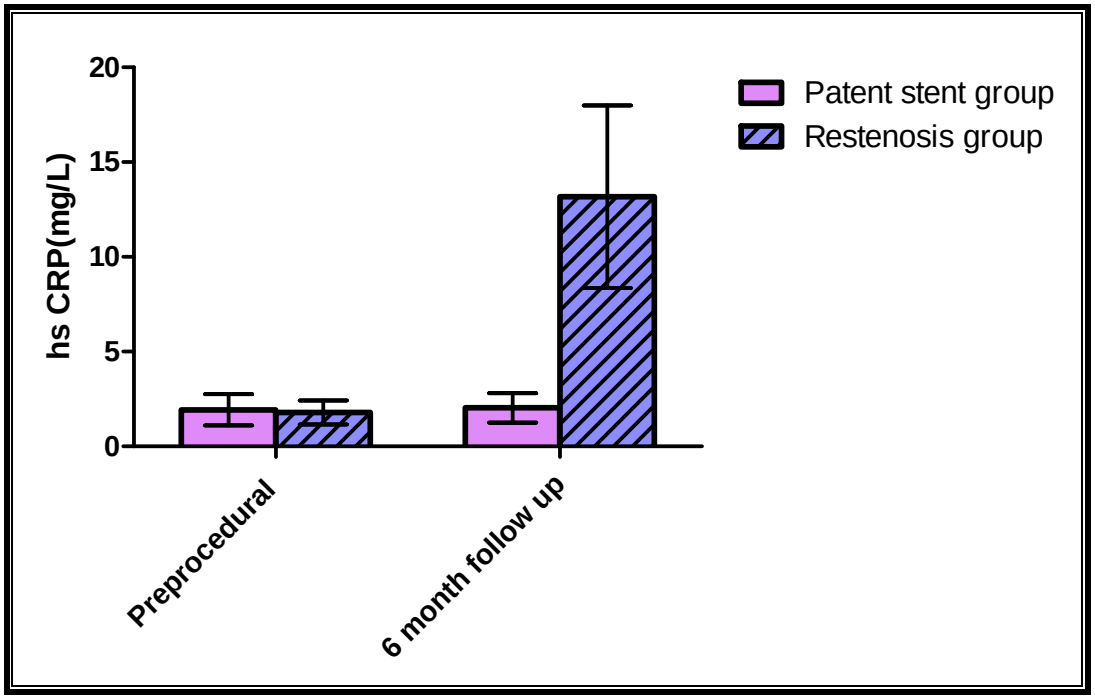

Figure (24): Comparison between patent stent and restenosis groups as regarding preprocedural and six month follow up of serum hs-CRP in BMS group.

XV–Comparison between patent stent and restenosis groups as regarding preprocedural and 6 month follow up of serum IL-6 in DES group table (18), figure (25):

1- Comparison between patent stent and restenosis groups as regarding preprocedural and 6 month follow up of serum IL- 6 in DES group .

The Preprocedural IL-6 mean value for patent stent group is 1.589, SD ± 0.853, while in restenosis group the mean value is 2.22, SD ± 1.273, with no significant statistical difference (P=0.099).

The six month follow up of IL–6 mean value for patent stent group is 1.625, SD ± 0.126, while in instent restenosis the mean value is 10.715, SD ± 2.454 with highly significant statistical difference (P <0.0001).

2- Pre procedural and 6 month follow up of serum IL – 6 in patent stent group in DES group :

The preprocedural serum IL – 6 mean value is 1.589, SD ± 0.853, while the post procedural mean value is 1.625 , SD ± 0.126 , with no statistical significant difference (P = 0.768) .

3- Pre procedural and 6 month follow up of serum IL –6 in instent restenosis group in DES group :

The preprocedural serum IL-6 mean value is 2.22 , SD ± 1.273 , while the six month follow up mean value is 10.715 , SD ± 2.454 , with highly significant statistical difference (P=0.0001).

Table (18): Comparison between patent stent and restenosis groups as regarding preprocedural and 6 month follow up of serum IL-6 in DES group.

IL-6 (pg/ml)		Patent stent group		Restenosis group		T test	
		Mean	± SD	Mean	± SD	T	P value
Preprocedural		1.589	0.853	2.22	1.273	1.679	0.0999
6 month follow up		1.625	0.126	10.715	2.454	-34.182	< 0.0001
T test	T	0.295		-8.13			
	P value	0.7684		< 0.0001			

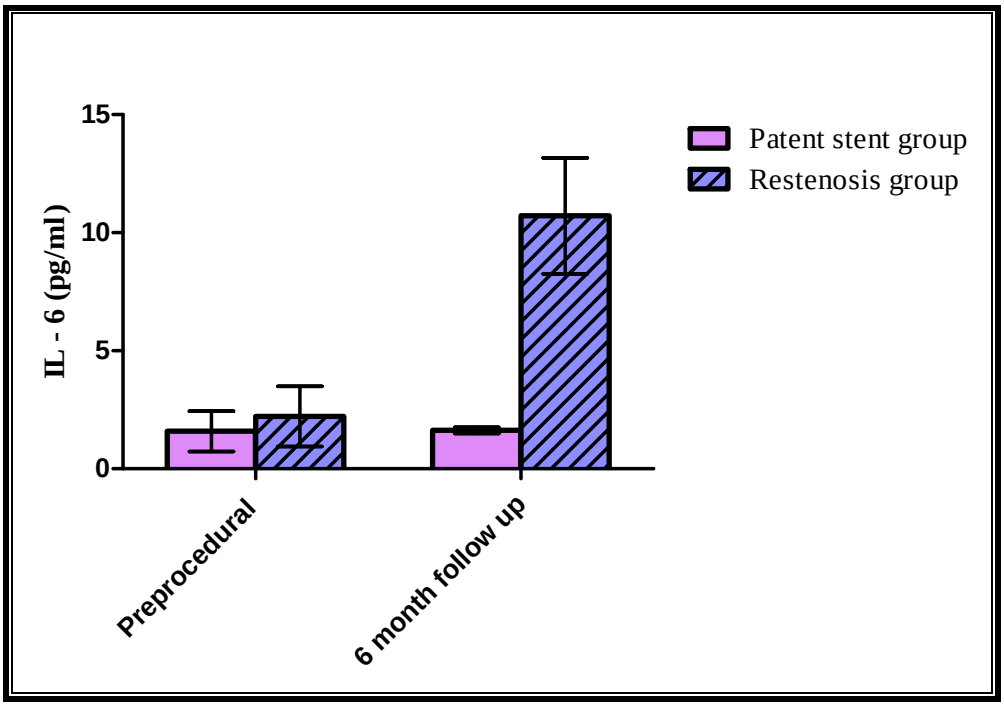

Figure (25): Comparison between patent stent and restenosis groups as regarding preprocedural and 6 month follow up of serum IL-6 in DES group .

XVI-Comparison between patent stent and restenosis groups as regarding preprocedural and 6 month follow up of serum IL-6 in BMS group table (19), figure (26):

1- Comparison between patent stent and restenosis groups as regarding preprocedural serum IL-6 and 6 month follow up in BMS group .

The preprocedural serum IL-6 mean value for patent stent group is 2.217, SD ± 1.426, while for instent restenosis group the mean value is 1.744, SD ± 1.242,with no statistical significant difference (P=0.648) .

The six month follow up of serum IL-6 mean value for patent stent group is 2.747, SD ± 1.132, while in instent restenosis group the mean value is 11.66 , SD ± 5.626, with highly significant statistical difference (P< 0.0001) .

2- Comparison between pre procedural and 6 month follow up of serum IL – 6 in patent stent group in BMS group :

The preprocedural IL – 6 mean value is 2.217 , SD ± 1.426 , while 6 month follow up mean was 2.747 , SD ± 1.132, with no statistical significant difference (P=0.066) .

3- Comparison between pre procedural and 6 month follow up of serum IL – 6 in restenosis group in BMS group :

The preprocedural mean value is 1.744, SD ± 1.242 , and the six month follow up mean value is 11.66 , SD ± 5.626 with highly significant statistical difference (P=0.0007) .

***Table (19)*:** Comparison between patent stent and restenosis groups as regarding preprocedural and 6 month follow up of serum IL-6 in BMS group.

IL-6 (pg/ml)		Patent stent group		Restenosis group		T test	
		Mean	±SD	Mean	±SD	T	P value
Preprocedural		2.217	1.426	1.744	1.242	-0.459	0.6484
6 month follow up		2.747	1.132	11.66	5.626	-9.518	< 0.0001
T test	T	1.864		-4.554			
	P value	0.066		0.0007			

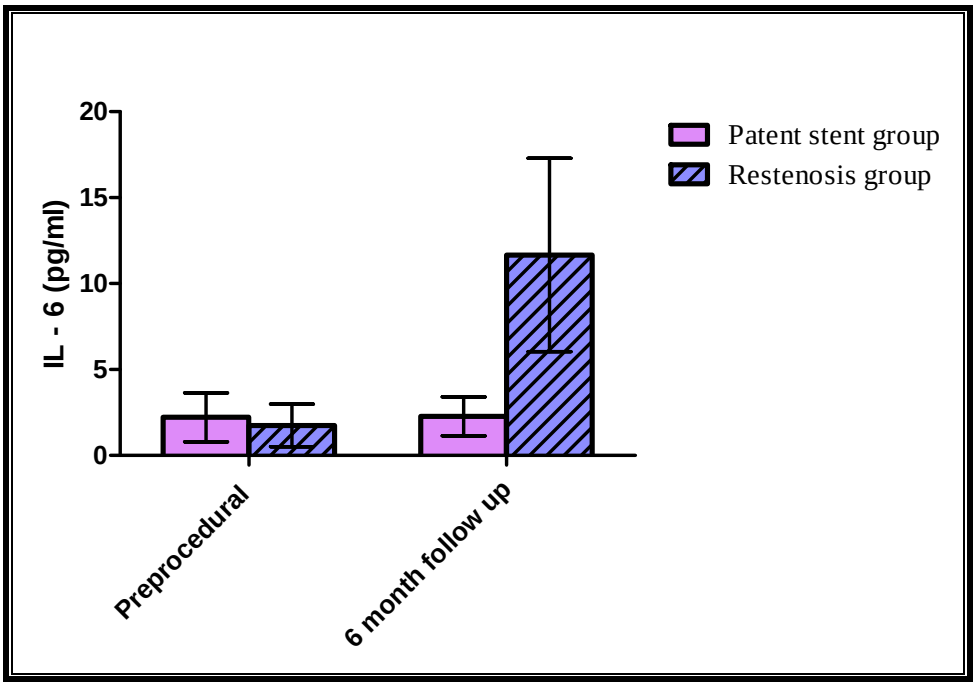

Figure (26) : Comparison between patent stent and restenosis groups as regarding preprocedural and 6 month follow up of serum IL-6 in BMS group.

XVII–Predictive value of hs-CRP and IL-6 at six month follow for instent restenosis table (20), (21) figure (27), (28) :

1- Predictive value of hs- CRP :

ROC curve analysis indicates that patients with hs-CRP value >5 mg/L at 6 month follow up are at higher risk for instent restenosis with 100% sensitivity, 97.78% specificity, 66 % positive predictive value and 100% negative predictive value.

2- Predictive value of IL-6 :

ROC curve analysis indicates that patients with IL-6 values > 5.7 pg/mL at 6 month follow up are at higher risk for instent restenosis with 100% sensitivity, 98.89% specificity, 83% positive predictive value and 100% negative predictive value .

Table (20): Predictive values of hs-CRP at six month follow up .

hs-CRP	95% Confidence

		Interval	
		Lower limit	Upper limit
Positive predictive value	66%	0.214764	0.660
Negative predictive value	100%	0.941513	1
Sensitivity	100%	0.628811	1
Specificity	97.78%	0.922	0.997

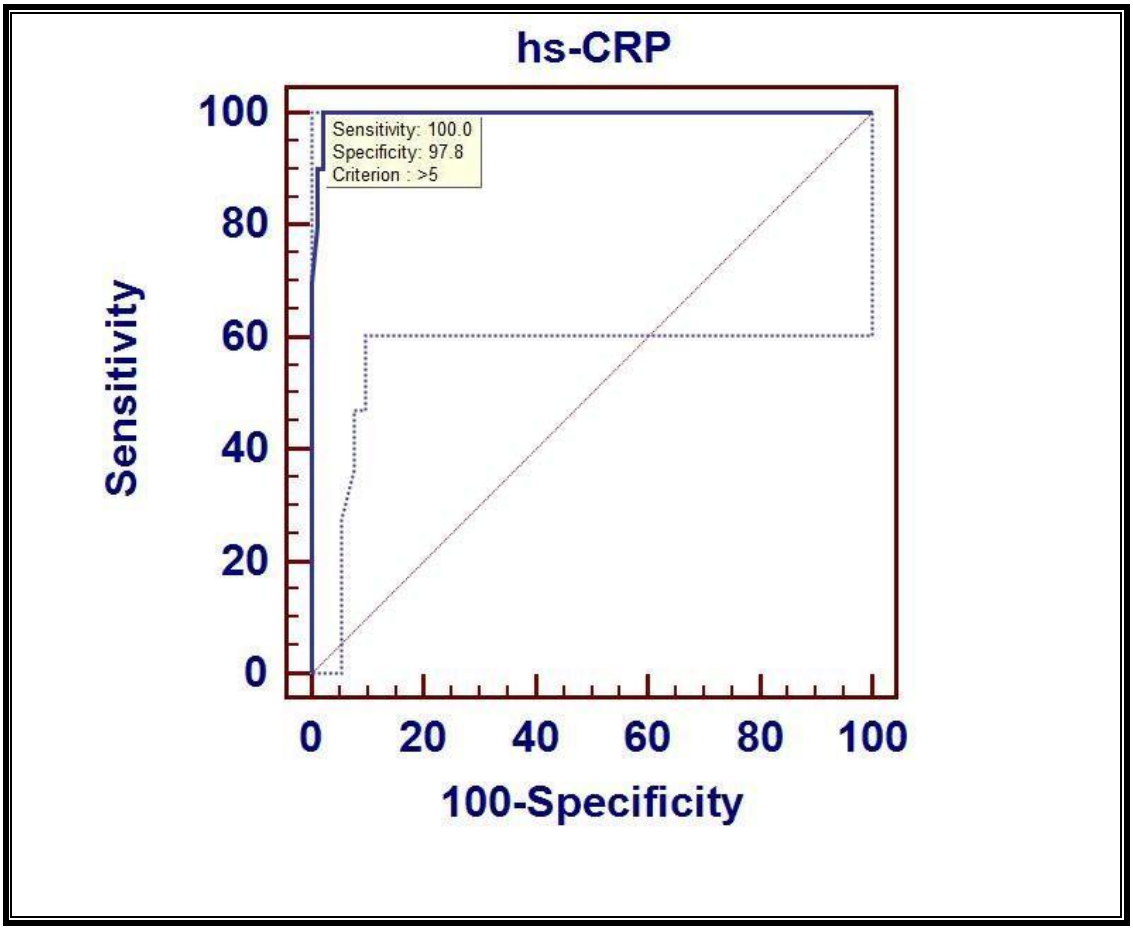

Figure (27) : ROC curve analysis of hs-CRP at six month .

Table (21): Predictive value of IL-6 at 6 month follow up .

IL-6	95% Confidence

		Interval	
		Lower limit	Upper limit
Positive predictive value	83%	0.591	0.83
Negative predictive value	100%	0.936	1
Sensitivity	100%	0.628	1
Specificity	98.89 %	0.94	1

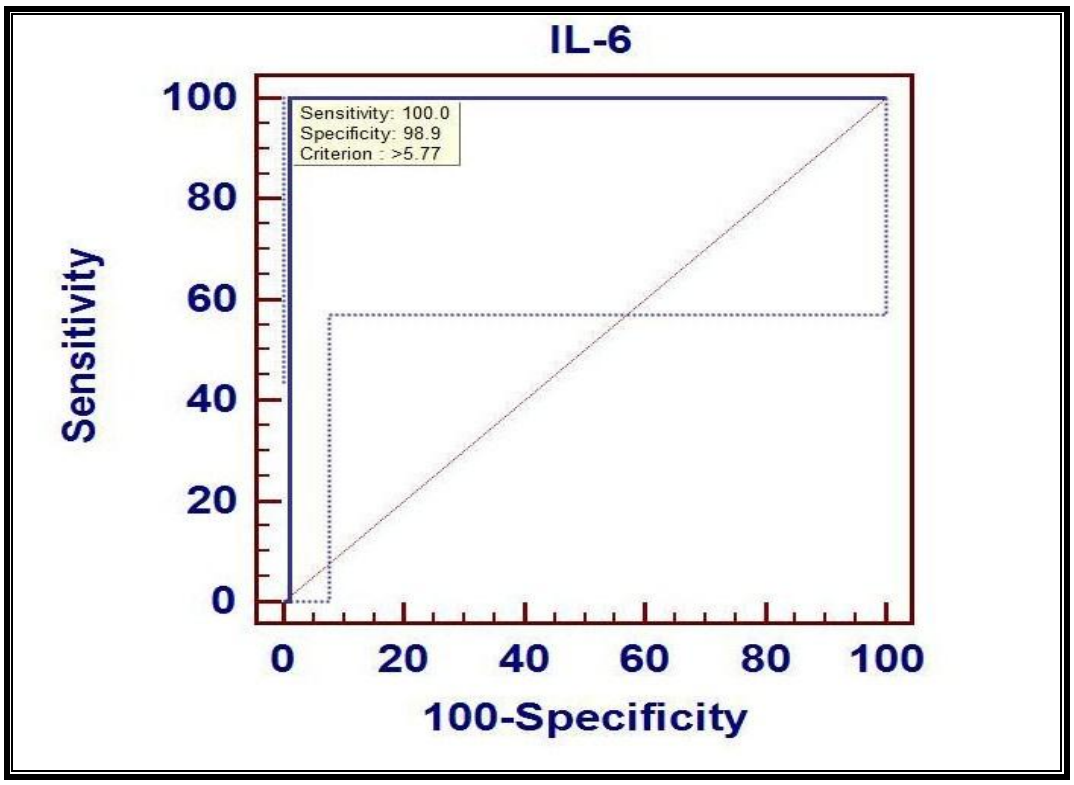

Figure (28) : ROC curve analysis of IL-6 at six month follow up.

XVIII-Clinical and angiographic characteristics of instent restenosis and patent stents subgroups table (22), figure (29), (30).

1- Clinical characteristics of instent restenosis and patent stents groups .

In patent stent group seven patients (77.77%) are diabetic, while in restenosis group thirty nine (42.85%) are diabetic with statistically significant difference (P= 0.049).

Regarding HTN, Dyslipidemia and smoking, there is no statistical significant difference between the two groups.

2- Lesion type:

In instent restenosis group no patients are reported to have type A lesion, three patients have type B lesion (33.33%) and six patients have type C lesion (66.66%).

In patent stents group thirteen patients have type A lesion (14.28%), forty eight patients have type B lesion (52.73%) and thirty patients have type C lesion (32.97%) , no statistical significant difference is found between the two groups for type A and B, while the difference between the two groups for type C lesion is statistically significant (P=0.05).

3- Stent length:

In instent restenosis group the mean stent length is 30.89, SD ± 15.85, while in patent stents group the mean stent length is 20.98, SD ± 7.06 with highly significant statistical difference (P=0.0007).

4- Stent width:

In instent restenosis group the mean stent width is 2.92, SD ± 0.32, while in patent stents group the mean width is 3.01, SD ± 0.37 with no statistical significant difference (P=0.0877).

Table (22) : Clinical and angiographic characteristics of instent restenosis and patent stents groups.

	Instent restenosis	**Patent stents**	**chi square**

				X^2	P value
DM		7(77.777%)	39(42.85%)	3.85	0.049
HTN		6 (66.666%)	42(46.15%)	2.73	0.4
Dyslipdemia		3 (33.333%)	27(29.67%)	2.71	0.43
Smoking		4 (44.444%)	53(58.24%)	1.87	0.328
Lesion type	**A**	0	13(14.28%)	0.697	0.24
	B	3 (33.333%)	48(52.73%)	0.762	0.223
	C	6 (66.667%)	30(32.97%)	1.65	0.05
		Mean ± SD	**Mean ± SD**	**T**	**P value**
Stent length		30.89 ± 15.85	20.98 ± 7.06	-3.483	0.0007
Stent width		2.92 ± 0.32	3.01 ± 0.37	1.7248	0.0877

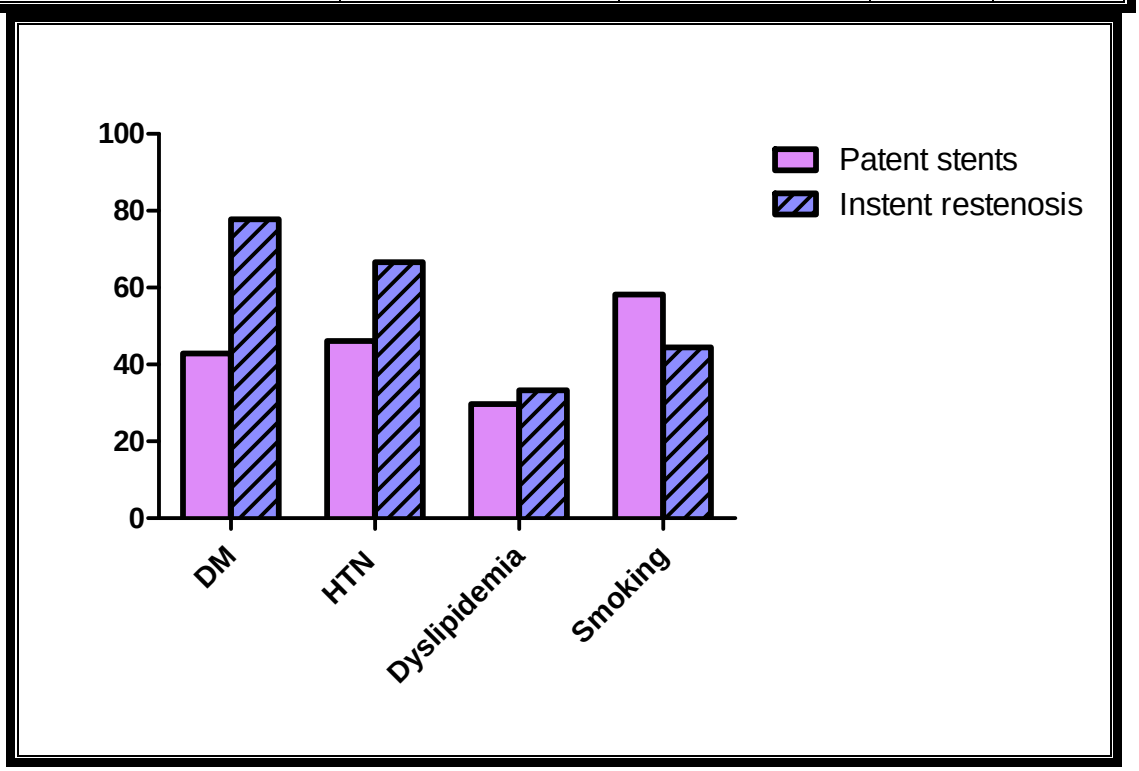

Figure (29): Clinical characteristics of instent restenosis and patent stents groups.

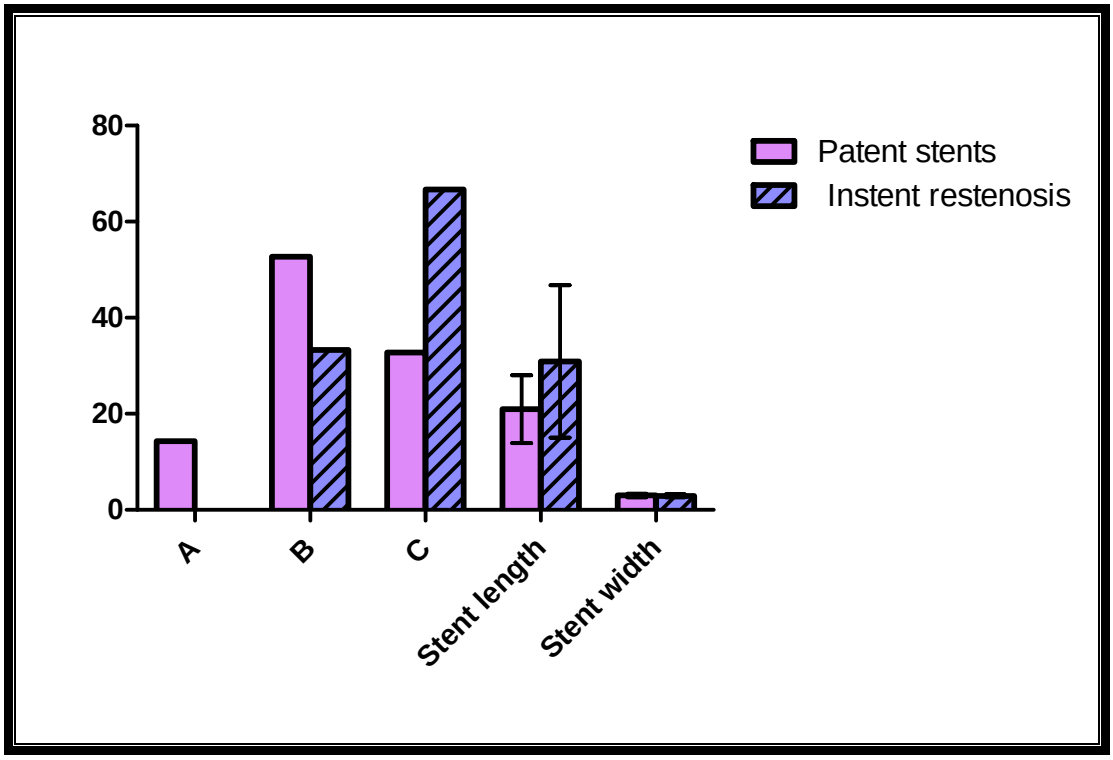

Figure (30): Angiographic characterstics of instent restenosis and patent stents groups.

XIX–Comparison between patients with and without complications as regarding preprocedural and 24 h postprocedural serum hs-CRP in the study groups table (23), figure (31) :

1- Comparison between patients with and without complications as regarding Preprocedural and 24h post procedural serum hs-CRP in DES group .

The preprocedural hs-CRP mean value for patients with complications is 1.831, SD ± 0.988, while for those without complications the mean value is 2.006, SD ± 0.881, with no statistical significant difference (P=0.64).

While the 24 h postprocedural hs-CRP mean value for patients with complication is 4.255, SD ± 0.469, while for those without complication

the mean value is 3.767, SD ± 0.655.The difference is statistically significant (P = 0.039) .

2- Comparison between patients with and without complications as regarding Preprocedural and 24h post procedural serum hs-CRP in BMS group .

The preprocedural hs-CRP mean value for patients with complications is 1.973, SD ± 0.688, while for those without complications the mean value is 1.916, SD ± 0.889, with no statistical significant difference (P = 0.862) .

The 24 h postprocedural hs-CRP mean value for patients with complication is 7.178, SD ± 0.863, while for those without complication mean value was 6.18, SD ± 0.911, with statistical significant difference (P = 0.01) .

Table (23): Comparison between patients with and without complications as regarding Preprocedural and 24h post procedural serum hs-CRP in DES & BMS groups

hs-CRP mg/L		Complication				T test	
		With		Without			
		Mean	±SD	Mean	±SD	T	P value
DES group	Preprocedural	1.831	0.988	2.006	0.881	0.477	0.64
	Postprocedural	4.255	0.469	3.767	0.655	2.184	0.039
BMS group	Preprocedural	1.973	0.688	1.916	0.889	0.176	0.862
	Postprocedural	7.178	0.863	6.18	0.911	2.755	0.01

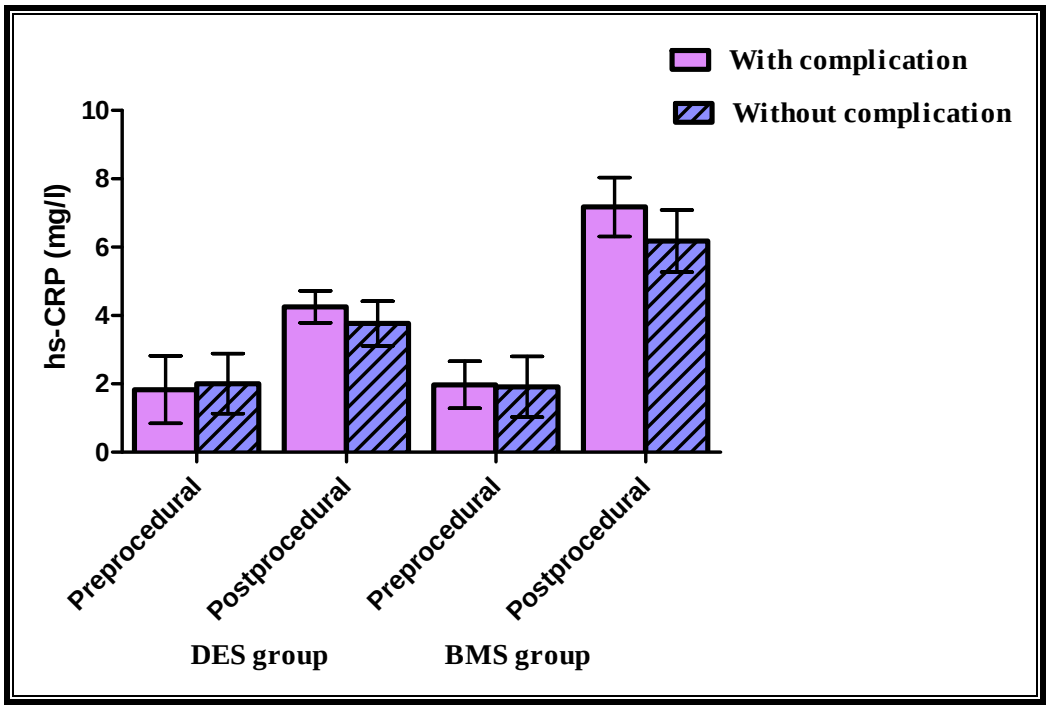

Figure (31): Comparison between patients with and without complications as regarding Preprocedural and 24h post procedural serum hs-CRP in DES &BMS group .