Research Article

Clinical profile of patients with acute coronary syndrome with special reference to diabetes mellitus

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ABSTRACT

Background: Ischemic heart disease is defined as inadequate blood flow resulting in decreased oxygenation to the myocardium due to severe narrowing and/or complete blockage of coronary arteries. Although a number of risk factors have been identified over the past several decades, the precise aetiology and mechanisms leading to the development of CAD are not fully understood. These includes abnormal levels of circulating cholesterols with elevated level of LDL-cholesterol and reduced level of HDL-cholesterol, hypertension, cigarette smoking, diabetes mellitus, male gender, post-menopausal state, advanced age, sedentary life style, obesity and a positive family history of premature cardiovascular disease female population.
Methods: Our study was aimed to interrogate and to assess the patients presenting with acute coronary syndrome, for the presence of conventional risk factors with special eye on diabetes and to stratify patients with acute coronary syndrome according to their diabetic status (Diabetic vs. non diabetic) and also to study pattern of involvement of coronary arteries in diabetic and non-diabetic patients and to stratify patient according to treatment they received PTCA vs. CABG.
Results: It was observed that out of 100 patients with diabetes mellitus, 71% patients were having diabetes mellitus. Among the diabetics in this study, STEMI (73.13%) was the commonest presentation of ACS. On the other hand amongst diabetics, 58.33% had STEMI.
Conclusion: Patients with diabetes mellitus had more dyslipidemia, hypertension and smokers. This group of patients required maximum intervention in the form PTCA and CABG.

Keywords: Acute coronary syndrome, Diabetes mellitus, PTCA, CABG, STEMI

INTRODUCTION

Ischemic heart disease is defined as inadequate blood flow resulting in decreased oxygenation to the myocardium due to severe narrowing and/or complete blockage of coronary arteries. Ischemic heart disease (IHD) is classified into two subgroups:

1) Chronic coronary artery disease who most commonly present with stable angina

2) Acute coronary syndrome.[1]

All these conditions have a common aetiology and causes formation of thrombus on an inflamed and complicated atheromatous plaque. Coronary Artery Disease (CAD) is a major cause for morbidity and mortality in the developing countries. Indian populations have been observed to have a more severe CAD that has its onset at younger age with male predominance.[2]

Although a number of risk factors have been identified over the past several decades, the precise aetiology and mechanisms leading to the development of CAD are not fully understood. These includes abnormal levels of circulating cholesterols with elevated level of LDL-cholesterol and reduced level of HDL-cholesterol, hypertension, cigarette smoking, diabetes mellitus, male gender, post-menopausal state, advanced age, sedentary life style, obesity and a positive family history of premature cardiovascular disease.

Aims and objectives

The aims and objectives of the study were as given below:

1. To interrogate and to assess the patients presenting with acute coronary syndrome, for the presence of conventional risk factors with special eye on diabetes.

2. To stratify patients with acute coronary syndrome according to their diabetic status (Diabetic vs. non diabetic)

3. To study pattern of involvement of coronary arteries in diabetic and non-diabetic patients.

4. To stratify patient according to treatment they received PTCA vs. CABG.

METHODS

Study was conducted in department of general medicine at the peerless hospital & B. K. Roy research centre which is a 300 bed super-speciality hospital in Kolkata, West Bengal.100 Subjects from in-patient were selected. It is a retrospective, non randomised, descriptive study. All adult patients (>18 years) diagnosed as acute coronary syndrome were selected based on serial ECG changes and cardiac biomarker. Patients with non-cardiac chest pain. Patients without significant ECG changes; Patients without elevated cardiac biomarkers; patients having previous ECG showing persistent elevated ST elevation; patients not giving consent were all excluded from study.

Information regarding history, clinical finding (including anthropometric measurement), ECG, biochemical parameter were entered into pre-designed, pre-tested proforma.

Parameters studied at the time of admission and on follow up till the patient was discharged by using a pre-designed and pre-tested proforma.

a) History - History regarding the illness as well as history of past illness, occupational, social, familial, drug history were obtained from the patient and parents or both. Specific risk factors for diabetes,

hypertension and STEMI were picked up by thorough history from patient and relatives and also from the clinical examination supported by laboratory tests as required.

b) Clinical examination - general and systemic examination

c) Anthropometry -

a. Weight was measured using an electronic weighing machine calibrated to the nearest 1gm with minimum cloths and no shoes.

b. Height was measured by Stadiometer in standing position without shoes.

c. Waist circumference was measured using measuring tape at level midway between the lowest rib margin and iliac crest.

d. Hip circumference was measured with measuring tape at maximal circumference over the buttock.

d) Biochemical examination:

A) Fasting and 2 hour post prandial blood sugar

This was measured using the GOD-POD method, which is an enzymatic spectrophotometric method for plasma glucose estimate.

We have included glycemic status which presented at the time of admission.

Specimen - plasma

Reference interval - FBS >126 mg/dl; 2 hour PPBS >200 mg/dl during an oral glucose tolerance test as per ADA 2013.

{We have not considered HBA1C for diagnosing or knowing the glycemic status of the subject of our study}.

B) Urea

It was tested by enzymatic UV test UREASE-GLDH

Specimen - Serum

Reference interval - 10-45 mg/dl

C) Creatinine

It was measured by calorimetric method (Jaffe method)

Specimen - Serum

Normal range - 0.8-1.5 mg/dl

D) Lipid profile

i. Total cholesterol -

It was measured by CHOP-PAP technique which is an enzymatic spectrophotometric method using a TRANS-SASIA-L 300 auto analyser.

Specimen - Serum after 12 hour of fasting

Reference range- <200 mg/dl (NCEP guideline)

ii. Direct HDL-Cholesterol (HDL-C)

Measured by enzymatic method using Di-Chii kit

Specimen - Serum after 12 hour of fasting

HDL- cholesterol remains stable in serum for 6 days at 2°C

Reference range - ≥ 60mg/dl (NCEP guideline)

iii. Direct LDL-Cholesterol (LDL-C)

Measured by enzymatic method using Di-Chii kit

Specimen - Serum after 12 hour of fasting

Reference range - <100 mg/dl (NCEP guideline)

iv. Serum triglyceride (TG)

It was measured by enzymatic DHBS colorimetric method.

Specimen - Serum after 12 hour of fasting

Reference range - <150 mg/dl (NCEP guideline)

v. VLDL

Direct LDL-C and Direct HDL-C measured were added and then subtracted from value of total cholesterol to get the value of VLDL.

E) Cardiac enzymes

i. Creatinine kinase and creatinine kinase MB were measured at 0 hour and 12 hours after admission by immunoinhibition assay (an antibody is incorporated with the CK reagent. This antibody will bind to and inhibit the activity of the M subunit of CKMB.

Specimen - Serum

Reference range - CPK <180U/L; CPK-MB <20U/L

ii. Troponin T (CTnT)

It was performed minimum 6 hours after onset of chest pain using the TROTT sensitive kit

It is a sensitive marker of myocardial damage and also to differentiate Non- STEMI from Unstable angina.

We have included only qualitative test as we are not looking into the severity and prognosis of patients with Acute Coronary Syndrome.

F) Other laboratory parameter tested

i. Complete hemogram
ii. Routine urine examination
iii. Chest X-ray (Postero-anterior view).

G) Electrocardiogram (Figure 1)

Serial ECG was done using a SCHILLER AT-2 PLUS ECG machine shown in Figure 1. ST elevation or depression, T wave inversion, dynamic ST-T changes were noted. ST segment scoring not done

Any new onset bundle branch block or hemi block, AV block or arrhythmias was noted.
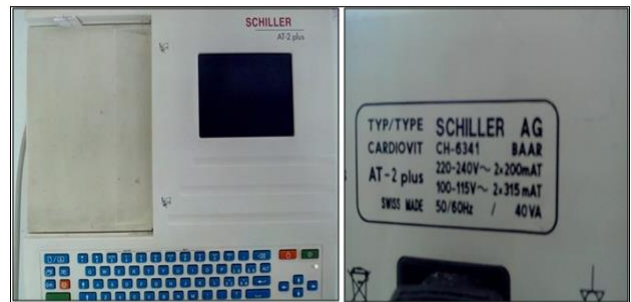
Figure 1: Showing electrocardiography machine.

H) Echocardiography - 2D and M-mode study.

Transthoracic echocardiography - 2D and M mode was done in all patients as early as possible using the Phillips echocardiography machine. Especially any wall motion abnormalities and ventricular systolic dysfunction were noted. Left ventricular ejection fraction was estimated using the Teichoz formula.

Figure 2: Showing echocardiography machine.

I) Coronary angiography: Coronary angiography was done by femoral artery approach and accordingly patients were grouped into significant (major = ≥70% lesion) or insignificant (minor = ≤70%).

e) Data relating to the patient information/investigation was collected:

A. Complications - like recurrent chest pain, recurrent myocardial infarction, left ventricular failure, arrhythmias and death.

B. A correlation of history, clinical feature, risk factors, ECG, cardiac biomarkers with short term (hospital stay) done and not with hospital stay duration.

C. Pattern of acute coronary syndrome in diabetic and non-diabetic patients observed.

D. Management of patients according to pattern of acute coronary syndrome observed.

RESULTS

Maximum (46%) patients in our study was old aged between 60-80 years (Table 1).

Table 1: Age group-wise distribution of CAS cases.

Age group (years)	No. of patients
<40	8
40-60	39
60-80	46
>80	7

Mean age for male and female was 59.9 years and 64.0 years respectively (Table 2).

Table 2: Mean of ACS patients under study.

Sex	Mean ± SE (years)	SD (years)
Male	59.9 ± 1.49	13.6
Female	64.0 ± 3.63	14.5

People who were from middle socioeconomic class were having more CAS (Table 3).

Table 3: Patients with ACS from different socioeconomic status.

S/E	Cases	% in total cases
Lower class	9	9.00%
Middle class	85	85.00%
Upper class	6	6.00%

Most (91%) patients having CAS were living sedentary life (Table 4).

Table 4: Patients with ACS according to life style.

Lifestyle	Cases	% in total cases
Active (A)	3	3.00%
Sedentary (S)	91	91.00%

Patient belonging to normal BMI were having ACS more commonly compared to the pre-obese and non-obese (Table 5).

Table 5: Body mass index (BMI) of patients with ACS.

BMI	No. of cases	% in total cases
<25 (Normal)	53	53.00%
25-30 (Pre-obese)	43	43.00%
>30 (Obese)	4	4.00%

ACS among patients with normal waist circumference were high compared to above normal (Table 6).

Table 6: Waist circumference of male patients with ACS.

Waist circumference (WC) (cm) (Male)	No. of male patients	% in total cases
<102 (Normal)	52	61.90%
102-110	20	23.81%
≥110	12	14.29%

Among females majority (68.75%) were having waist circumference more than 100 cm (Table 7).

Table 7: Waist circumference of female patients with ACS.

WC (cm) (Female)	No. of female patients	% in total cases
<88 (Normal)	0	0.00%
88-100	5	31.25%
≥100	11	68.75%

Most (78.57%) male waist hip ratio below 1.0 cm and 21.43% were more than 1.0 cm (Table 8).

Table 8: Waist hip ratio of male patients with ACS.

W:H ratio	No. of male patients	% in total cases
<1.0 (Normal)	66	78.57%
≥1.0	18	21.43%

100% females had the waist hip ratio above 0.85 cm (Table 9).

Table 9: Waist hip ratio of female patients with ACS.

W:H ratio	No. of female patients	% in total cases
<0.85 (Normal)	0	0.00%
≥0.85	16	100.00%

Hypertension was found in 75% patients of our study population, similarly smoking was found in 70%, whereas diabetes mellitus in 71% and dyslipidemia was found in 64% patients (Table 10).

Past history with effort angina 25.51%, IHD 12.25%, and no history of cardiac illness in 62.24% (Table 11).

Family history of the diabetes mellitus (34%), hypertension (34%), CAD (27%), IHD (1%), and SCD (1%) (Table 12).

73.13% patients were diabetic among patients with STEMI and 58.33% and 71.43% patient had diabetes among NSTEMI and UA respectively (Table 13).

77.33% (value of test statistic 5.653, P value 7.884e-09) were hypertensive, 65.71% (value of test statistic 2.769, P value 0.002811) were smokers and 81.25% (value of test statistic 6.405, P value 0.0028114) were dyslipidemic from patients having diabetes mellitus (Table 14).

Total number of stenosed coronary arteries were 88 and 64 (72.73%) were having diabetes (value of test statistic 4.788, P value 8.422582e-07). Only 9.28% was with normal coronary anatomy, 35.05% single vessel disease (76.47% were diabetic), 47.42% double vessel disease (67.39% were diabetic) and 8.25% with triple vessel disease (87.50% were diabetic). Among patients with normal coronary arteries 11.11% were STEMI and 88.89% were NSTEMI (Table 15).

Among males STEMI was more common than female (62 vs. 5), NSTEMI and UA were also more common in

males than females (10 vs. 2) and (12 vs. 9) respectively (Table 16).

Table 10: Risk factors in patients with ACS.

Risk factors	No. of patients exposed	% patients exposed
Hypertension	75	75.00%
Smoking	70	70.00%
DM	71	71.00%
Dyslipidemia	64	64.00%
At least one risk factor	99	99.00%

Table 11: History of cardiac illness in patients with ACS.

Past H/o	No. of cases	% in total cases
Effort angina	25	25.51%
IHD (Ischemic heart disease)	12	12.24%
No cardiac history	61	62.24%

Table 12: Family history of patients with ACS.

Family H/o	No. of cases	% in total cases
DM (Diabetes mellitus)	34	34.00%
HTN (Hypertension)	34	34.00%
CAD (Coronary artery disease)	27	27.00%
IHD (Ischemic heart disease)	1	1.00%
SCD (Sudden cardiac death)	1	1.00%
At least one risk factor	85	85.00%

Table 13: Distribution of ACS patients with diabetes.

ACS types	No. of patients	No. of diabetes patients	%ACS patients with diabetes
STEMI	67	49	73.13%
NSTEMI	12	7	58.33%
UA	21	15	71.43%

Table 14: Risk factor wise distribution of ACS patients having diabetes.

Risk factors	No. of patients	No. of DM patients	% Patients with diabetes	#Value of test statistic	P value (large sample Z-test)
Hypertension	75	58	77.33%	5.653	7.884e-09*
Smoking	70	46	65.71%	2.769	0.002811*
Dyslipidemia	64	52	81.25%	6.405	0.0028114*

*Proportion of diabetics having hypertension or smoking or dyslipidemia in patients with ACS is more than 50% (i.e. more than the proportion of Non-Diabetics having hypertension or smoking or dyslipidmia in patients with ACS) at 5% level of significance.

π = 0.5 vs. π >0.5

Table 15: Distribution of different types of CAD patients having diabetes.

Type of CAD	No. of CAD patients	Number of diabetes patients	%CAD patients with diabetes	#Value of test statistic	P value (large sample Z-test)
Single vessel blocked	34	26	76.47%		
Double vessels blocked	46	31	67.39%	4.788	8.422582e-07*
Triple vessels blocked	8	7	87.50%		
All CAD	88	64	72.73%		

*Proportion of Diabetics having coronary artery disease (one or more vessels blocked) in patients with ACS is more than 50% (i.e. more than the proportion of Non-Diabetics having coronary artery disease in patients with ACS) at 5% level of significance.

Table 16: Sex-wise distribution of different types of ACS.

ACS Type	Male	Female	Total cases	% in total cases
STEMI (ST elevation myocardial infarction)	62	5	67	67.00%
NSTEMI (Non ST elevation myocardial infarction)	10	2	12	12.00%
UA (Unstable angina)	12	9	21	21.00%
Total cases (100)	84	16	100	100.00%

82% presented with chest pain, 2% with syncope, 30% with dyspnoea, impending to doom or chocking sensation, 30% with sweating, 19% with chest discomfort and 7% presented with nausea, vomiting, dizziness etc. (Table 17).

Table 17: Different symptoms ACS patients.

Type of symptoms	No. of cases	% in total cases
Chest pain	82	82.00%
Syncope	2	2.00%
SOB/choking/impending to doom/dyspnea	30	30.00%
Sudden heavy sweating (Diaphoresis)	30	30.00%
Nausea/vomiting/dizziness	7	7.00%
Chest tightness/chest discomfort/uneasiness	19	19.00%

Table 18: Location of chest pain in patients with ACS.

Chest pain location	No. of cases	% in ACS patients with chest pain
Retrosternal	63	76.83%
Epigastric	3	3.66%
Left Chest	11	13.41%
Diffuse	5	6.10%

76.83% patients presented with retrosternal chest pain, 3.66% with epigastric pain, 13.41% presented with left sided chest pain and 6.10% patients presented with diffuse pain in chest (Table 18).

41% patients complained about radiation to left upper limb, 5% to both upper limb, 5% to epigastria and 4% to neck and jaw (Table 19).

Table 19: Radiation of chest pain in ACS patients.

Radiation of chest pain	No. of cases	% in total cases with chest pain
Left upper limb	41	41.00%
Both arm	5	5.00%
Epigastria	5	5.00%
Neck & jaw	4	4.00%

Mean ejection fraction in STEMI was 41.73%, NSTEMI was 40.75% and 57.10% in patients with unstable angina (Table 20).

Table 20: Mean ejection fraction (LVEF) of patients with ACS.

Type of ACS	Mean ejection fraction
STEMI	41.73%
NSTEMI	40.75%
UA	57.10%

Total number of stenosed coronary arteries were 88 and 64 (72.73%) were having diabetes (value of test statistic 4.788, P value 8.422582e-07). Only 9.28% was with normal coronary anatomy, 35.05% single vessel disease (76.47% were diabetic), 47.42% double vessel disease (67.39% were diabetic) and 8.25% with triple vessel disease (87.50% were diabetic). Among patients with normal coronary arteries 11.11% were STEMI and 88.89% were NSTEMI (Table 21 and 22).

Table 21: Pattern of coronary artery involvement in different ACS patients.

Disease diagnosed	No. of patients with all vessels normal	No. of patients with at least one vessel blocked (CAD)	% of patients with all vessels normal	% of patients with at least one vessel blocked (CAD)
STEMI	1	63	11.11%	71.59%
NSTEMI	0	12	0.00%	13.64%
UA	8	13	88.89%	14.77%
All ACS	9	88	9.28%	90.72%

12 patients received thrombolytic on admission among STEMI patients (65%) (Table 23).

(67%) patients 37.31% received BMS, 35.82% received DES and 7.46% received CABG whereas 19.40% did not receive any intervention (PCI/CABG). Among patients with NSTEMI (21%) only 75% patients received BMS, 16.66% received DES and 8.33% did not receive any

intervention. Among patients with unstable angina 38.09% patients received BMS whereas 61.90% did not receive any intervention (Table 24).

Table 22: Pattern of coronary artery involvement in all ACS patients.

Type of CAD	No. of ACS patients	% in total ACS patients
All vessels normal	9	9.28%
Single vessel blocked	34	35.05%
Double vessels blocked	46	47.42%
Triple vessels blocked	8	8.25%

Table 23: No. (%) of ACS cases who received thrombolytic treatment.

Type of ACS	No. of patients	No. of thrombolytic treatment	% of thrombolytic treatment
STEMI	67	51	76.12%
NSTEMI	12	0	0.00%
UA	21	0	0.00%

Table 24: Different type of treatments in ACS patients.

Type of ACS	No. of PTCA				No. of CABG	Others (Non-invasive treatments)	Total
	BMS	DES	No Stent	Total			
STEMI	25	24	3	52	5	10	67
NSTEMI	9	2	0	11	0	1	12
UA	8	0	1	9	0	12	21
All	42	26	4	72	5	23	100

Average Length Of Stay (ALOS) in hospital was 9.74 days for STEMI, 9.63 days for NSTEMI and 9.32 days for unstable angina (Table 25).

Table 25: Showing average length of stay in hospital.

Type of ACS	No. of patients	Number of discharged with stable condition	ALOS (days)
STEMI	67	62	9.74
NSTEMI	12	8	9.63
UA	21	19	9.32

DISCUSSION

This is a retrospective study based on the various spectrum of acute coronary syndrome which includes 100 patients of both sexes. They were selected if they had met the criteria for acute coronary syndrome as mentioned in the inclusion criteria. The patients were admitted to the coronary care unit and intensive care unit of Peerless

hospital and B. K. Roy research center, Kolkata during the period February 2012 to February 2013. They were diagnosed on the basis of history, clinical examination, ECG and cardiac biomarkers.

The study population was enough for a retrospective study carried out during hospital stay of patients. The aim of the study was to establish if a correlation exists between clinical features, ECG and some important conventional risk factors like diabetes mellitus, hypertension, smoking, dyslipidemia, age and sex. We have not studied complications, long term outcome and non-conventional risk factors.

Mean age for male in our study population was 59.9 ± 1.49 (SD years 13.6), whereas in females the same was 64.0 ± 3.63 (SD years 14.5) (Table 2) and maximum patients (46%) were between 60 and 80 years of age group (Table 1) while mean age in CREATE study was 57.5 years (SD 12.1)[2] and Male/female ratio was 84:16, and the same from the GRACE Study was 69:31[3] and in

study done by Lu HT and Nordin RB (2013) the mean age (SD) was 59.1 (12.0) with 70% male population.[4]

Most patients (85%) belonged to middle socioeconomic status, and 9% and 6% were from lower and upper socioeconomic status respectively (Table 3). In CREATE study most (52.5%) patients were from lower-middle socioeconomic status.[5]

Out of 100 patients, 91% were living sedentary life style whereas only 3% were physically active (Table 4) whereas in study done by Gupta R (1996) found that 86% were living sedentary lifestyle in rural area compared to 81% from urban area population.[2,10] While in another study by Singh RB, Sharma JP, Rastogi V, Raghuvanshi RS, Moshiri M, Verma SP, et al. (1997) found that sedentary life style was significantly higher in urban population compared to the rural subjects (P <0.01).[6]

Body Mass Index (BMI) of 53% patients in this study population was below normal BMI (25 kg/m^2), 43% were between 25-30 kg/m^2 and only 4% were above 30 kg/m^2 (Table 5). In study done by Diercks DB, Roe MT, Mulgund J, Pollack CV, Kirk JD Jr, et al. found that most (70.5%) of the CRUSADE patients were classified as obese or overweight (Overweight BMI 25-29.9 and obesity BMI ≥30.0) they present with co-morbid conditions like diabetes mellitus, hypertension and hyperlipidemia.[7]

61.9% male had waist circumference below 102 cm, 23.81% were between 102-110 cm and 14.29% were above 110 cm (Table 6). For waist circumference in females were 31.25% (Between 88-100 cm), whereas 68.75% were above 100 cm (Table 7). In study done by Barazzoni R, Aleksova A, Carriere C, Cattin MR Zanetti M, Vinci P, et al. (2013) found that the incidence of ACS was lower in patient with normal waist circumference compared to higher waist circumference independent of age and plasma creatinine associated with lower PTX3 (Long Pentraxin3).[8]

Most (78.57%) male waist hip ratio below 1.0 cm and 21.43% were more than 1.0 cm (Table 8). In contrast, 100% females had waist hip ratio above 0.85 cm (Table 9) where as in a study done by Selim S, Rahman R, Yasmin R, Karim N, Chowdhury SH, Lona H, et al. (2013) they found that Waist hip ratio was significantly greater in cases 0.98 ± 0.05 than control 0.93 ± 0.102.[9]

Hypertension was found in 75% patients of our study population, similarly smoking was found in 70%, whereas diabetes mellitus in 71%. In our study where dyslipidemia was considered as a risk factor, it was found that 64% patients had dyslipidemia (Table 10), where as in study done by Mahmood M, Ashraf T, Memon MA, Achakzai. (2010) 85.5% had abdominal obesity presenting with acute coronary syndrome.[7,10] Where as in CREATE study they found that 37.7% were hypertensive, 40.2% were smokers and 37.7% were with

diabetes mellitus.[9] While in another study done by Selim S, Rahman R, Yasmin R, Karim N, Chowdhury SH, Lona H, et al. (2013) they found that 70% case and 45% control were smokers, 23.5% of cases and 33% of controls were having diabetes, 5% of case and 1.5% of control were having dyslipidemia and BMI in cases was 24.68 ± 3.06 whereas in control it was 20.54 ± 4.37.[9]

Past history with effort angina 25.51%, IHD 12.25%, and no history of cardiac illness in 62.24% (Table 11) whereas in study done by Selim S, Rahman R, Yasmin R, Karim N, Chowdhury SH, Lona H, et al. (2013). Found that 31% of cases and 2% of the control population were having positive past history of cardiac illness.[9]

Family history of diabetes mellitus (34%), hypertension (34%), CAD (27%), IHD (1%), and SCD (1%) (Table 12). Whereas in a study done by Milionis HJ, Kalantzi KJ, Papathanasiou AJ, Kosovitsas AA, Doumas MT, Goudevenos (2007) found that positive family history of premature coronary artery disease in individual with metabolic syndrome had an incremental effects on the odds of suffering an acute coronary syndrome (Odds ratio, 7.12; 95% confidence interval; P <0.001).[10] While in other study done by Misiriya KJ, Sudhayakumar N, Khadar SA, George R, Jayaprakasht VL, Pappachan JM (2009) found that in their study 43% were hypertensive, 41.05% were diabetic.[11]

In our study 77.33% (value of test statistic 5.653, P value 7.884e-09) were hypertensive, 65.71% (Value of test statistic 2.769, P value 0.002811) were smokers and 81.25% (Value of test statistic 6.405, P value 0.0028114) were dyslipidemic from patients having diabetes mellitus (Table 14). Whereas in study done by Shmulewitz D, Auerbach SB, Lehner T, Blundell ML, Winick JD, Youngman LD, et al. (2001) have found that in diabetic patients, 24% patients were with obesity.[12]

In our study population only 67% showed STEMI, 12% NSTEMI and 21% were with unstable angina (Table 18) whereas in a study done by Misiriya KJ, Sudhayakumar N, Khadar SA, George R, Jayaprakasht VL Pappachan JM (2009) found that 56% patient had STEMI, 44% patient had UA/NSTEMI.[8,10] In CREATE study they found that most (60.6%) presented with STEMI and only 39.4% patients they presented with NSTEMI/UA.[9] Among males STEMI was more common than female (62 vs. 5), NSTEMI and UA were also more common in males than females (10 vs. 2) and (12 vs. 9) respectively (Table 16). Where as in our study population 73.13% patients were diabetic among patients with STEMI and 58.33% and 71.43% patient had diabetes among NSTEMI and UA respectively (Table 13) whereas in study done by In study done by Panduranga P, Sulaiman KJ, Al-Zakwani IS, Lawati JA (2010) found diabetic patients presented more commonly with unstable angina (55% diabetic and 44% non-diabetic, P <0.001) and less commonly with STEMI (20% diabetic and 27% non-diabetic, P = 0.001).[13]

As shown in Table 17, out of 100 patients 82% presented with chest pain, 2% with syncope, 30% with dyspnoea, impending to doom or chocking sensation, 30% with sweating, 19% with chest discomfort and 7% presented with nausea, vomiting, dizziness etc. Whereas study done by Pathy MS. 1967, 29 (190):190 found that out of 387 patients (19.37%) presented with chest pain, (6.97%) presented with syncope, with dyspnoea was presentation for (19.89%), whereas only (0.51%) presented with sweating, whereas (2.58) and (1.03%) patients presented with vomiting and chest discomfort respectively.[14]

93.75% patients presented with sudden onset chest pain compared to 1.25% of gradual onset, 5% with intermediate onset. 76.83% patients presented with retrosternal chest pain, 3.66% with epigastric pain, 13.41% presented with left sided chest pain and 6.10% patients presented with diffuse pain in chest (Table 18) whereas study done by Muhammad AM, Shahzad AK, Sohail S, Ijaz ULHT have found that out of 331 patients 308 (93.1%) patients reported chest pain as presenting complaint there were 127 (38.4%) patients with pre-cordial chest pain, 115 (34.7%) had retrosternal chest pain, 58 (17.5%) were having epigastric pain.[15] 41% patients complained about radiation to left upper limb, 5% to both upper limb, 5% to epigastria and 4% to neck and jaw (Table 19) whereas study done by Muhammad AM, Shahzad AK, Sohail S, Ijaz ULHT has shown that radiation of chest pain to shoulder, neck and jaw was seen in 75 (22.7%) whereas in 42 (12.7%) patients pain radiated to both side of the chest, 55 (16.6%) patients had chest pain radiation to chest, shoulder, upper arm and ulnar side of the left forearm and chest pain radiation to interscapular region along with both side of the chest was present in 10 (3.0%) patients, only in 11 (3.3%) patients pain radiated only to left side of the chest.[15]

Mean ejection fraction in STEMI was 41.73%, NSTEMI was 40.75% and 57.10% in patients with unstable angina (Table 20) Compared to study done by Jedrzkiewicz S, Goodman SG, Yan RT, Grondin FR, Gallo R, Welsh RC, et al. (Am Heart J 2010) found that 58.3% had normal ejection fraction and 41.7% (25% mild and 16.7 moderate low) had reduced ejection fraction in NSTEMI[16] VS study done by Altmann DR, Mutschelknauss M, Ehl N, Koller M, Schaer B, Jorg L, et al. (Swiss Med Wkly 2013) found that STEMI had low ejection fraction in 49% patients.[17]

While in angiographic findings we found that total number of stenosed coronary arteries were 88 and 64 (72.73%) were having diabetes (value of test statistic 4.788, P value 8.422582e-07). Only 9.28% was with normal coronary anatomy, 35.05% single vessel disease (76.47% were diabetic), 47.42% double vessel disease (67.39% were diabetic) and 8.25% with triple vessel disease (87.50% were diabetic). Among patients with normal coronary arteries 11.11% were STEMI and 88.89% were NSTEMI (Table 21, 23 and 24) and in study done by Gui MH, Qin GY, Ning G, Hong J, Li XY,

Lu AK, et al. (Diabetes Res Clin Pract 2009) found that Diabetic patients had single vessel disease (28.8% vs. 46.2%) less frequently and triple vessel disease (35.2% vs. 24.0%) more frequently.[18] In our study population we found that 55.56% were having normal coronary arteries, 76.47% were having single vessel disease, 67.39% patients were having double vessel disease and 0nly 87.50% patients were having triple vessel disease among patients with diabetes mellitus. Whereas in study done by Natali A, Vichi S, Landi P, Severi S, L'Abbate A, Ferrannini E. (Diabetologia 2000) found abnormal coronary arteries more frequently in diabetic patients than in non-diabetes patients (85% vs. 67%, P <0.0001), the excess being explained by prevalence of three vessel disease (36% vs. 17%, P <0.0001). The sum of all angiographicaly detectable lumen stenoses was higher in diabetic than non-diabetic population (357 ± 232 vs. 211 ± 201, P = 0.0001).[19] Only 76.12% patients received thrombolytic on admission among STEMI patients (65%) as shown in Table 23, whereas in CREATE study they have given thrombolysis in only 58.5% patients with acute coronary syndrome. Among STEMI (67%) patients 37.31% received BMS, 35.82% received DES and 7.46% received CABG whereas 19.40% did not receive any intervention (PCI/CABG). Among patients with NSTEMI (21%) only 75% patients received BMS, 16.66% received DES and 8.33% did not receive any intervention. Among patients with unstable angina 38.09% patients received BMS whereas 61.90% did not receive any intervention (Table 24). In study done by Greenhalgh J, Hockenhull J, Rao N, Dundar Y, Dickson RC, Bagust A. (Cochrane Database Syst Rev. 2010) found that there was no statistically significant difference in death, AMI or thrombosis between DES and BMS.[20]

Average stay in hospital was 9.74 days for STEMI, 9.63 days for NSTEMI and 9.32 days for unstable angina (Table 25). Whereas overall stay in patients with ACS was 10.4 for diabetic patients and 7.4 for the non-diabetic patients as found in study done by Novo G, Scordato F, Cerruto G, Vitale G, Ciaramitaro G, Coppola G et al. (Minerva Cardioangiol. 2009).[21] Whereas in another study done by Keller T, Tzikas S, Scheiba O, Krahn U, Post F, Arnolds S, et al. (Herz. 2012;37(3):301-7) found that median length of stay was shorter in ACS patients treated in chest pain unit atv5.0 days compared to 8.0 days if admitted to emergency department (P< 0.001) whereas no difference of length of stay was found in unstable angina patients, whereas in STEMI patients admitted to emergency department the time was longer at 8.0 days compared to 7.0 days if admitted to chest pain units(P = 0.042).[22] To conclude, it was observed that out of 100 patients with diabetes mellitus, 71% patients were having diabetes mellitus. Patients with diabetes mellitus had more dyslipidemia, hypertension and smokers.

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