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ORIGINAL ARTICLE

To Determine the Frequency of Different Complex Coronary Lesions in Diabetic Patients

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ABSTRACT

Background: Diabetic people have an excessive amount of coronary atherosclerosis.
Diabetes mellitus is a strong predictor of mortality and MI in both men and women. It's unclear whether diabetics and non-diabetics have different rates of complicated coronary lesions such bifurcation and ostial lesions.
Objective: To find out how often different types of complicated coronary lesions are in diabetic people.
Methodology: 136 individuals were enrolled in this study. All patients had coronary angiography using the conventional femoral or radial artery technique. Angiographic data was obtained by two interventional cardiologists with 3 years of post-fellowship experience interpreting angiograms. Data on complicated coronary lesions was collected. It has a significant p-value (0.05), indicating that there is a significant difference in this disorder between the two groups.
Results: The mean age of the 136 patients was 47.3±12.2 years (range 25 to 70 years). There were 71 males (52.2%) and 65 females (47.8%). Mean BMI was 25.9±1.3 kg/m2, mean duration of diabetes mellitus was 7.5±3.5 year, mean weight was 75.7±5.1 and mean height was 5.3±0.6 m. Coronary artery lesions were as follows: bifurcation lesions 85 (62.5%), ostial lesion 32 (23.5% and LMCA lesions 19 (14%). Stratification with regard to age, gender, BMI and duration of diabetes was also carried out.
Conclusion: In diabetic patients, complicated coronary lesions such as bifurcation and ostial lesions were shown to be substantially more prevalent than LMCA lesions.
Keyword: Diabetes mellitus, Bifurcation lesion Ostial lesion, LMCA lesion

INTRODUCTION

Diabetes mellitus (DM) is a fast spreading epidemic disease that affects approximately 350 million people worldwide. [(1)] Furthermore, is a key risk factor for CAD, with more than 40% of individuals with acute coronary syndrome (ACS) having DM.[(2,3)] Furthermore, mortality in diabetic patients with ACS is 2-3 times higher than in non-diabetic patients,[(4)] and both subdiagnostic diabetic individuals and patients newly identified with impaired glucose tolerance have higher 30-day mortality in ACS than non-diabetic patients.[(5)] After two years, researchers identified a 1.8-fold increase in CV death and a 1.4-fold increase in MI in diabetes patients with ACS compared to non-diabetic patients.[(6)] Diabetes patients present to the emergency room more slowly than non-diabetics, have higher hemodynamic instability and target organ damage, and frequently undergo late reperfusion in AMI with ST segment elevation (STEMI).

Thrombolysis and primary angioplasty (PCI) were found to be equally beneficial in diabetic and non-diabetic patients in a meta-analysis of 19 studies involving 6000 patients with STEMI. [(7)] Patients who underwent primary angioplasty, on the other hand, had lower rates of recurrence MI and stroke, whereas patients with DM had a delayed onset of reperfusion and a longer length of ischemia, as well as a significant delay in starting therapy due to unusual symptoms. It is clearly recognized that diabetes people have more triple-vessel CAD and less single-vessel CAD than non-diabetics. According to postmortem investigations, diabetic patients had more elevated atherosclerotic lesions, a higher frequency of left main coronary artery stenosis, and more extensive and diffuse disease than non-diabetic patients. Diabetics are more likely than non-diabetics to have distal CAD. [(8)] After two years, researchers identified a 1.8-fold increase in CV death and a 1.4-fold increase in MI in diabetes patients with ACS compared to non-diabetic patients. [(9)] Diabetes patients present to the emergency room more slowly than non-diabetics, have higher hemodynamic instability and target organ damage, and frequently undergo late reperfusion in AMI with ST segment elevation (STEMI).

Thrombolysis and primary angioplasty (PCI) were found to be equally beneficial in diabetic and non-diabetic patients in a meta-analysis of 19 studies involving 6000 patients with STEMI. [(10)] Patients who underwent primary angioplasty, on the other hand, had lower rates of recurrence MI and stroke, whereas patients with DM had a delayed onset of reperfusion and a longer length of ischemia, as well as a significant delay in starting therapy due to unusual symptoms. It is clearly recognized that diabetes people have more triple-vessel CAD and less single-vessel CAD than non-diabetics. According to autopsy investigations, diabetic patients had more elevated atherosclerotic lesions, a higher frequency of left main coronary artery stenosis, and more extensive and diffuse disease than non-diabetic patients. Diabetics are more likely than non-diabetics to have distal CAD. [(11)]

MATERIALS AND METHODS

Army Cardiac Center, Combined Military Hospital, Lahore, Pakistan, did this retrospective study. During the study period, a total of 136 patients were included in the sample size. The research was conducted from March 10th to September 9th, 2018. Patients between the ages of 25 and 70, of both genders, who had been diabetic for at least one year were included. Patients who denied informed consent and had previous revascularization treatments on their medical records were excluded. SPSS version 25 was used to analyze the data. For quantitative data such as age, diabetes duration, height, weight, and BMI, the mean SD was provided. For qualitative variables like gender and kind of complicated coronary lesions, frequency and percentage were calculated. Stratification was used to control effect modifiers such as age, gender, diabetes duration, and BMI. The Chi Square test was used after stratification, and p value < 0.05 was considered statistically significant.

RESULTS

The mean age of the 136 patients was 47.3±12.2 years (range 25 to 70 years). There were 71 males (52.2%) and 65 females (47.8%). Mean BMI was 25.9±1.3 kg/m2, mean duration of diabetes mellitus was 7.5±3.5 year, **(Table-1)**

Coronary artery lesions were as follows: bifurcation lesions 85 (62.5%), ostial lesion 32 (23.5% and LMCA lesions 19 (14%). **(Table-2)**

Coronary artery lesions were as follows: bifurcation lesions, ostial lesion and LMCA lesions found 71(52.21%) male patient compare with female as 65(47.79%), ostial lesion and LMCA lesions (**Table-3)**

Table 1: Descriptive Statistic of Demographical Data

Characteristics		Mean ± S.D
Age 47.3±12.2		
25-50		89 (65.4%)
51-70		47 (34.6%)
Gender	Male	71(52.2%)
	Female	65(47.8%)
BMI 25.9±1.3		
< 25		28(20.6%)
≥ 25		108(79.4%)

Table-2: Stratification for duration of Diabetes Mellitus

Duration of DM (Year)	Coronary Artery Lesions			Total	P value
	Bifurcation	Ostial	LMCA		
≤ 5	25	9	7	41	0.78
≥ 6	60	23	12	95	
Total	85	32	19	136	

Table-3: Stratification for Gender

Gender	Coronary Artery Lesions			Total	P value
	Bifurcation	Ostial	LMCA		
Male	46	13	12	71	P=0.252
Female	39	19	7	65	
Total	85	32	19	136	

DISCUSSION

Type 2 diabetic mellitus (T2DM) is associated with a significant and potentially deadly condition known as CAD. [12] In these patients, CAD is typically asymptomatic and has frequently developed to an advanced stage before clinical manifestation. [13] A risk factor-based method for detecting the presence of CAD in asymptomatic diabetic patients, on the other hand, has not improved clinical results. [14] CAD is still the leading cause of death in diabetic people. Diabetes affects roughly one out of every ten persons worldwide, and its prevalence is rising. [15] The situation in the Middle East is significantly worse, particularly in Saudi Arabia, where adult DM prevalence is 23.7 percent and CAD affects 5.5 % of population. [16] Type 2 DM affects 11.77 % of Pakistan's population. Males have an 11.20 % prevalence, while females have a 9.19 % prevalence. [17] A higher risk of CVD has been linked to type 2 diabetes. Furthermore, people with diabetes experience symptoms more strongly and earlier in life than people without diabetes.

The current study was the first to look at the occurrence of difficult coronary artery lesions in diabetes individuals, such as bifurcation and ostial lesions. According to a study, diabetics had a greater prevalence of left main coronary artery involvement. Individuals with diabetes who get coronary angioplasty have a higher risk of complications and a worse prognosis than non-diabetic patients. The current study's findings of a higher prevalence of bifurcation and ostial lesions may be a contributing factor in this less favorable outcome.

CONCLUSION

Complicated coronary lesions, such as bifurcation and ostial lesions, were shown to be significantly more common in diabetes patients than LMCA lesions. The development of CAD, as well as the outcomes of the disease's many types, is influenced by DM. Diabetics may have a worse outcome from CAD due to a higher prevalence of complex coronary lesions such as bifurcation and ostial lesions.

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