

A Comparative Study of Coronary Angiographic Data between Diabetic and Non-Diabetic Patients with Acute Coronary Syndrome

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Abstract

Introduction: Cardiovascular diseases is a major health burden in developing countries like Bangladesh. Patients with acute coronary syndrome (ACS) are at risk for death, myocardial infarction or recurrent ischaemic events. Comorbidity like DM plays a significant role in the outcome of such patients. So the objective of the present study was to see the coronary angiographic (CAG) findings among diabetic and nondiabetic patients in our context.

Methods: Patients presenting with the symptoms of ACS in the Department of Cardiology in a tertiary care center were selected for ECG and cardiac troponin I. Then according to the defined criteria they were selected for the study. These patients were followed up to their hospital stay period. History of the patient, physical examination and necessary investigations was done. ACS patients were divided into two groups. 1. ACS with DM and 2. ACS without DM. CAG was done among those patients with ACS. Finally CAG findings in two groups were compared systematically. Data were analyzed by SPSS 20.

Results: Among the 200 patients total male were 80.5% and total female were 19.5%. Male to female ratio was 5:1. Regarding age distribution it was found matched in both groups. Most patients were at age group 41-50 and 51-60 years which was 31% and 45% respectively. Regarding presence of hypertension in both groups, diabetic group had more hypertensive patients (81%) than the nondiabetic (71%) group ($p=0.098$). Regarding analysis of CAG findings in diabetic and non diabetic groups LMCA involvement was 16% and 12%, LAD 32% and 28%, LCX 22% and 23%, RCA 23% and 20% and triple vessel was 15% and 14% respectively. Only 5 (2.5%) patients were found not to having any lesion.

Conclusions: ACS with or without DM has variable CAG findings. So special care should be taken when dealing with such cases.

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Introduction:

Cardiovascular diseases have emerged as a major health burden in developing countries and are a subject of great concern for its significant contribution to mortality.¹ The acute coronary syndrome is a major cause of cardiovascular morbidity and mortality for which timely diagnosis and appropriate therapy is of paramount importance to improve clinical outcomes. Patients presenting with acute coronary syndrome — unstable angina (UA) and Non-ST-segment elevation myocardial infarction (NSTEMI) and STEMI, are at risk for death,

myocardial infarction or recurrent ischaemic events.^{2,3} Identifying such high risk patients, allows aggressive antithrombotic treatment and early intervention like coronary angiography to be targeted to those who will be benefited. Among patients with an acute myocardial infarction, 10% to 25% have diabetes and previous studies have shown that patients with diabetes have considerably higher mortality and morbidity rates than non-diabetic patients.⁴ Although the only direct diagnostic method of assessing coronary reperfusion is emergency angiography which is cumbersome, expensive

and unavailable in most hospitals. So present study is done to see the findings of CAG among diabetic and nondiabetic patients in our context.

Methods:

This was a prospective study done on 200 patients of symptomatic cases of acute coronary syndrome during a study period of one years from January 2016 to December 2016 in a tertiary care center with CCU facility in Chittagong, Bangladesh. Potential patients were initially evaluated who were presented with cardiac complaints. After initial evaluation management consent was taken for further testing and CAG. Patients were grouped into two ACS with DM and ACS without DM. History of hypertension was taken from drug history and on the spot measurement. A total of 200 patients were recruited where 100 cases were without DM and 100 were with DM In these way a total of 200 patients were recruited. All patients were prepared for coronary angiogram and the test was done in a single center with the direct supervision of the researcher himself. All data were collected and analyzed by SPSS 20.

Results:

Table 1 showing gender distribution where male and female were matched in both group. Total male were 80.5% and total female were 19.5%)

Table 2 showing age distribution where it was found matched in both groups. Most patients were at age group 41-50 and 51-60 years which was 31% and 45% respectively.

Table 3 showing presence of hypertension in both groups where diabetic group had more hypertensive patients(81%) than the nondiabetic(71%) group (p-0.098).

Multiple response table; LMCA- Left main coronary artery, LAD-Left anterior descending, LCX- left circumflex, RCA- Right coronary artery

Table 4 showing in both groups diabetic and non diabetic LMCA involvement was 16% and 12%, LAD 32% and 28%, LCX 22% and 23%, RCA 23% and 20% and triple vessel was 15% and 14% respectively. Only 5(2.5%) patients were found not to having any lesion.

Table-I
Gender distribution

		Group		Total
		Unstable angina with DM	Unstable angina without DM	
Gender	Male	75(75%)	86(86%)	161(80.5%)
	Female	25(25%)	14(14%)	39(19.5%)
Total		100	100	200

Chi square value 3.854, DF-1, p-0.05

Table-II
Age group distribution

		Group		Total
		ACS with DM	ACS without DM	
Age group	31-40 years	1(1%)	12(12%)	13(6.5%)
	41-50 years	33(33%)	29(29%)	62(31%)
	51-60 years	48(48%)	43(43%)	91(45%)
	61- 70 years	13(13%)	12(12%)	25(12.5%)
	>70 years	5(5%)	4(4%)	9(9%)
Total		100	100	200

Chi square value 7.730, DF-4, p-0.102

Table-III
Pattern of Hypertension in both Groups

		Group		Total
		ACS with DM	ACS without DM	
Hypertension	Absent	19(19%)	29(29%)	48(24%)
	Present	81(81%)	71(71%)	152(76.0%)
Total		100	100	200

Chi square value 2.741, df- 1, p-0.98

Table-IV
Angiographic findings

		Group		Total
		ACS with DM	ACS without DM	
Age group	LMCA	16(16%)	12(12%)	28(14%)
	LAD	32(32%)	28(28%)	60(30%)
	LCX	22(22%)	23(23%)	45(22.5%)
	RCA	23(23%)	20(20%)	43(21.5%)
	Triple vessel	15(15%)	14(14%)	27(14.5%)
	No lesion	3(3%)	2(2%)	5(2.5%)

Discussion:

In this study patients without known coronary artery disease who underwent invasive angiography after the event of ACS in a tertiary care hospital of Chittagong, Bangladesh during the period from January 2016 through December 2016. Table showing in both groups diabetic and non diabetic LMCA involvement was 16% and 12%, LAD 32% and 28%, LCX 22% and 23%, RCA 23% and 20% and triple vessel was 15% and 14% respectively. Only 5(2.5%) patients were found not to having any lesion. A study done by Chang et al³ found in their study that varieties coronary artery lesions were distributed among both diatetic and nondiabetic group of patients (P < 0.0001). Obstructive CAD was twice as common in DM group, and they had more plaques per coronary segment than did non diabetic patients.

Among 200 patients analyzed total male were 80.5% and total female were 19.5%). Male to female ratio was 5:1. These sociodemographic profile are consistent with a Bangladeshi study done by Islam and Majumder.⁵ A higher prevalence of ischemic heart disease in male than female has been reported in a study from England.⁷ Thus the present results are in agreement that male population is more prone to IHD which may be linked to genetic/hormonal difference.

Regarding risk factor analysis revealed hypertensive patients in DM group was more 81(81%) patients than without DM, 71(71%) group. The results of present study with reference to risk factors were similar to those published earlier that diabetes and hypertension are

common risk factors of IHD. Dyslipidemia were also found more. H/O smoking, life style and family history of IHD were found as common risk factors. All of the above findings are consistent with the earlier study.⁶ So, it can be concluded that, hypertension is an important risk factor for CAD and its CAG findings may be variable.

References:

1. Julian D.G. Cowan J.C. 1992. Coronary Heart Disease. Cardiology 6th Edition 1992:105-138.
2. Chan JCN, Malik V, Jia W, Kadowaki, Yajnik CS, Yoon KH, Hu FB. Diabetes in Asia epidemiology, risk factors, and pathophysiology. JAMA. 2009;301:2129-40.
3. Akter S, Rahman MM, Abe SK, Sultana P. Prevalence of diabetes and prediabetes and their risk factors among Bangladesh adults: a nationwide survey. Bulletin of the World Health Organization 2014;92:204-213A
4. Fava S, Azzopardi J, Agius-Muscat H, 2004. Outcome of Unstable Angina in Patients with Diabetes Mellitus. Diabet Med 2004 July Vol-14;Issue 3:209-213doi;10.1002.
5. Pekka Jousilahti, Erkki V, Jaakko T, Pekka P 1999. Sex, age, cardiovascular risk factors, and coronary heart disease: Circulation.1999 Mar 9;99(9):1165-72.
6. Xavier D, Pais P, Devereaux PJ, Xie C et al. 2008 Treatment and outcomes of acute coronary syndromes in India(CREATE): a prospective analysis of registry data. Lancet 371:1435-1442.(Net 22 Ref7).
7. Islam IAKM, Majumder A.A.S. Coronary artery disease in Bangladesh: A review. Indian Heart J. 201365(4): pp.424-435
8. Ayub M, Waseem T. Risk stratification of patients presenting with first acute myocardial infarction with serum cardiac troponin T. Pak J Card 1999; 10:54-56