SMOKING AND ITS RELATIONSHIP WITH BLOOD PRESSURE, BLOOD GLUCOSE AND BLOOD PARAMETES IN PATIENTS WITH CORONARY HEART DISEASE

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Background: The objective of this study was to find out relation ship and effects of cigarette smoking on blood pressure, BMI, haemoglobin and haematocrit in coronary heart disease patients. **Methods:** A total of one hundred and fifty subjects were included in the study. Thirty out of these were control subjects showing no signs or symptoms of coronary heart disease while the rest one hundred and twenty belonged to various categories of coronary heart disease patients. They were further subdivided on the basis of presence or absence of the major five risk factors. **Results:** The mean age of subgroup with stable and unstable angina was significantly (p<0.05) higher than the mean age of control group. The mean age group of acute myocardial infarction and old myocardial infarction shows no significant difference as compared to the control group. No significant difference was found when the mean body mass indices of these groups were compared to that of the control group. Also no significant difference was found when the mean systolic blood pressures of these groups were compared to that of the control group. **Conclusion:** It is concluded from the study that there is no significant statistical difference between the smokers and the control group in terms of haemoglobin, haematocrit, and serum blood glucose, BMI, systolic and diastolic blood pressure in stable angina, unstable angina, acute myocardial infarction and old myocardial infarction patients.

Keywords: Smoking, Blood pressure, Blood glucose

INTRODUCTION

Many conventional risk factors like smoking, high blood pressure, increase in BMI, DM and advancing age have been demonstrated to predict risk of coronary artery disease (CAD), not all CAD can be explained by these conventional risk factors.[1]

The use of tobacco products remain major remediable risk factors in patients prone to the development of coronary artery disease and may with variety of the other coronary artery risk disease factors. Cigarette smoking has been implicated in the pathogenesis of ischemic heart disease.[2] It has been found that the overweight-associated cardiovascular risk is substantially increased by exposure to other atherosclerotic risk factors, of which smoking seems to be the most important.[3]

Kotseva[4] and Wood[5] in their studies conducted in European population shows that the patients with established coronary artery disease have the prevalence of smoking is more than 20%, where as the prevalence of obesity, defined by a body mass index greater than or equal to 30kg m^2, is about 33%.

There is no uniform presenting syndrome for chronic ischemic heart disease.[6] Although chest discomfort is usually the predominant symptom in stable (chronic) or unstable angina and acute myocardial infarction, syndromes of ischemic heart disease also occur in which ischemic chest discomfort is absent or not prominent.[7] These include asymptomatic (silent) myocardial ischemia, cardiac arrhythmias and congestive heart failure.

Coronary artery diseases have many known risk factors. Few studies demonstrated a consistent association among characteristics observed at one point in time in apparently healthy individuals with the subsequent incidence of coronary artery disease in these individuals. These associations include and increase in the concentration of plasma cholesterol, the incidence of cigarette smoking, hypertension, clinical diabetes, obesity, age, or the male sex and the occurrence of coronary artery disease. As a result of these associations, each characteristic has been termed a risk factor for coronary artery disease, and this terminology has been generally accepted and has become part of scientific literature associated with this problem.[8] In a study done by Rhee, it is concluded that cigarette smoking acutely increases aortic stiffness and blood pressure in male smokers with hypertension and the effect persist longer than in male smokers with out hypertension.[9] Galal in his study concluded that BMI is and independent predictor of long term mortality, where as an improved outcome was observed in over weight and obese patients.[10]

The objective of this study is to find out the relation ship and effects of cigarette smoking on blood pressure, BMI, haemoglobin and haematocrit in coronary heart disease patients.

MATERIAL AND METHODS

A total of one hundred and fifty subjects were included in the study. Thirty out of these were control

subjects showing no signs or symptoms of coronary heart disease while the rest one hundred and twenty belongs to various categories of coronary heart disease patients. They were further subdivided on the basis of presence or absence of the major five risk factors. The patients in the categories stable angina and old myocardial infarction were selected from those who were registered as the outpatients at National Institute of Cardiovascular Diseases (NICVD) Karachi. While patients with acute myocardial infarction were selected from the patients admitted in the same institute, the unstable angina patients were selected from both the settings that are the outpatients and the admitted patients of NICVD. The control group comprised of age, sex, and weight matched normal individuals compared with that of patients. The patients selected for inclusion in the stable angina pectoris group had normal resting electrocardiogram. They complained of pericardial heaviness or pain with exertion with or without radiation to left shoulder.

RESULTS

A total on one hundred and fifty subjects were included in the study. Out of these thirty were the controls with no evidence of cardiac disease. The rest of one hundred and twenty subjects were patients of different categories of coronary heart disease, namely stable angina (SA), unstable angina (UA), acute myocardial infarction (AMI) and old myocardial infarction (OMI).

Table-1 shows the mean values of all the parameters studied in the control group, the mean age was 54±1.09 years. The mean body mass index calculated fr4om the height and weight was 25.80±0.48 kg/m^2. The mean systolic blood pressure recorded was 123.16±1.70 mm Hg, while the mean diastolic blood pressure was 82.66±1.47 mm Hg. The mean haemoglobin level of control group shown in the Table-1 was 13.64±0.28 g/dl while the mean haematocrit level was 41.93±0.28 %.

Table-1: Mean of all parameters of the control group (The values are expressed as Mean±SEM)

Parameters	Unit	Mean±SEM
Age	Year	54.00±1.09
BMI	Kg/m^2	25.80±0.48
Systolic blood pressure	mm Hg	123.16±1.70
Diastolic blood pressure	mm Hg	82.66±1.47
Haemoglobin	g/dl	13.64±0.28
Haematocrit	%	41.93±0.47

Table-2 shows the mean age, body mass index and systolic and diastolic blood pressures of the stable angina, unstable angina, acute myocardial infarction and old myocardial infarction patients belonging to smoking group. The mean age of subgroup with stable and unstable angina was significantly (p<0.05) higher than the mean age of control group. The mean age group of acute myocardial infarction and old myocardial infarction shows no significant difference as compared to the control group. No significant difference was found when the mean body mass indices of these groups were compared to that of the control group. Also there is no significant difference was found when the mean systolic blood pressures of these groups were compared to that of the control group.

None of the haemoglobin, haematocrit and serum blood glucose values in Table-3 showed any significant difference when compared to the control group.

Table-2: Age, body mass index and blood pressure of smoking group. (Mean±SEM)

Group	Subgroup	Age (yr)	BMI (Kg/m^2)	Systolic BP (mm Hg)	Diastolic BP (mm Hg)
SMOKING	SA	58±0.73	27±0.31	118±4.63	79±2.91
	UA	59±1.14	24±0.73	117±6.04	81±3.67
	AMI	57±1.14	25±0.70	124±5.78	75±3.53
	OMI	58±1.24	25±0.50	117±5.14	80±3.23
CONTROL		54±1.09	25±0.48	123±1.70	82±1.47

Table-3: Haemoglobin, haematocrit and serum glucose levels in smoking group. (Mean±SEM)

Group	Subgroup	Haemoglobin	Haematocrit	Serum Glucose
SMOKING	SA	14.00±0.42	40.60±3.35	83.40±9.09
	UA	14.18±0.25	43.60±5.87	77.40±2.56
	AMI	13.86±0.39	38.80±2.90	73.20±4.42
	OMI	14.52±0.51	44.80±3.65	73.80±2.57
CONTROL		13.64±0.28	41.93±0.47	75.53±1.09

DISCUSSION

The relation of haemoglobin and haematocrit with risk of coronary heart disease has been a subject of considerable debate in past few decades but there is a wide disagreement in the observations made in different studies. Coronary heart disease is very rare in persons with untreated pernicious anaemia but is very common in patients with polycythemia vera. Similarly rate of coronary heart disease are low in those area of world in which anaemia is a public health problem. Smoking increased the systolic and

diastolic BP and heart rate significantly in both chronic smokers and non-smokers as compared with baseline levels or controls. Pulse pressure did not increase significantly.[11] Increased intra-abdominal fat is related to coronary heart disease but not to smoking history. Smoking history is related to coronary heart disease but not to diabetes. Weight gain is associated with smoking cessation and appears to be concentrated in the central subcutaneous regions, especially for those who have coronary heart disease. [12]

CONCLUSION

It is concluded from the study that there is no significant statistical difference between the smokers and the control group in terms of haemoglobin, haematocrit, and serum blood glucose, BMI, systolic and diastolic blood pressure in stable angina, unstable angina, acute myocardial infarction and old myocardial infarction patients.

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