Original Article

Relationship of Smoking and Myocardial Infarction among Male above 40 Years Checking Into Jinnah Hospital

Taimoor Jahangir, Abdullah Jamil Siddiqui, Waqas Jehangir, Naheed Hamayaun Sheikh

Abstract

Objective: To find an association between smoking and the development of myocardial infarction in male patients above forty years of age presenting at the Cardiology department of Jinnah Hospital Lahore. **Material and method:** This is a case-control study. **Results:** Out of a total of 120 cases 66.67% (80) patients were smokers. Similarly, out of a total of 120 controls 35% (42) were found to be smokers. Odd Ratio is 3.71 **Conclusion:** With this study it was concluded that smoking is a risk factor for the development of myocardial infarction. This study showed that the patients with myocardial infarction are more likely to have past history of smoking. **Key words:** Men above forty, Smoking, Myocardial Infarction.

INTRODUCTION

Myocardial infarction (MI) is a leading cause of mortality and disability of adults in urban and rural Pakistan, and occurs at a younger age than in western populations. Myocardial infarction occurs when blood supply to a part of the heart is interrupted causing some heart cells to die. This is most commonly due to occlusion of coronary arteries an atherosclerotic plaque which is caused by chronic inflammatory response in the walls of arteries, caused largely by the accumulation of macrophage white blood cells and promoted by low-density lipoproteins (plasma proteins that carry cholesterol and triglycerides). The classical symptoms include sudden chest pain or compression (typically radiating to the left arm), shortness of breath, Nausea, vomiting, palpitations & sweating. The classical signs include increased respiratory rate, cold clammy skin, elevated jugular venous pressure, hepato-jugular reflex, edema of legs, gallop and holo-systolic murmur. Approximately one quarter of all myocardial infarctions is silent, without chest pain[1]. To understand epidemiological study results, it is important to note that many factors associated with MI mediate their risk via other factors[3]. Smoking is a major risk factor in causing myocardial infarctions. Cigarettes contain more than 7000 chemical compounds including hundreds that are toxic[2]. The

damage caused by smoking is influenced by the number of cigarettes smoked, whether the cigarette has a filter and how the tobacco has been prepared. Research has shown that smoking reduces the life expectancy by 7-8 years. 300 people dies every day in the UK is a result of smoking. According to WHO an estimate of 17.1 million people die of Cardiovascular Diseases every year. The number of people under the age of 70 who die from smoking-related diseases exceeds the total figure for deaths caused by breast cancer, AIDS, traffic accidents and drug addiction. Non-smokers and ex-smokers can also look forward to a healthier old age than smokers[3]. The large hospital based "Inter-heart" case-control study, which included some 2171 patients from "South Asia", found a threefold relative risk of MI for smoking, with a population attributable risk of 37%.[4] The risks of smoking for nonfatal MI were more among younger population than that seen in the Inter-heart or other western studies.[6] Indeed, even within largely western populations, the international World Health Organization MONICA (multinational monitoring of trends and determinants in cardiovascular disease) project recently reported a nearly fivefold elevation in risk for non-fatal MI associated with current smoking in younger men.[7] A case-control study on MI in

smokers was conducted among 68 hospitals in the US, 587 cases and 2685 controls who smoked cigarettes to establish a correlation. It was concluded that smoking higher-yield cigarettes is associated with an increased risk of MI[1]

MATERIAL AND METHODS

It was a case control study. Cases were selected from Department of Cardiology and controls were selected from Jinnah Hospital Lahore after suitable matching. Duration of study was about eight month. Sample size was calculated using EPI INFO 2002 with confidence interval 95%. Case control ratio 1:1. A total of 240 cases and controls were selected in which 120 were cases and 120 were controls. All male aged 40 or above with or without myocardial infarction were included for cases and controls, respectively. Definite diagnosis of MI was based on clinical examination, electrocardiogram, and cardiac enzymes. Inclusion criteria for cases was 40 years age male known cases of MI and inclusion criteria for control was 40 year age male not a patient of MI. Exclusion criteria was patient with any congenital heart disease or any heart disease other than MI. Collection of data was done via a questionnaire. Permission was taken from ethical board of the institution and patients. A total of 136 men met eligibility criteria, and 120 were included in the study; 16 eligible cases were excluded for the following reasons: fatal incident MI patients, discharged before interview could take place, too sick to be interviewed, and not willing to be interviewed. For each case, the controls matched by age (within five years) and hospital were obtained from non-cardiac outpatient clinics or inpatient wards. Controls comprised relatively healthy men with minor ailments or conditions. We identified 140 eligible controls, twenty of whom refused participation. Subjects were interviewed in person, and asked to report the number of cigarettes smoked per day.

RESULTS

Sixty six per cent of the 120 male cases and 35% of the 120 male controls currently smoked cigarettes. Compared to never smokers, current smokers were younger, had lower body mass indexes and physical activity levels. Sixty percent of the 120 cases smoked for more than 10 years and twelve percent of 120 cases smoked for more than 10 years. The odds of getting a

Myocardial Infarction is 3.7 times more in smokers than in non-smokers.

Table-1
Age in Years

No	Age range	Cases	Controls	Total
1	40 to 50	52(43.3%)	60(50%)	112(46.66%)
2	51 to 60	44(36.6%)	30(25%)	74(30.8%)
3	61 to 70	18(15%)	22(18.33%)	40(16.6%)
4	71 to 80	6(5%)	8(6.66%)	14(5.83%)

Table-2
Percentage of Exposed and Unexposed

No	Regularity	Cases	Control	Total
1	Smoker	80(66.67%)	42(35%)	122(50.83%)
2	Non smoker	40(33.33%)	78(65%)	118(49.16%)
	Total	120(100%)	120(100%)	240(100%)

Table-3
Duration of Smoking

No	Duration	Cases	Control	Total
1	3 to 5 years	10(12.5%)	24(48%)	34(26.1%)
2	6 to 10 years	10(12.5%)	20(40%)	30(23%)
3	10 to 20years	60(80%)	6(12%)	66(50%)

Table-4
Cigarettes Smoked by Smokers per Day

No	Quantity	Cases	Control	Total
1	Less than 10	24(30%)	33(66%)	57(35%)
2	10 to 20	20(25%)	10(20%)	30(15%)
3	Greater than 20	36(45%)	7(14%)	43(29.1%)

Table-5
Table of Odd Ratio

	Smoker	Non-Smoker
Cases	80	40
Controls	42	78
Odds Ratio	3.71	

DISCUSSION

Our 3.7 fold increased risk associated with current smoking for non-fatal MI is consistent with findings from the Inter-heart study, where a threefold elevation in risk was observed.[4] Two western studies have already documented that the RRs for smoking are more extreme (even at lower absolute risks) at younger ages.[7] Smoking is now considered to be an important risk factor for the development of cardiovascular diseases like in many other diseases. A cohort study was conducted by Eva Prescott et al in which 11472 women smokers and 1319 men smokers were followed for a mean of 12.3 years. Out of these men showed a

greater incidence of myocardial infarction than women with 1251 as compared to only 512 women[8]. A case-control study conducted by Inter-heart in 52 countries showed a positive association of smoking to the development of MI. In this study, out of 61 cases 34.4% were smokers while controls were only 24.5%, the association was found to be insignificant with p=0.3210. The odds ratio was found to be 0.62. However, a positive correlation can be found as far as the duration of smoking is concerned with a 10-20 year smoking history of in 49% of cases as compared to only 7% of controls.[11]

CONCLUSION

Smokers have a higher risk of myocardial infarction than non-smokers, as the odd ratio comes out to be 3.71 which is significant. This raises also that smoking is more harmful with regard to ischemic heart disease, possibly because of constituents of tobacco smoke. Although there are certain aspects of risk factors which must be considered like family history, hypertension, obesity, etc. The implication for tobacco control is clear: that reduced smoking will reduce the leading cause of adult death in Pakistan. Tobacco prevention in Pakistan is beginning to be addressed at the national level with legislation that bans advertising, sponsorship of sports, and cultural events by tobacco companies, smoking in public places, and sale of tobacco products to people younger than 18 years of age. Our results add additional impetus in particular to cessation: some 70–80 million males over the age of 30 smoke, [9] with vascular disease, tuberculosis and cancers being the major cause of premature mortality and disability among these men. Avoidance of tobacco related disease over the next few decades will require current smokers to quit, with the greatest benefits if quitting occurs before the onset of disease.[10]

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AUTHORS

- **Taimoor Jahangir**
  4th Yr MBBS students
  Allama Iqbal Medical College, Lahore
- **Abdullah Jamil Siddiqui**
  4th Yr MBBS students
  Allama Iqbal Medical College, Lahore
- **Dr. Waqas Jehangir**
  House Officer
  Punjab Institute of Cardiology, Lahore
- **Prof. Dr. Naheed Hamayaun Sheikh**
  Prof. Community Medicine
  Allama Iqbal Medical College, Lahore