



ASSOCIATION OF OBESITY WITH IN-HOSPITAL MORTALITY IN PATIENTS UNDERGOING CORONARY INTERVENTION (PCI)

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ABSTRACT:

OBJECTIVE: Various studies have demonstrated that obesity is associated with increased morbidity and mortality, as well as with other cardiovascular risk factors i.e. diabetes, hypertension and hyperlipidemia. Thus, we studied the association of obesity with in-hospital mortality in patients undergoing coronary intervention (PCI)

MATERIAL AND METHODS: In this study, 150 patients (75 obese, 75 non obese) 30 to 70 years of age were enrolled through non-probability, purposive sampling technique from cardiology wards of Punjab Institute of Cardiology, Lahore from March 2015 to March 2016. Body mass index (BMI) was measured and patients with BMI > 30Kg/m² were taken as obese and patients with BMI < 30Kg/m² were taken as nonobese.

All patients who underwent percutaneous coronary intervention patients were included in the study. Group I constituted obese patients and group II non obese patients, while patients with chronic renal failure (serum creatinine > 1.5 mg/dl), chronic liver disease (Hepatitis B or C positive and shrunken liver on ultrasound) and anemia (hemoglobin < 13 mg/dl in males, < 12mg/dl in females), (all assessed on past medical records) were excluded. PCI was done by femoral or radial artery approach under local anaesthesia. Patients were managed post PCI as per hospital protocol.

All these cases were followed up till 7 days of post-PCI for in-hospital mortality

RESULTS: In our study, 19%(n=14) in obese group and 20%(n=15) in non-obese group were between 30-50 years of age while 81%(n=61) in obese and 79.67%(n=60) were between 51-70 years of age, mean age was calculated as 56.68±7.72 in obese and 56.64±7.63 years in non-obese group, 54.67%(n=41) in obese and 57.3%(n=43) in non-obese group were male while 45.33%(n=34) in obese and 42.7%(n=32) in non-obese group were females, mean body mass index was calculated as 34.87±4.65 kg/m² in obese and 27.63±5.41 kg/m² in non-obese group. Association of obesity with in-hospital mortality in patients undergoing PCI was recorded as 1.33%(n=1) in obese and 2.66%(n=2) in non-obese group.

CONCLUSION: We concluded that there is no association of obesity with in-hospital mortality in patients undergoing coronary intervention (PCI).

KEYWORDS: Coronary intervention, obese, non-obese, in-hospital mortality.

INTRODUCTION:

Cardiovascular diseases, the leading cause of death worldwide affects all the socio-economic classes of the community.¹ Among the different modes of therapy, percutaneous coronary syndrome (PCI) remains the preferred mode of treatment for Acute Coronary Syndrome(ACS).²

A number of patients presenting with ACS are obese. There has been a dramatic increase in number of obese people worldwide in recent years.^{3,4} Obesity remains a recognized indepen-

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dent risk factor for coronary artery disease and cardiovascular related mortality⁵ and this risk becomes especially significant as the body mass index exceeds 30.⁶

However, several recent studies have shown that in established cardiovascular disease obese patients have better outcomes as compared to non obese patients. This phenomenon is being termed as obesity paradox.^{5,7}

Various studies have demonstrated that obesity is associated with increased morbidity and overall mortality, as well as with other cardiovascular risk factors i.e. diabetes, hypertension and hyperlipidemia.

In recent studies a significant variation exists in the frequency of in-hospital mortality in patients undergoing PCI but this has not been studied previously in our population. This study helped

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to clarify this variation and was also useful to determine the phenomenon of 'Obesity Paradox' in our local population. If an association of obesity was found with in-hospital mortality then the high risk group can be labelled to prevent any adverse outcome.

MATERIAL AND METHODS:

In this study 150 patients, 75 obese and 75 non obese, age ranging from 30 to 70 years were enrolled through non-probability, purposive sampling technique from cardiology wards of Punjab Institute of Cardiology, Lahore from March 2015 to March 2016. Body mass index (BMI) was measured and patients with BMI > 30Kg/m² were taken as obese and patients with BMI < 30Kg/m² were taken as nonobese.

150 patients undergoing percutaneous coronary intervention via femoral or radial artery, divided into 2 groups, Group I obese patients and group II non obese patients. Patients with chronic renal failure (serum creatinine > 1.5 mg/dl), chronic liver disease (Hepatitis B or C positive and shrunken liver on ultrasound) and anemia (hemoglobin < 13 mg/dl in males, < 12mg/dl in females), (all assessed on past medical records) were excluded.

Informed consent was taken from the patients with the assurance of confidentiality of their records. A detailed history was taken from the patients and their medical record, demographic information i.e. age, gender, address and contact numbers were obtained and recorded. All these cases were followed up till 7 days of post-PCI for in-hospital mortality (as described in the operational definition) by researcher himself. All this information was recorded on Performa. PCI was done by femoral or radial artery approach under local anaesthesia. Patients were managed post PCI as per hospital protocol.

DATA ANALYSIS PROCEDURE:

The collected data was analysed statistically by using SPSS version 16. Quantitative variables like age, body mass index (BMI) was presented in form of mean ± S.D. Qualitative variables like gender and in-hospital mortality was presented in the form of frequency and percentage. Data was stratified for age, gender. Relative risk was calculated to find association of obesity with in-hospital mortality. Relative risk (R.R) > 1 was considered significant.

RESULTS:

A total of 150 cases (75 obese and 75 non-obese) fulfilling the inclusion/exclusion criteria were enrolled to determine the association of obe-

sity with in-hospital mortality in patients undergoing coronary intervention (PCI).

Age distribution of the patients was done, it showed that 19%(n=14) in obese group and 20%(n=15) in non-obese group were between 30-50 years of age while 81%(n=61) in obese an 79.67%(n=60) were between 51-70 years of age, mean±sd was calculated as 56.68±7.72 in obese and 56.64±7.63 years in non-obese group. (Table No. 1)

Patients were distributed according to gender, it showed that 54.67%(n=41) in obese and 57.3%(n=43) in non-obese group were male while 45.33%(n=34) in obese and 42.7%(n=32) in non-obese group were females. (Table No. 1)

Table-1: Association of obesity with demographic and in-hospital mortality in patients undergoing PCI

Gender	Obese Group (n=75)	Non-Obese Group (n=75)	P-value
	No. of patients	No. of patients	
Male	41(54.67%)	43(57.3%)	0.458
Female	34(45.33%)	32(42.71%)	
Age	56.68±7.72	56.64±7.63	1.23
Age group	30-50	14(19%)	0.764
	51-70	61(81%)	
BMI	34.87±4.65	27.63±5.41	0.001
In-Hospital Mortality	1(1.33%)	2(2.66%)	1.00

Table-2: Relative risk of the of obesity with in-hospital mortality

Relative risk	95% CI	Significance level
0.5	0.04 to 5.39	P = 1.00

Mean Body Mass Index was calculated as 34.87±4.65 in obese and 27.63±5.41 in non-obese group. (Table No. 1)

Association of obesity with in-hospital mortality in patients undergoing PCI was recorded as 1.33%(n=1) in obese and 2.66%(n=2) in non-obese group had in-hospital mortality. (Table No. 2)

DISCUSSION:

Various studies have demonstrated that obesity is associated with increased morbidity and overall mortality, as well as with cardiovascular risk factors i.e. diabetes, hypertension and hyperlipidemia. This study was planned with a view that in recent studies a significant variation exists in the frequency of in-hospital mortality in patients undergoing PCI but this has not been studied previously in our population.

A recent study by Payvar S et al compared outcomes after percutaneous coronary syndrome (PCI) and showed in-hospital mortality of 1.97%



in normal weight and 1.21% in extremely obese patients⁸ while another study by Kosuge M et al divided cases according to BMI into lean, normal, overweight and obese and recorded in-hospital mortality of 9.2% in lean, 4.4% in normal, 2.5% in overweight and 1.8% in obese respectively⁹. The findings of our study were in agreement with Kosuge M et al⁹ for obese patients but they recorded more cases with in-hospital mortality in lean patients, our study showed no significant difference between obese and non-obese group by calculating relative risk as 0.5.

Kosuge M et al⁹ concluded that BMI itself had no impact on in-hospital mortality in patients undergoing primary PCI for AMI. The phenomenon 'obesity paradox' may be explained by the fact that obese patients were younger at presentation. Our study also showed in agreement with this study except presentation of cases among younger age group.

BMI data appears to be confounded by several other factors in patients with AMI who underwent

primary PCI. We found that obese patients had more cardiovascular risk factors, such as hypertension, diabetes mellitus and hyperlipidemia, which is consistent with the results of most other studies.¹⁰⁻¹⁵

Another recent study by Alidoosti M et al¹⁶ who investigated the impact of the body mass index (BMI) on the mid-term outcome following successful PCI and concluded that the BMI had no significant effect on the rate of major adverse cardiac events (MACE). Interventionists' recommendations for patients undergoing PCI should, therefore, not be significantly influenced by the BMI status.

Though in this study we concluded that there is no significant effect of body mass index on in-hospital mortality in patients undergoing PCI but there is a dire need to conduct some-other studies in our population.

CONCLUSION:

We concluded that there is no association of obesity with in-hospital mortality in patients undergoing coronary intervention (PCI)

Author's Contribution

MUF: Major contribution to the conception, design of the research and the acquisition, analysis and interpretation of data. SA: Was consultant in-charge of the study and gave frequent advice, corrections and did the proof reading. OA: Writing the discussion and editing the final version of the article. MZ: Helped in rearranging data.



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