DOI: https://doi.org/10.53350/pjmhs2115123598

ORIGINAL ARTICLE

Relationship of Obesity with Mortality in Hospitals among Patients Planned for Coronary Intervention

IMRAN ELLAHI SOOMRO[1], MUHAMMAD HASSAN BUTT[2], MUHAMMAD ASLAM[3], ABDUL QADIR BHUTTO[4], JAVED KHURSHED SHAIKH[5], IFTIKHAR AHMED[6]

[1]*Assistant Professor Cardiology, Peoples University of Medical and Health Sciences for Women PUMHSW (SBA) Nawabshah*
[2,5]*Assistant Professor, NICVD, Sukkur*
[3]*Assistant Professor Intervention Cardiologist NICVD Nawabshah*
[4]*Assistant Professor Cardiology Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat*
[6]*Assistant Professor, NICVD, Hyderabad*
Correspondence to: Imran Ellahi Soomro, Email: imranellahi7@yahoo.com, Cell: 03003220156

ABSTRACT

Aim: Multiple studies have shown obesity to be related with augmented mortality and morbidity, as well as other cardiovascular risk factors such as diabetes, hyperlipidaemia and hypertension. Therefore, we are investigating the relationship between obesity and in-hospital mortality among patients planned for coronary intervention (PCI).

Place and Duration: In the Cardiology department of Peoples University of Medical and Health Sciences For Women PUMHSW (SBA) Nawabshah, for one-year duration from July 2020 to July 2021.

Methods: 138 patients (69 obese, 69 non-obese) aged 30-70 years were included in the research using a purposive, non-probability sampling technique from the cardiology department. The body mass index of all patients was recorded and patients with BMI above 30 kg / m2 were deliberated as obese, and individuals with BMI less than 30 kg / m2 were deliberated as non-obese. All patients who endured percutaneous coronary intervention were included in the study. Group I comprised of obese and non-obese patients in group II.

Results: To determine the obesity relationship with in-hospital mortality among patients planned for coronary intervention (PCI), a total of 138 cases (69 obese and 69 non-obese) were included that met the inclusion / exclusion criteria. When the age grouping was performed, 17.4% (n = 12) of the obese group and 24.6% (n = 17) of the non-obese group were between the ages of 30 and 50, while 82.6% (n = 57) in the obese group and 75. 4% (n = 52) in the non-obese group were 51- 70 years of age, the mean ± SD was calculated as 55.25+8.10 years in the obese group and 57.97+7.52 years in the non-obese group. The mean BMI was calculated as 34.46±4.31 in the obese group and 28.91±5.37 in the non-obese group

Conclusion: We concluded that there is no association between obesity and in-hospital mortality in patients enduring coronary intervention (PCI).

Keywords: In-hospital mortality, Coronary intervention, non-obese, obese.

INTRODUCTION

Cardiovascular disease, the foremost reason of death globally, affects all socioeconomic classes in society[1]. Of the different treatment modalities, percutaneous coronary syndrome (PCI) remains the preferred treatment modality for acute coronary syndrome (ACS). Several patients with ACS are obese[2-3]. In current years, there has been a histrionic upsurge in the ratio of people with obesity worldwide. Obesity remains an established self-determining risk factor for cardiovascular mortality and coronary heart disease, with a risk becoming particularly pronounced when the body mass index exceeds 30 in obese patients[4-5]. This phenomenon is known as the obesity paradox. Several studies have shown obesity to be related with augmented overall mortality and morbidity, as well as other cardiovascular risk factors such as diabetes, hypertension, and hyperlipidaemia[6]. Recent studies have seen significant variation in in-hospital mortality rates in patients undergoing PCI, but this has not been studied in our population before[7-8]. This study helped explain this variability and was also useful in identifying the "obesity paradox" in our local population. If a link between obesity and in-hospital mortality is found, the high-risk group can be labeled to avoid adverse outcomes.

MATERIAL AND METHODS

This cross-sectional study was held in the Cardiology department of Peoples University of Medical and Health Sciences For Women PUMHSW (SBA) Nawabshah, for one-year duration from July 2020 to July 2021. 138 patients (69 obese, 69 non-obese) aged 30-70 years were registered in the study using a purposive, non-probability sampling technique from the cardiology department. The body mass index of all patients was recorded and patients with BMI above 30 kg / m2 were deliberated as obese, and individuals with BMI less than 30 kg / m2 were deliberated as non-obese. Percutaneous coronary intervention from the femoral or radial arteries was performed in 138 patients and these patients were alienated into two groups as group I of obese and non-obese patients as group II. The patients with chronic liver disease (positive hepatitis B or C and liver shrunken on ultrasound), chronic renal failure (above 1.5 mg / dl serum creatinine) and anaemia (haemoglobin less than 12 mg / dL in females and less than 13 mg / dL in males,) (all evaluated in previous medical records) were excluded. Informed consent was obtained from patients, ensuring the confidentiality of their records. Detailed patient history and medical history were retrieved, and demographic data such as age, gender, address and contact numbers obtained and recorded. All these cases were followed by the investigator himself up to 7 days after PCI for in-hospital mortality (per surgical definition). All this information was recorded in the Performa. PCI was performed under local anaesthesia with access to the radial or femoral arteries. Patients were treated according to the inpatient protocol after PCI.

Collected data were statistically analysed using SPSS version 21. Quantitative variables such as age and body mass index (BMI) are accessible as mean ± SD. Qualitative variables such as gender and in-hospital mortality are presented as frequency and percentage. Data were classified by gender and age. Relative risk was calculated to find the association between obesity and hospital mortality. A relative risk (R.R)> 1 was considered significant.

RESULTS

To determine the obesity relationship with in-hospital mortality among patients planned for coronary intervention (PCI), a total of 138 cases (69 obese and 69 non-obese) were included that met the inclusion / exclusion criteria. When the age grouping was performed, 17.4% (n = 12) of the obese group and 24.6% (n = 17) of the non-obese group were between the ages of 30 and 50, while 82.6% (n = 57) in the obese group and 75. 4% (n = 52) in the non-obese group were 51- 70 years of age, the mean ± SD was calculated as 55.25+8.10 years in the obese group and 57.97+7.52 years in the non-obese group. (Table 1). Patients were divided by

gender, it was shown that 53.62% (n = 37) in the obese group and 59.42% (n = 41) in the non-obese group were male, while 46.40% (n = 32) in the obese group and 40.68% (n = 28) of the non-obese group were women.

Table-1: Relationship of obesity with demographic and in-hospital mortality among patients enduring PCI

Gender		Obese Group (n=69)	Non-Obese Group (n=69)	P-value
		No. of patients	No. of patients	
Male		37(53.62%)	41(59.42%)	0.46
Female		32(46.40%)	28(40.68%)	
Age		55.25+8.10	57.97+7.52	1.18
Age group	30-50	12(17.4%)	17(24.6%)	0.77
	51-70	57(82.6%)	52(75.4%)	
BMI		34.46±4.31	28.91±5.37	0.001
In-Hospital Mortality		2(2.9%)	1(1.4%)	1.08

The mean body mass index was calculated as 34.46±4.31 in the obese group and 28.91±5.37 in the non-obese group. (Table 1). In patients undergoing PCI, the relationship between hospital mortality and obesity was 2.9% (n = 2) in the obese group and 1.4% (n = 1) in the non-obese group. (Table No. 2)

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

Relative risk	95% CI	Significance level
0.6	0.03 to 5.41	P = 1.04

DISCUSSION

Several studies have shown that obesity is related with augmented overall mortality and morbidity, as well as cardiovascular risk factors, namely diabetes, hypertension, and hyperlipidaemia[9-10]. This study was designed taking into account that there is considerable variability in in-hospital mortality in patients undergoing PCI in recent studies, but this has not been studied in our population before. A recent study by Payvar S et al. Compared treatment outcomes after percutaneous coronary syndrome (PCI) and found hospital mortality of 1.97% for normal weight and 1.21% for extremely obese patients[11-12]. Another study by Kosuge M et al. He divided BMI into underweight, normal, overweight and obese, and reported hospital mortality at 9.2% in lean, 4.4% in healthy subjects, 2.5% in overweight and 1.8% in obese subjects, respectively[13-14]. The results of our study for obese patients are parallel to Kosuge M et al study although they reported more hospital mortality in lean patients, our study found no significant differences in the relative risk calculation between the obese and non-obese groups[15-16]. Kosuge M et al. Concluded that BMI alone had no effect on hospital mortality in patients undergoing primary PCI due to AMI. The obesity paradox phenomenon can be explained by the fact that obese patients are younger on admission[17-18]. Our study was also consistent with that study, with the exception of the case report in the youngest age group. BMI data in AMI patients undergoing primary PCI appear to be hampered by several other factors. We found that cardiovascular risk factors such as diabetes, hyperlipidaemia and hypertension are more common in obese patients, which is consistent with the results of many other studies[19]. Alidoosti M et al concluded that BMI had no significant effect on the rate of major adverse cardiac events (MACE) in the mean-term outcome after successful PCI. Therefore, BMI status should not have a significant impact on the intervention recommendations for patients undergoing PCI[20-21]. Although we concluded in this study that body mass index had no significant effect on in-hospital mortality in patients undergoing PCI, further studies in our population are urgently needed.

CONCLUSION

We conclude that there is no association between obesity and hospital mortality in patients undergoing coronary intervention (PCI).

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