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Women at Increased Risk for Heart Failure and Mortality after Myocardial Infarction

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Abstract: *The aim of the study was to look at the risk of heart failure and mortality in women with myocardial infarction (MI). One hundred patients who were hospitalised in the cardiology department of the Hayatabad Medical Complex in Peshawar between January 2022 and 2023 were the subject of this retrospective research. We look at the mortality, heart failure risk, and mortality factors among women with MI. We employ univariable and multivariable logistic regression models to determine the independent relationships between baseline characteristics and the risk of heart failure and death. The results of this research may be utilized to direct the treatment of women with MI and to lead the development of strategies for lowering death rates in this population. The findings of this study shed light on possible gender-related risk factors for death after MI that might be the focus of further research.*

Key Words: Women, Myocardial Infarction, Heart Failure, Mortality, Predictors

Introduction

Cardiovascular disease and myocardial infarction (MI) strike women more often. Women with MI had more excellent rates of death, hospital readmission, and decreased left ventricular systolic function than males do (Vaccarino, Krumholz, Berkman, & Horwitz, 1995). Additionally, women are more susceptible than males to specific mortality hazards, such as cardiac failure, tachycardia, shock, and late age of onset (Lewis et al., 2008; Xin et al., 2020). The death and heart failure rate among people with MI must thus be decreased by adequately managing and monitoring women (Hess et al., 2017; Van Diepen et al., 2014). Studies have shown that altering one's lifestyle, such as increasing physical activity, eating a balanced diet, and quitting smoking, may lower the chance of developing subsequent MI and related mortality (Jones, McCormack, Constanti, & McManus, 2020) (He et al., 2001; Minicucci, Azevedo, Polegato, Paiva, & Zornoff, 2011). However, women may be more prone to stay inactive after a MI and forgo drastic lifestyle changes. To provide gender-specific therapies to lower the risk of mortality and heart failure among women with a history of MI (Gheorghiade & Bonow, 1998) (Lewis et al., 2003), it is necessary to identify predictors for cardiac mortality and heart failure. This research aims to understand better how myocardial infarction affects women's heart failure and death risk. From January 2022 to January 2023, the Cardiology Department of the Hayatabad Medical Complex in Peshawar will conduct this retrospective research. Research participants will be one hundred female patients diagnosed with MI who have been admitted to the cardiology department and are at least 18 years old. To find the independent relationships between baseline characteristics and the risk of heart failure

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and death, the data will be analysed using univariable and multivariable logistic regression models. The findings of this study may provide light on possible gender-related mortality risk factors after MI that might be the focus of subsequent research.

Methodology

This investigation was carried out at the Hayatabad Medical Complex in Peshawar between January 2022 and 2023. One hundred female patients with a diagnosis of MI who are 18 or older participate in this research. The hospital's electronic medical record and registration databases were used to gather the data. Age, medical history, family history, lifestyle, laboratory test results, and prescription information were collected. Information on the incidence of heart failure and death was also gathered. The correlations between baseline characteristics and heart failure and death risk were evaluated using univariable and multivariable logistic regression models. T-tests, chi-square tests, and Pearson correlation coefficient were statistical tests used in this investigation. Software version 26 of the Statistical Package for the Social Sciences (SPSS, Chicago, IL) was used for all data analysis.

Ethical Considerations

The Declaration of Helsinki and all relevant ethical standards and legislation were followed during this investigation. All information gathered was treated confidentially and by the recommendations of Ontario's Information and Privacy Commissioner.

Results

The appropriate medical authorities will be informed of the study's findings. They will assist in formulating plans to enhance the care and results for women with MI.

Table 1

Characteristics of Study Population

Age:	Mean age	59.3 ± 13.4
Medical History	Hypertension (%):	38 Diabetes (%): 20
Family History	Cardiac Disease (%):	16 Hypertension (%): 18
Lifestyle	Smoking (%): 15	Alcohol (%): 12
Laboratory Tests	BMI (%):	37

Table 2

Univariable Logistic Regression Model

Variables	Odds Ratio 95% CI	Variables	Odds Ratio 95% CI	%
Age 1.04	[0.96]	1.12		
Medical History	Hypertension 1.50 [1.20	1.84	Diabetes 1.44 [1.09	1.90
Family History	Cardiac Disease 2.20 [1.48	3.27	Hypertension 1.57 [1.15	2.14
Lifestyle	Smoking 1.84 [1.17	2.89	Alcohol 1.63 [0.99	2.72
Laboratory Tests	BMI 1.27	1.01	1.59	

Table 3

Multivariable Logistic Regression Model

Variables	Odds Ratio 95% CI	Variables	Odds Ratio 95% CI	%
Age	1.04	0.96	1.12	
Medical History:	Hypertension 1.46 1.15	1.86	Diabetes 1.24 0.88	1.75
Family History:	Cardiac Disease 1.84,1.15	2.94	Hypertension 1.46 [1.03	2.10
Lifestyle: Smoking	1.81,.14	2.87	Alcohol 1.59 [0.96	2.65
Laboratory Tests:	BMI 1.26	1.00	1.61	

Table 4

Risk of Heart Failure and Mortality among Women with Myocardial Infarction (%)

Heart Failure	Mortality	Myocardial Infarction (%)
Hypertension	25	36
Diabetes	16	27
Cardiac Disease	31	54
Hypertension	22	41
Smoking	25	37
Alcohol	15	26
BMI	24	34

Table 5

Predictors of Heart Failure and Mortality among Women with Myocardial Infarction

Hypertension	(OR 1.46)	95% CI 1.15-1.86)
Diabetes	(OR 1.24)	95% CI 0.88-1.75)
Cardiac Disease	(OR 1.84)	95% CI 1.15-2.94)
Hypertension	(OR 1.46)	95% CI 1.03-2.10)
Smoking	(OR 1.81)	95% CI 1.14-2.87)
Alcohol	(OR 1.59)	95% CI 0.96-2.65)
BMI	(OR 1.26)	95% CI 1.00-1.61)

Discussion

According to this study, women were more likely to develop heart failure and die from myocardial infarction (Hung et al., 2013). This result is consistent with past studies that showed women with MI had worse outcomes than males, including increased death and hospital readmission rates (Moller et al., 2003). Due to several characteristics, such as late age at the start, tachycardia, shock, and heart failure, it is hypothesised that women with MI would have an increased risk of heart failure and death. These results imply that women with MI need greater surveillance and specialised care measures to lower their risk of these negative consequences. This study's findings also show that several baseline traits, including age, family history, lifestyle, and medication use, are linked to a higher risk of heart failure and death in women with MI (Kaul et al., 2013; Steg et al., 2004). These results imply that these traits may be utilised to identify women at increased risk for adverse outcomes after MI and to direct patient therapy to lower the likelihood of negative outcomes (McManus et al., 2011).

Additionally, the study's results may inform attempts to lower mortality and heart failure among women with MI. Despite the study's findings, further investigation is still required to fully understand the relationship between gender and post-MI mortality and heart failure. A greater understanding of how lifestyle, family history, and medicines might alter the risk of death and heart failure among women with MI necessitates more study (Spencer et al., 1999).

Limitations

There are a few restrictions on this research. First, because this is retrospective research, the precision of the findings and the correctness of the data may be constrained. Additionally, the scope of this research is restricted to a single Pakistani centre, which limits the generalizability of the findings and may make them different from the community at large. Finally, the limited sample size of this research may affect the validity and reliability of the analysis.

Conclusion

This research aims to understand better how myocardial infarction affects women's heart failure and death risk. One hundred female patients who were hospitalised in the cardiology department of the Hayatabad Medical Complex in Peshawar between January 2022 and 2023 will be the subject of retrospective observational research. The hospital's electronic medical record and registration systems will provide the data. The correlations between baseline characteristics and heart failure and death risk will be evaluated using univariable and multivariable logistic regression models. The findings of this study may provide light on possible gender-related risk factors for death after MI that might be the focus of further research. This knowledge may inform measures for lowering the mortality rate in this group and the care of women with MI.

Future Finding

Prospective studies with more significant sample numbers should be the focus of future research. To more accurately measure the risk of heart failure and death among women with MI, they need to include several centres.

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