The Professional Medical Journal
www.theprofesional.com

ORIGINAL PROF-2709

CORONARY ARTERY DISEASE;

SEVERITY & ITS ASSOCIATED RISK FACTORS IN CAUSING HEART FAILURE IN PATIENTS PRESENTED WITH STEMI AT GULAB DEVI CHEST HOSPITAL

Usman Javed Iqbal[1], Majid Kaleem[2], Muhammad Imran Hanif[3]

1. B.Sc (Hons) Cardiac Perfusion, MPH
   Gulab Devi Postgraduate Medical Institute, Lahore.
2. Assistant Professor Cardiology
   Gulab Devi Chest Hospital, Lahore.
3. Assistant Professor Cardiology
   Gulab Devi Chest Hospital, Lahore.

Correspondence Address:
Usman Javed Iqbal
Demonstrator
Postgraduate Medical Institute
Gulab Devi Chest Hospital, LHR
sh.usmanjavediqbal@gmail.com

Article received on:
18/11/2014
Accepted for publication:
27/12/2014
Received after proof reading:
06/05/2015

ABSTRACT…Background: Development of heart failure is always secondary to presence of risk factors like diabetes mellitus, hypertension, age, smoking and underlying coronary artery disease. **Objective:** The objective of this study was to find the frequency of risk factors and coronary artery involvement in patients of heart failure after myocardial infarction. **Study Design:** A non-randomized cross sectional study. **Setting:** Gulab Devi Chest Hospital. **Period:** Six months. **Methods:** 100 patients was done. Using non probability (purposive) sampling technique; all patients with ages between 20 to 80 years, irrespective of gender, diagnosed with heart failure (with ejection fraction ≤ 40%) secondary to STEMI were included in the study. Patients that were not having heart failure secondary to STEMI and those that hadn't their coronary angiography done were excluded from the study. The data were analyzed using SPSS Version 20. Descriptive statistics was used to see analyze the data. **Results:** Mean age of patients was 52.61±10.2years. There was an overall male predominance (81%). Common risk factors that we observed were smoking (65%), hypertension (62%), diabetes (58%) and positive family history (38%). In this study 51% patients had triple vessels disease, 15% patients had double vessels disease and 34% patients had single vessel disease. Most common lesion was of LAD following LCX, RCA and LMS. **Conclusion:** Our study conclude that coronary artery disease is the main causative factor for the development of heart failure in patients of myocardial infarction and even a single vessel disease can lead to heart failure with severe systolic dysfunction. Most common associated risk factor was smoking, hypertension being the second most common following diabetes and positive family history.

Key words: Ischemic heart diseases (IHD), Myocardial Infarction (MI), Heart Failure, Risk factors.

Article Citation: Iqbal UJ, Kaleem M, Hanif MI. Coronary artery disease; severity & its associated risk factors in causing heart failure in patients presented with STEMI at Gulab Devi chest hospital. Professional Med J 2015;22(5):532-535.

INTRODUCTION

Congestive heart failure is a common sequel of myocardial infarction in patients with atherosclerotic heart disease[1] and it is the only category of cardiovascular disease for which the prevalence, incidence, hospitalization rate, total burden of mortality and cost have increased in the past 25 years.[2] Fueling this epidemic is the increasing number of elderly patients developing impaired left ventricular (LV) function as a manifestation of chronic coronary artery disease (CAD). At least half the patients with heart failure have a low ejection fraction (40% or less).[3] Coronary artery disease is the cause of approximately two thirds of cases systolic heart failure.[4] There are a number of risk factors like age, gender, family history, smoking habit, diabetes and hypertension which are associated with development of CAD.[5] Moreover CAD, hypertension, and diabetes singly or in combination, predominate as causes of heart failure.[6] Our study evaluate that which type of coronary artery lesion has increased incidence of development of heart failure and which vessel more commonly is vulnerable to disease with respect to presence of certain risk factors.

MATERIALS & METHODS

Design & Setting

Our study was a cross sectional survey of 100 patients presented in CCU of Gulab Devi chest hospital. Study was completed in six months.

Sample selection

Using non probability (purposive) sampling technique; all patients with ages between 20 to 80 years, irrespective of gender, diagnosed with heart

failure (with ejection fraction ≤ 40%) secondary to STEMI were included in the study. Patients that were not having heart failure secondary to STEMI and those that hadn't their coronary angiography done were excluded from the study.

Data collection

A short structured questionnaire was prepared and patients were interviewed in ward after taking verbal consent. In addition to collecting basic demographic details, patients were asked about the presence of chronic hypertension and diabetes mellitus. Information was also obtained regarding smoking history and history of ischemic heart disease in first degree relatives. Angiographic findings were also noted down to see the extent of disease.

Statistical Analysis

Data were entered and analyzed using SPSS software version 20. Qualitative data were presented in form of f (%) while quantitative data were presented in form of mean±S.D.

RESULTS

The mean age of our patient was 52.6±10.2. There was an overall male predominance (81%). Over all the most common risk factor was smoking (65%). Hypertension was the second most common risk factor in our patients; about 62% of them were hypertensive. 60% of the subjects were observed as diabetes and females were more prone to be diabetic than males. A positive family history of IHD was observed on 38 subjects. These socio-demographic and risk profile is illustrated in Table-I below.

Age in years (mean ± SD)	52.6 ± 10.2
Range	84 - 24 = 60
Gender n (%)	
Male	81(81%)
Female	19 (19%)
Risk factor n (%)	
Smoking	65 (65%)
Hypertension	62 (62%)
Diabetes	58 (58%)
Family history of HID	38 (38%)

Table-I: SOCIODEMOGRAPHIC & RISK PROFILE

Table-II shows the descriptive of severity of CAD in terms of coronary artery involvement and diagnosis. 37 patients were diagnosed of anterior wall (A/W) MI, 21 were of Inferior wall (I/W) MI, 20 patients were diagnosed of antero-septal (A/S) MI and 15 patients were presented with Antero-lateral (A/L) MI. With respect to angiographic findings most common vessel involved was left anterior descending (LAD) artery i.e 33% following circumflex artery in 25% patients, right coronary artery (RCA) in 24% and left main stem in 18% of the patients. 51 patients were having triple vessels disease, 34 had single vessel disease while only 15 patients were having double vessel disease.

Diagnosis n (%)	
Anterior wall MI	37 (37%)
Posterior wall MI	02 (2%)
Inferior wall MI	21 (21%)
Lateral wall MI	02 (2%)
Antero-lateral MI	15 (15%)
Antero-septal MI	20 (20%)
Infero-posterior MI	03 (3%)
Angiographic details n (%)	
RCA lesion	24 (24%)
LAD lesion	33 (33%)
LMS lesion	18 (18%)
Circumflex lesion	25 (25%)
Vessel Involved n (%)	
Single (SVD)	34 (34%)
Doubel (DVD)	15 (15%)
Triple (TVD)	51 (51%)

Table-II: CORONARY ARTERY INVOVMENT

DISSCUSSION

Coronary artery disease remains a leading cause of death and exerts a heavy social and economical toll. According to the results of Faisal et al[7] there is a linear relation between age and CAD risk. These results are similar to our study as 80% of the patients are more than 40 years of age. Gender related differences in cardiac function and myocardial adaptation to injury or stress have been reported previously by Adams et al[8] who suggested that men were more likely than women to have an ischemic etiology of their

heart failure. These findings are similar to our results which also show males predominance about 81%. Various patterns of risk factors of CAD are reported by previous studies.[9] Some studies[10] reported that diabetes predisposes to cardiac failure at all ages in both sexes. Other reported hypertensive cardiovascular disease as a common and powerful predisposing cardiovascular condition. About 75% of cardiac failure is associated with hypertension with or without other associated cardiac conditions.[11] Our findings revealed similar results with that of these studies, 62% of our patients were hypertensive, 58% were diabetics 65% were smokers and 38% patients had a positive family history of coronary heart disease. Gheorghiade et al[12] showed a strong association of heart failure with coronary artery disease and described CAD as the most common underlying disease in HF patients. Another study suggested CAD as the underlying cause of HF in approximately 2/3 of the patients with left ventricular systolic dysfunction.[4] The remainders have non ischemic causes of systolic dysfunction and may have an identifiable cause viz hypertension, valvular disease, myocarditis etc. Our study showed consistency with previous studies described, as in our research there were 100 patients of heart failure with known underlying cause, coronary artery disease; 34% patients had developed heart failure by single coronary vessel involvement, 15% patients had develop heart failure due to double vessel involvement and 51% had develop heart failure due to triple vessel involvement. There were 23.49% involvement of right main coronary artery, 33.33% involvement of left main coronary artery, 18.31% involvement of left anterior descending artery and 24.87% involvement of left circumflex artery.

Ultimately on the basis of literature we can say that coronary disease and other risk factors such as hypertension, and diabetes singly or in combination, predominate as causes of heart failure.

CONCLUSION

According to this study it is concluded that coronary artery disease is the main causative factor for the development of heart failure in patients of myocardial infarction and even a single vessel disease can lead to heart failure with severe systolic dysfunction. Moreover this study shows that the most common lesion was of LAD with the left circumflex becoming the 2nd most common then right main coronary artery and then left main stem becoming the least common artery involved in coronary artery disease.

REFERENCES

1. Polak JF, Holman BL, Wynne J, Colucci WS. **Right ventricular ejection fraction: an indicator of increased mortality in patients with congestive heart failure associated with coronary artery disease.** Journal of the American College of Cardiology. 1983;2(2):217-24.

2. Hunt SA, Baker DW, Chin MH, Cinquegrani MP, Feldman AM, Francis GS, et al. **ACC/AHA guidelines for the evaluation and management of chronic heart failure in the adult: executive summaryA report of the american college of cardiology/american heart association task force on practice guidelines (committee to revise the 1995 guidelines for the evaluation and management of heart failure) developed in collaboration with the international society for heart and lung transplantation endorsed by the heart failure society of america55555.** Journal of the American College of Cardiology. 2001;38(7):2101-13.

3. Jessup M, Brozena S. Heart failure. **The New England journal of medicine.** 2003;348(20):2007-18.

4. Aurigemma GP, Gaasch WH. Clinical practice. **Diastolic heart failure.** The New England journal of medicine. 2004;351(11):1097-105.

5. Renilla A, Barreiro M, Barriales V, Torres F, Alvarez P, Lambert JL. **Management and risk factors for mortality in very elderly patients with acute myocardial infarction.** Geriatrics & gerontology international. 2013;13(1):146-51.

6. Ho KK, Anderson KM, Kannel WB, Grossman W, Levy D. **Survival after the onset of congestive heart failure in Framingham Heart Study subjects.** Circulation. 1993;88(1):107-15.

7. Faisal AWK, Ayub M, Waseem T, Khan RSAT, Hasnain SS. **Risk Factors In Young Patients Of Acute Myocardial Infarction.** J Ayub Med Coll Abbottabad. 2011;23(3).

8. Adams KF, Dunlap SH, Sueta CA, Clarke SW, Patterson JH, Blauwet MB, et al. **Relation between gender, etiology and survival in patients with symptomatic heart failure.** Journal of the American College of

Cardiology. 1996;28(7):1781-8.

9. Wilson PW, D'Agostino RB, Levy D, Belanger AM, Silbershatz H, Kannel WB. **Prediction of coronary heart disease using risk factor categories.** Circulation. 1998;97(18):1837-47.

10. Kannel WB, Ho K, Thom T. **Changing epidemiological features of cardiac failure.** British heart journal. 1994;72(2 Suppl):S3.

11. Kannel WB, Ho K, Thom T. **Changing epidemiological features of cardiac failure.** British heart journal. 1994;72(2 Suppl):S3.

12. Gheorghiade M, Sopko G, De Luca L, Velazquez EJ, Parker JD, Binkley PF, et al. **Navigating the crossroads of coronary artery disease and heart failure.** Circulation. 2006;114(11):1202-13.

"Age is not a limit for working hard."

Shuja Tahir

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Usman Javed Iqbal	Writing of research report, data analysis	
2	Majid Kaleem	Concept & idea	
3	M. Imran Hanif	Critical/Proof reading, suggestions