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ACUTE MYOCARDIAL INFARCTION;

FREQUENCY OF FAMILY HISTORY OF ISCHEMIC HEART DISEASE (IHD) AND RELATED RISK FACTORS IN THE FIRST DEGREE RELATIVES

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ABSTRACT… Objective: To determine the frequency of family history of IHD and related risk factors in the first degree relatives of patients suffered from acute myocardial infarction (AMI). **Study Design:** Descriptive study. **Setting:** PMRC Research Centre, Nishtar Medical College, Multan, Cardiology unit Nishtar Hospital Multan and Chaudhry Pervez Elahi Institute of Cardiology, Multan. **Duration:** One year from July 2011 to June 2012. **Material and methods:** In this descriptive study 331 patients of AMI of either sex and age ≥ 20 years admitted in Cardiology unit of Nishtar Hospital Multan and Chaudhary Pervez Elahi Institute of Cardiology Multan were registered. For data collection non-probability convenient sampling technique was used. Informed consent was taken from each patient. The information were recorded in a predesigned questionnaire. The data were analyzed through SPSS-11. **Results:** Mean age of the study cases was 54.99±11.25 years (Minimum age was 20 years and maximum was 90 years). Two hundred sixty four (79.8%) were male and 67 (20.2%) were female patients and male to female ratio was 3.9:1. Out of these 331 patients 111 (33.6 %) were having positive family history of IHD. In these 111 (33.6 %) cases history of diabetes was seen in 45 (40.5 %), 43(38.8 %) had history of hypertension and history of hyper-cholesterolemia was present in 23 (20.7 %) of cases. **Conclusions:** The family history of IHD in addition to traditional risk factors such as hypertension, hyperlipidemia, diabetes mellitus and smoking is itself an important risk factor for IHD. Relatives of the young patients with IHD should be considered as high risk group and it calls for close surveillance of their first degree relatives and early intervention. All their family members should be advised life style modification, appropriate management of risk factors and regular follow up of even apparently healthy descendents.

Key words: Ischemic Heart Disease, Family History, Acute Myocardial Infarction.

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INTRODUCTION

Familial or inherited tendencies to develop certain diseases are very common. Some have many family members affected with cancers while others are prone to develop heart attacks and strokes[1,2]. IHD, diabetes mellitus, hypercholesterolemia and hypertension are very important diseases which have great propensity to run in the family. The propensity for family tendency might be genetically determined. The inherited genes may carry 25 % risk for the development of various diseases[3]. Ischemic heart disease is a health burden in our society. About 600000 Americans die of heart diseases annually, this represents almost 25 % of all US deaths[4]. It has high tendency to run in the families and a positive family history of IHD is a major risk factor for ischemic heart disease[5-7]. The innate susceptibility to develop ischemic heart disease was suggested in Framingham cohort study[8-11]. If a father develops heart attack before the age of 55 and mother before the age of 65 years, this positive family history becomes very significant for the next generation and mere presence of parental and maternal history for premature myocardial infarction may increase the risk to 7 folds in descendents[12]. Thus the history of IHD in the first degree relatives is a risk factor for this disease and risk is greater in women than men[13]. The study by Sintonen et al[13], shows a strong heritable component for IHD and related risk factors. In young and middle aged women having first degree relative with heart attack under the age of 55 the IHD risk increases by 33% and 2 relatives increase the risk by 50 %[14].

IHD is also an important cause of sudden death and this also has family prelidiction, a history of sudden death due to IHD in parents of cohorts was found to be associated with 30% increased risk for ischemic heart disease in the families. Subjects with family history of sudden cardiac death have also increased risk of dying suddenly during an acute coronary event[15]. Hypertension also tends to run in the family it is through the same genes that can pre-dispose a person to hypertension, heart disease or stroke[16]. Diabetes mellitus also runs in the family and type II has stronger genetic linkage than type-I. Diabetes mellitus is also an important risk factor for MI. The women with type II diabetes are at much greater relative risk for MI than men even when adjusted for other risk factors[17]. Hyperlipidemia is an established risk factor for IHD and about 1 out of 500 people in the USA inherit this condition, so early detection of this disorder can help to reduce the burden of heart disease in the persons with hyperlipidemias and also in the other family members[4]. The present study was conducted to see the frequency of family history of IHD and related risk factors (especially hypertension, diabetes mellitus and hyperlipidemia) in the first degree relatives of acute myocardial infarction patients. This study will highlight the importance of family history of ischemic heart disease and related risk factors like diabetes mellitus, hypertension and hyperlipidemia in patients of acute MI and may justify the close surveillance of first degree relatives and early management of affected.

MATERIAL AND METHODS

In this descriptive study 331 patients of acute MI of either sex and age ≥ 20 years admitted in Cardiology unit, Nishtar Hospital Multan and Chaudhary Pervez Elahi Institute of Cardiology Multan were registered. The duration of this study was one year from July 2011 to June 2012. For data collection non-probability convenient sampling technique was used. Informed consent was taken from each patient. The information were recorded in a pre-designed questionnaire. The data were analyzed through SPSS-11.

RESULTS

A total of 331 patients of acute MI were registered for this study. Mean age of the study cases was 54.99±11.25 years (Minimum age was 20 years and maximum was 90 years). (Table-I). Two hundred sixty four (79.8%) were male and 67 (20.2%) were female patients and male to female ratio was 3.9:1 (Figure-1). Out of these 331 patients 111 (33.6 %) were having family history of IHD. In these 111 (33.6 %) cases history of diabetes was seen in 45 (40.5 %), 43(38.8 %) had history of hypertension and history of hyper-cholesterolemia was present in 23 (20.7 %) of cases.

Age Groups (In years)	Frequency	%age
20-30	5	1.5
31-40	26	7.8
41-50	106	32.1
51-60	107	32.4
61-70	65	19.6
More than 70	22	6.6
Total	331	100%

Table-I. Age wise distribution of study cases (n=331)

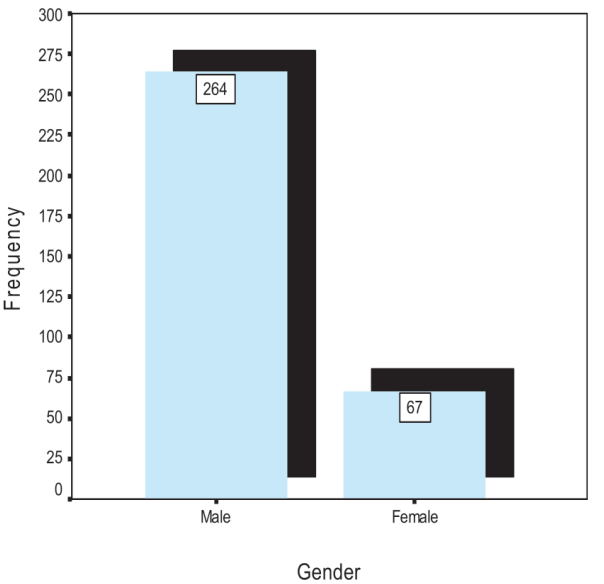

Figure-1. Gender distribution (n=331)

DISCUSSION

Ischemic heart disease (IHD) is an important cause of morbidity and mortality. In the past few years the incidence of IHD has halved in the west

but it has become doubled in the subcontinent[18] and it has become the problem of relatively young age and about half of the cases occur under age of 50 years[18]. Diabetes mellitus, hypertension, hypercholesterolemia, smoking and positive family history of IHD are important risk factors for IHD[19-22]. IHD affects both male and female, however females have some protection from IHD during the reproductive life but after the menopause and if they have diabetes before the menopause then this protection is lost.

Positive family history of certain diseases definitely draws attention to the relevant diseases in descendents. It is evident from epidemiological studies that family history of IHD especially parental history of IHD is an important risk factor for the family[5,6]. Some authors believe this familial risk can be clustered with other established risk factors[23], whereas others describe positive family history as an independent risk factor[7,12]. If a father suffers from heart attack before the age of 55 and mother before the age of 65 this family history becomes important for the next generation and positive family history of IHD in both parents increases the risk of IHD to 7 folds in the descendents[13]. Prevalence of positive family history up to 75% has been reported in some studies[24]. Hoseini et al[7] have described the family history of IHD in 14.9 % of the cases while Faisal et al[25] have described positive family history in 32 % of the cases. In present study we evaluated family history and related risk factors. In our study the family history of IHD was seen in 33.6 % of the cases. The results of our study are close to the results reported by Faisal et al. Similarly, Nadeem et al[1] in their study have also described family history in 43 % of the patients and has described it as another important risk factor, the same has also been highlighted in another study from India[26]. This has been supported by another study in which those young subjects were having greater risk of coronary artery disease (CAD) who also had positive family history of CAD[27]. The young subjects having family history of CAD have greater risk of sub-clinical athero-sclerosis[27] and have high prevalence of coronary artery calcium in the presence of other metabolic risk factors than those without family history[28]. Clustering of risk factors synergize effect of each other and family history of IHD is also an important risk factor and these patients have IHD at younger age. In our index cases family history of diabetes was seen in 40.5% of the cases, family history of hypertension in 38.8% of the cases and family history of hypercholesterolemia in 20.7% of the cases.

CONCLUSIONS

The family history of IHD in addition to traditional risk factors such as hypertension, hyperlipidemia, diabetes mellitus and smoking is itself an important risk factor for IHD. Relatives of the young patients with IHD should be considered as high risk group and it calls for close surveillance of their first degree relatives and early intervention. All their family members should be advised life style modification, appropriate management of risk factors and regular follow up of even apparently healthy descendents.

REFERENCES

1. Nadeem M, Ahmed SS, Mansoor S, Farooq S. **Risk factors for coronary heart disease in patients below 45 years of age.** Pak J Med Sci 2013; 29(1): 91-96.

2. Chaudhry AH, Muhammad D, Sharif MA, Ahmed N. **Study of various risk factors in patients with ischemic heart disease.** Professional Med J 1996; 3(2): 151-9.

3. http://www.sharecare.com/health/heart-disease/family-history-and-heart-disease.

4. **Centre for Disease Control and Prevention (CDC). Genomics and Health;** Heart Disease and Family History. Available from URL; http://www.cdc.gov/genomics/resources/diseases/heart.htm [Last updated on 07-02-2014] [cited on 11-06-2014].

5. Sesso HD, Lee IM, Gaziano JM, et al. **Maternal and paternal history of myocardial infarction and risk of cardiovascular disease in men and women.** Circulation 2001; 104: 393-8.

6. Shea S, Ottman R, Gabrieli C, et al. **Family history as an independent risk factor for coronary artery disease.** J Am Coll Cardiol 1984; 4 793-801.

7. Hoseini K, Sadeghian S, Mahmoudian M, Hamidian R, Abbasi A. **Family history of cardiovascular disease as a risk factor for coronary artery disease in adult**

offspring. Monaldi Arch Chest Dis 2008; 70(2): 84-7.

8. Snowden EB, McNamara PM, Garrison RI, et al. **Predicting coronary heart disease in siblings- a multivariate assessment.** The Farmingham study. Am J Epidemiol 1982; 115: 217-22.

9. Bhalli MA, Kayani AM, Samore A. **Frequency of risk factors in male patients with acute coronary syndrome.** J Coll Physcians Surg Pak 2011; 21(5): 271-75.

10. Wilson PW. **Established risk factors and coronary artery disease: the Framingham study.** Am J Hyperten 1994; 7: 7-12s.

11. Schildkraut JM, Myers RH, Carrison RJ, et al. **Coronary risk associated with age and sex of parental heart disease in the Farmingham Heart Study.** Am J Epidemiol 1989;64: 555-9.

12. Simon J, Rosolova H. **Family history-and independent risk factors for coronary heart disease, it is time to be practical.** Eur Heart J 2002; 23: 1637-1638.

13. Pohjola-Sintonen S, Rissanent AP, LiskolaP, Loumanmakis K. **Family history as a risk factor of coronary heart disease in patients under 60 years of age.** Eur Heart J 1998; 19: 235-9.

14. http://www.webmd.com/heart-disease/news/20010129/family-heart-disease-history.

15. Kaikkonen KS, Kortelainen ML, Linna E, Huikuri HV. **Family history and the risk of sudden cardiac death as a manifestation of an acute coronary event.** Circulation 2006; 114(14): 1462-7.

16. Goldstein IB, Shapiro D, Weiss RE. **How family history and risk factors for hypertension relate to ambulatory blood pressure in healthy adults.** J Hypertens 2008; 26 (2): 276-83.

17. Mulnier HE, Seaman HE, Raleigh VS, Soedamah-Muthu SS, Colhoun HM, Lawrenson RA, et al. **Risk of myocardial infarction in men and women with type 2 diabetes in the UK: a cohort study using the General Practice Research Database.** Diabetologia 2008; 51(9): 1639-45.

18. Enas EA, Senthilkumar A. **Coronary artery disease in Asian Indians: an update and review.** Int J Cardiol 2002; 1(2):1-34.

19. Sadeghi R, Adnani N, Erfanifar A, Gackkar L, Maghsoomi Z. **Premature coronary heart disease and traditional risk factors- can we do better.** Int Cadiovasc Res J 2013;7(2): 46-50.

20. Murabito JM, Pencina MJ, NamBH, D'Agostino RB, Wang TJ, Lioyd-Jones D, et al. **Sibling cardiovascular disease as a risk factor for cardiovascular disease in middle aged adults.** J Am Med Assoc 2005; 294(24): 3117-23.

21. Nasir K, Budoff MJ, Wong ND, Scheuner M, Herrington D, Arnett DK, et al. **Family history of premature coronary heart disease and coronary artery calcification: Multi-Ethnic study of Atherosclerosis (MESA).** Circulation 2007; 116(6): 619-26.

22. Liyod-Jones DM, Nam BH, D'Agostino RB, Levy D, Murabito JM, Wang TJ, et al. **Parental cardiovascular disease as a risk factor for cardiovascular disease in middle-aged adults: a prospective study of parents and offspring.** J Am Med Assoc 2001; 291(18): 2204-11.

23. Perkins KA. **Family history of coronary heart disease: is it an independent risk factor?** Am J epidemiol 1986; 124: 182-94.

24. Hawe E, Talmand PJ, Millder GJ, Humphries SE. **Family history is a coronary heart disease risk factor in the second Northwick Part Heart Study.** Ann Hum Genet 2003;67: 97-106.

25. Faisal AK, Ayub M, Waseem T, Khan RSA, Hasnain SS. **Risk factors in young patients of acute myocardial infarction.** J Ayub Med Coll Abbottabad 2011;23(3): 10-13.

26. Zimmerman FH, Cameron A, Fisher LD, Ng G. **Myocardial infarction in young adults angiographic characterization, risk factors and prognosis (Coronary artery surgery study registry).** J Am Coll Cardiol 1995; 26: 654-61.

27. Juonala M, Viikari AS, Rasanen L. **Young adults with family history of CAD have increased arterial vulnerability to metabolic risk factors: the cardiovascular risk in young Finns study.** Arterioscler Thromb Vasc Biol 2006; 26(6): 1376-1382.

28. Michos ED, Nasir K, Rumberger JA, Vasamreddy C, Braunstein JB, Buddoff MJ, et al. **Relation of family history of premature coronary heart disease and metabolic risk factors to risk of coronary arterial calcium in asymptomatic subjects.** Am J Cardiol 2005; 95 (5): 655-57.