

Clinical and Angiographic Profile of ST-elevation Myocardial Infarction in Premenopausal Women

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Abstract

Introduction: Ischemic heart disease and its complications are on a rise in premenopausal women unlike previously thought that estrogen provides protective effects from cardiovascular diseases. There are less number of studies for premenopausal women with ST-elevation myocardial infarction and very few took into account the clinical and angiographic pattern.

Purpose: In this study, we took into account clinical and angiographic pattern as well as certain risk factor profile.

Materials and Methods: Women <50 years admitted in the Intensive Coronary Care Unit of Government Rajaji Hospital, Madurai, with ST-elevation myocardial infarction were taken into the study (43 in number). Their clinical presentation, risk factor profile, biochemical data, electrocardiogram and echo findings, and the angiographic findings were collected. The study was conducted over a period of 1 year.

Results: In our study, most of them were diabetics, non-vegetarians were using sunflower oil or palm oil, and almost 100% had dyslipidemia. Most of them had anterior wall myocardial infarction with ejection fraction >40%. Most of them had single-vessel disease. Thirty days mortality was very less. In about five patients, none of the conventional risk factors for coronary artery disease (CAD) were present.

Conclusion: Premenopausal women with ST-elevation myocardial infarction are on a rise in the current era, unlike previously thought. The previous studies were of comparative studies between premenopausal and postmenopausal women. Studies about the risk factors among this age group were very less. Although conventional risk factors such as diabetes and dyslipidemia played major role, some of the unusual risk factors and unidentified risk factors were found to contribute to the disease. Further studies are needed to identify the unusual risk factors for CAD present in this age group.

Key words: Angiographic pattern, Coronary artery disease, Premenopausal, Risk factors, ST-elevation myocardial infarction

INTRODUCTION

Ischemic heart disease and its complications are on the rise in premenopausal women unlike previously thought that estrogen provides protective effects from cardiovascular diseases.^[1,2] Equal number of men and women of <50 years are affected by coronary artery disease (CAD), especially

acute coronary syndromes.^[3] There are less number of studies for premenopausal women with ST-elevation myocardial infarction (STEMI) and very few took into account the clinical and angiographic pattern. In this study, we took into account clinical and angiographic patterns as well as certain risk factor profiles.

MATERIALS AND METHODS

Women <50 years in the premenopausal period, admitted in the ICCU of Government Rajaji Hospital, Madurai, with STEMI,^[4] were taken into the study (43 in number). Their clinical presentation,^[5] risk factor profile, biochemical data, electrocardiogram and echo findings, and the angiographic

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Month of Submission : 11-2019
Month of Peer Review : 12-2019
Month of Acceptance : 12-2019
Month of Publishing : 01-2020

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Table 1: Distribution of the parameters among the study population

Parameter	Number	Percentage
Age 40–50 years	34	79
Diabetes	25	58
Overweight and obese	12	28
Sedentary lifestyle	31	73
Sunflower oil usage	22	51
Palm oil usage	18	42
Non-vegetarians	34	79
Anterior wall myocardial infarction	33	77
Low-density lipoprotein >130	14	32
High-density lipoprotein <40	43	100
Ejection fraction >40%	34	78
Hypertension at presentation	20	47
Single-vessel disease	33	77
Double-vessel disease	5	12
Triple-vessel disease	5	12
In-hospital mortality	4	9

findings were collected. The in-hospital mortality was observed. The study was conducted for 1 year.

RESULTS

The data obtained are given in the following Table 1.

DISCUSSION

Previously, it was thought that premenopausal women are protected from CAD as there is a protective effect of estrogen on atherogenesis.^[1,2] However, currently, there is a rising trend in the incidence of CAD among premenopausal women, especially acute coronary syndromes.

Diabetes was the leading risk factor for CAD in women.^[6,7] Our study establishes the same. About 58% of our study population were diabetics. However, only 12% were in the overweight or obese range of body mass index. Hence, body weight did not have a direct association with CAD in our study.

A sedentary lifestyle obviously predisposed to CAD, as in our study.^[8,9] The majority of them were non-vegetarians. We were trying to associate any particular oil usage among the study population. However, sunflower oil usage and palm oil usage were equally associated with them.

Although only 32% had abnormal low-density lipoprotein levels, almost 100% of the study population had abnormal high-density lipoprotein levels, directly related to atherogenesis.^[10]

Anterior wall MI was the most common as in any study population, and ejection fraction was mostly >40%. All

patients had significant CAD mostly in the form of the single-vessel disease, unlike previous studies showing normal coronaries or non-obstructive CAD.^[11,12]

About 9% of the study population had in-hospital mortality, very less when compared to the in-hospital mortality among the general women population.^[13]

CONCLUSION

Although most of the results were corroboratory to the previous studies,^[6,14] some of the findings such as lesser overweight people, 100% dyslipidemia, 100% obstructive CAD, and very less in-hospital mortality^[13] were new findings in our study.^[15] This implies that there is a changing trend in the incidence of acute coronary syndromes in this population as well as some of the clinical and angiographic profile which was different in our study population. Further studies are needed to establish the causal role of any newer risk factors among this age group.

Limitations of the Study

This is an observational study and does not have control or comparative group. Hence, we could not compare the clinical and angiographic profile with postmenopausal women and also the causal role of the risk factors which were not able to be established in this study.

REFERENCES

1. Krishnan MN. Coronary heart disease and risk factors in India on the brink of an epidemic? *Indian Heart J* 2012;64:364-7.
2. Vaccarino V, Parsons L, Every NR, Barron HV, Krumholz HM. For the national registry of myocardial infarction 2 participants. Sex based differences in early mortality after myocardial infarction. *N Engl J Med* 1999;341:217-25.
3. Khan NA, Daskalopoulou SS, Karp I, Eisenberg MJ, Pelletier R, Tsadok MA, *et al.* Sex differences in acute coronary syndrome symptom presentation in young patients. *JAMA Intern Med* 2013;173:1863-71.
4. Thygesen K, Alpert JS, Jaffe AS, Simoons ML, Chaitman BR, White HD, *et al.* Third universal definition of myocardial infarction. *Circulation* 2012;126:2020-35.
5. Rubini Gimenez M, Reiter M, Twerenbold R, Reichlin T, Wildi K, Haaf P, *et al.* Sex-specific chest pain characteristics in the early diagnosis of acute myocardial infarction. *JAMA Intern Med* 2014;174:241-9.
6. Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, *et al.* Heart disease and stroke statistics--2015 update: A report from the American heart association. *Circulation* 2015;131:e29-322.
7. Bettegowda S. Clinical profile of ischemic heart disease in women with special reference to the risk factors. *Sch J App Med Sci* 2014;2:3020-5.
8. Lichtman JH, Leifheit-Limson EC, Watanabe E, Allen NB, Garavalia B, Garavalia LS, *et al.* Symptom recognition and healthcare experiences of young women with acute myocardial infarction. *Circ Cardiovasc Qual Outcomes* 2015;8:S31-8.
9. Leifheit-Limson EC, D'Onofrio G, Daneshvar M, Geda M, Bueno H, Spertus JA, *et al.* Sex differences in cardiac risk factors, perceived risk, and health care provider discussion of risk and risk modification among young patients with acute myocardial infarction: The VIRGO study. *J Am Coll Cardiol* 2015;66:1949-57.
10. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, *et al.* Effect

- of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): Case-control study. *Lancet* 2004;364:937-52.
11. Oomman A, Sathyamurthy I, Ramachandran P, Verghese S, Subramanyan K, Kalarickal MS, *et al.* Profile of female patients undergoing coronary angiogram at a tertiary centre. *J Assoc Physicians India* 2003;51:16-9.
 12. Wenger NK. Coronary heart disease: The female heart is vulnerable. *Prog Cardiovasc Dis* 2003;46:199-229.
 13. Canto JG, Rogers WJ, Goldberg RJ, Peterson ED, Wenger NK, Vaccarino V, *et al.* Association of age and sex with myocardial infarction symptom presentation and in-hospital mortality. *JAMA* 2012;307:813-22.
 14. Dave TH, Wasir HS, Prabhakaran D, Dev V, Das G, Rajani M, *et al.* Profile of coronary artery disease in Indian women: Correlation of clinical, non invasive and coronary angiographic findings. *Indian Heart J* 1991;43:25-9.
 15. Gupta R, Puri VK, Narayan VS, Saran PK, Dwivedi SK, Singh S, *et al.* Cardiovascular risk profile in Indian women. *Indian Heart J* 1999;51:679.

How to cite this article: Saravanan RR, Vijayasathy N, Veeramani SR, Balasubramanian S, Selvarani G, Sivakumar GS, Ramesh R. Clinical and Angiographic Profile of ST-elevation Myocardial Infarction in Premenopausal Women. *Int J Sci Stud* 2020;8(1):25-27.

Source of Support: Nil, **Conflicts of Interest:** None declared.