Original Article

Clinical Profile of Young Women with CAD

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Abstract

Background: Coronary artery disease (CAD) is the most common cause of mortality in India. Deaths due to CAD occur 5–10 years earlier in the Indians than in Western countries. Coronary artery disease (CAD) in young women, who are previously considered as low risk group, is on rise now due to various reasons. This study is aimed to find out the incidence of CAD in young women admitted for evaluation of chest pain.

Methods: The data of women suspected to have CAD and underwent CAG over a period of 2 years were retrospectively analyzed. The discharge summaries, coronary angiograms and angiogram reports were studied to get information about clinical and angiographic profiles of these women in the "young group" (age < 50 years)

Results: Study showed normal epicardial coronaries in 174 (49.8 %) women, non-significant lesion in 80 (23.2%) women, and intermediate lesion in 21 (6%) women and obstructive CAD in 75 (21 %) women. There were 48 (15.77 %) women with SVD, 16 (3.15 %) women with DVD, 11(2.8%) women with TVD.

Conclusion: There is an alarming increase in the proportion of young women angiographically diagnosed to have significant coronary artery disease. The atherosclerotic burden is greater in elderly women than young women as understood from the higher prevalence of obstructive coronary artery disease in elderly group.

Key Words: Coronary artery disease, Young women, Disease patterns

Introduction

Coronary artery disease (CAD) is a major cause of death[1]. The incidence of CAD has drastically come-down in the developed nations, but it has increased substantially in developing countries[2]. CAD in our subcontinent is different from that of western countries,i.e, it occurs at relatively younger age,[2] .Major risk factors predispose to CAD in 2% of 15–19 years old and 20% of 30 - 34 years men and 8% of women in 30 – 34 years of age. It can be clearly understood that early atherosclerosis is modified by the risk factors for clinical CAD. Hence long term prevention must begin as early as 30-35 years of age[3] for risk factors like metabolic syndrome[4,6] obesity[5] and Dyslipidemia[7].

Prevalence and pattern of CAD in young women is not well studied in various studies. There is not enough data for angiographic prevalence as well as pattern of CAD in young women. It is a well known fact that the prevalence of CAD is more in men compared to women. Some earlier data showed that among women who undergo coronary angiogram (CAG) the angiographically determined prevalence of "single vessel disease" (SVD) is 5.77%, "double vessel disease" (DVD) is 3.15%, and "triple vessel disease" (TVD) is 2.8 % respectively[8,9].With more than two risk factors., significant CAD is seen in 21% of women[10] study done by dave et al among Indian women undergoing coronary angiography showed greater proportion of TVD (39.6%) than DVD (12.9%) or SVD (15.8%). Our study is intended to know about the angiographic prevalence and pattern of CAD in young women admitted for coronary angiogram in a tertiary care rural hospital.

Aim

The objective was to study the pattern and prevalence of CAD in young women undergoing CAG

Materials & Methods

The data of women suspected to have CAD and underwent CAG over a period of 2 years were retrospectively analyzed. The discharge summaries, coronary angiograms and angiogram reports were studied to get information about clinical and angiographic profiles of these women in the "young group" (age < 50 years) .In this study, obstructive CAD was defined as at least 50% stenosis of luminal diameter of LMCA or at least 70% stenosis of luminal diameter of at least one of the major epicardial coronary arteries. Non-significant lesion was defined as less than 30% stenosis of luminal diameter whereas Intermediate lesion was defined as 30–50% stenosis of luminal diameter of LMCA, or 30–70% stenosis of luminal diameter of one of the major epicardial arteries. Depending on the number of major epicardial arteries involved, they are classified as single vessel disease (SVD), double vessel disease (DVD) and Triple vessel disease (TVD). The prevalence and

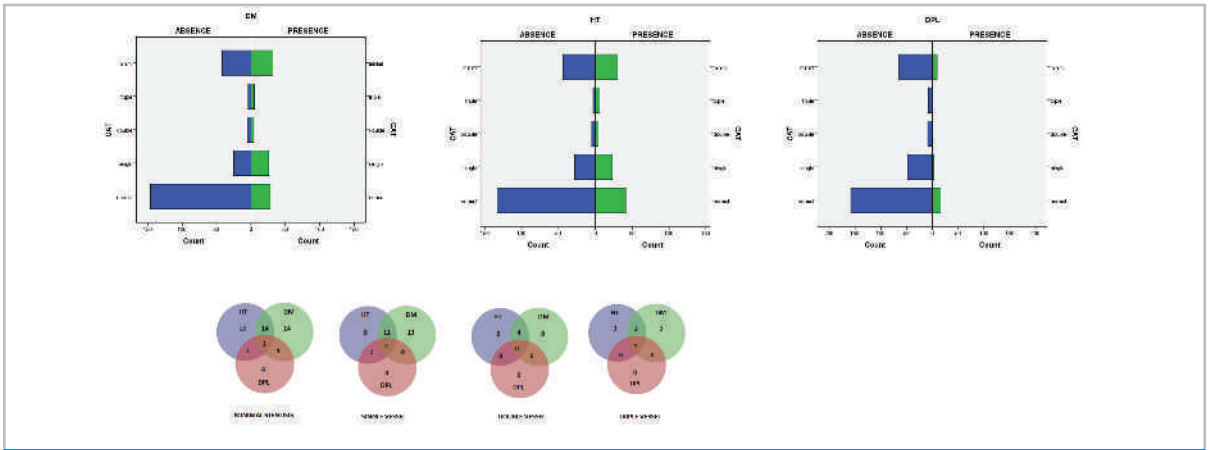

Fig 1 - Clinical profile of women undergoing coronary angiogram

	Hypertension	Type II diabetes	DLP	HT & DM	HT & DLP	DM & DLP	all three
Triple	3	2	0	2	0	0	1
Double	0	0	0	4	0	0	0
Single	10	14	0	11	1	0	2
Minimal	12	14	4	15	0	1	3

Table 1 - Clinical profile of women undergoing coronary angiogram

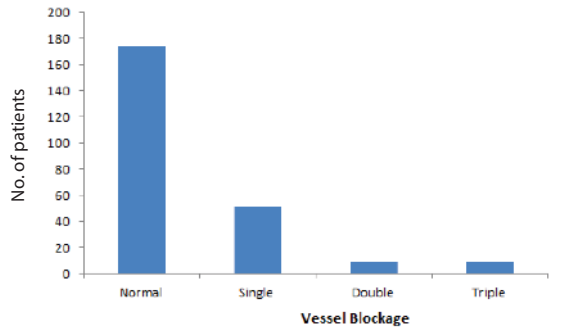

Fig 2 - Angiographic profile of women undergoing coronary angiogram.

pattern of CAD in these women were analyzed. All statistical analyses were performed using SPSS17 software. A p-value <0.05was considered statistically significant.

Results

Details of all 350 women who underwent CAG during the study period were taken. The mean age was 47.0 ± 3 years young women. There were 91 patients with hypertension (26 %), diabetes -101((34%), and Dyslipidemia -26 (7.4%) respectively. Left ventricle (LV) dysfunction was present in 51 (17 %) of patients. Atypical chest pain were seen in 152 patients (48 %). None of the women included in this study had the habit of smoking (Fig 1, Table 1).

Clinical profile of women undergoing coronary angiogram

The angiographic profile of these women, overall, showed normal epicardial coronaries in 174 (49.8 %) women, non-significant lesion in 80 (23.2%) women, and intermediate lesion in 21 (6%) women and obstructive CAD in 75 (21 %) women. There were 48 (15.77 %) women with SVD, 16 (3.15 %) women with DVD, 11(2.8%) women with TVD (Fig 2). Subgroup analysis revealed that normal epicardial coronaries were more prevalent in young women (1, p = 0.001). There was no statistical difference in the prevalence of non-significant lesion (80, p = 0.44) and intermediate lesion (21, p = 0.08)

Discussion

The average age of menopause is 52 years in western world, although it is slightly lesser in Indian women. In order to extrapolate our data to various ethnic populations, the subjects in this study were classified as young women with age <50years. There has been a changing trend in the number of young women undergoing CAG and the reason for this is the onset of risk factors for With regard to LV Function as assessed by Echocardiography, 17.04% had RWMA .Out of which 2.52% had severe LV dysfunction, 6.9 % had moderate LV dysfunction, 2.9 % had mild LV dysfunction and other's (83%) had Good LV function.

The prevalence of obstructive CAD is 21 % in our study[13], Interestingly, there was near equal distribution of both non-significant lesions and intermediate lesions. On the contrary to the observations of Dave et al study[15], there was not much variation in the proportion of SVD (15.77), DVD (3.15%) and TVD (2.8 %) among young women in our study. In our study, the prevalence of multivessel disease (DVD and TVD) is less among women undergoing CAG[15].

The pattern of involvement of coronary arteries were LAD, the most commonly affected vessel[16,17], followed by involvement of LCX and RCA, and LMCA is the least

involved vessel. This suggests that, with regard to clinical presentation and onset of risk factors for CAD at young age,there is a change.But the load of atherosclerotic plaque burden in the coronary arteries and type of involvement of coronary arteries have not changed in women.

Limitations of this study

Intravascular ultrasound, optical coherence tomography or fractional flow reserve was not used in this study. Hence we are not able to comment anything further on intermediate lesions.

Conclusion

The major modifiable risk factors in our young adults are Hypertension, diabetes and Dyslipidemia.The clustering of risk factors particularly three or more risk factors in an individual predispose to CAD at relatively younger age[19]. There is an alarming increase in the proportion of young women angiographically diagnosed to have significant coronary artery disease. The atherosclerotic burden is greater in elderly women than young women as understood from the higher prevalence of obstructive coronary artery disease in elderly group. There has been a change with regard to clinical presentation and onset of risk factors for coronary artery disease at young age, but the load of atherosclerotic plaque burden and type of involvement of coronary arteries have not changed in women.

The authors declare no conflict of interest.

References

1) Murray CJ, Lopez AD. Mortality by cause for eight regions of the world: Global Burden of Disease Study. Lancet 1997;349:1269–76.

2) Enas EA, Senthilkumar A. Coronary Artery Disease In Asian Indians: An Update And Review. Int J Cardiol 2002;1(2):1–34.

3) McGill HC Jr, McMaham CA, Zieske AW, Tracy RE, Malcom GT, Herderick EE, et al. Association of Coronary Heart Disease Risk Factors With Microscopic Qualities of Coronary Atherosclerosis in Youth. Circulation 2000;102:374–9.

4) Ford ES, Capewell S. Coronary Heart Disease Mortality Among Young Adults in the US. From 1980 through 2002. J Am Coll Cardiol 2007;50:2128–32.

5) Ford ES, Mokdad AH, Giles WH. Trends in waist circumference among US adults. Obes Res 2003;11:1223–31.

6) Ford ES, Giles WH, Mokdad AH. Increasing prevalence of the metabolic syndrome among US adults. Diabetes Care 2004;27:2444–9.

7) Ford ES, Mokdad AH, Giles WH, Mensah GA. Serum total cholesterol concentrations and awareness, treatment, and control of hypercholesterolemia among US adults: findings from the National Health and Nutrition Examination Survey, 1999–2000. Circulation 2003;107:2185-89.

8) Enbergs A., Burger R., Reinecke H. Prevalence of coronary artery disease in a general population without suspicion of coronary artery disease: angiographic analysis of subjects aged 40 to 70 years referred for catheter ablation therapy. Eur Heart J. 2000;21:45–52.

9) Chaitman B.R., Bourassa M.G., Davis K. Angiographic prevalence of high-risk coronary artery disease in patient subsets (CASS) Circulation. 1981;64:360–367.

10) Waters D.D., Halphen C., Theroux P. Coronary artery disease in young women: clinical and angiographic features and correlation with risk factors. Am J Cardiol. 1978;42:41–47.

11) Adão L., Santos L., Bettencourt N. Acute coronary syndromes in young women. Rev Port Cardiol.2004;23:69–77.

12) Welch C.C. Coronary artery disease in young women. Cardiovasc Clin. 1975;7:5–18.

13) Sukhija R., Yalamanchili K., Aronow W.S. Prevalence of left main coronary artery disease, of three- or four-vessel coronary artery disease, and of obstructive coronary artery disease in patients with and without peripheral arterial disease undergoing coronary angiography for suspected coronary artery disease. Am J Cardiol. 2003;92:304–305.

14) Dave T.H., Wasir H.S., Prabhakaran D. Profile of coronary artery disease in Indian women: correlation of clinical, non invasive and coronary angiographic findings. Indian Heart J. 1991;43:25–29.

15) D'Ascenzo F., Presutti D.G., Picardi E. Prevalence and non-invasive predictors of left main or three-vessel coronary disease: evidence from a collaborative international meta-analysis including 22740 patients. Heart.2012;98:914–919.

16) Pinto R.J., Bhagwat A.R., Loya Y.S. Coronary artery disease in premenopausal Indian women: risk factors and angiographic profile. Indian Heart J. 1992;44:99–101.

17) Welch C.C., Proudfit W.L., Sheldon W.C. Coronary arteriographic findings in 1000 women under age 50. Am J Cardiol. 1975;35:211–215.

18) Christofferson R.D., Lehmann K.G., Martin G.V. Effect of chronic total coronary occlusion on treatment strategy. Am J Cardiol. 2005;95:1088-1091.

19) Babu ezhilan, jayaraman balachander et.all.; Indian heart journal 2014