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A STUDY OF SERUM LIPID PROFILE AND HIGH SENSITIVE C- REACTIVE PROTEIN IN POST MENOPAUSAL WOMEN WITH AND WITHOUT CORONARY HEART DISEASES"

Community Medicine

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ABSTRACT

Background: Cardiac diseases increases in frequency after menopause due to hormonal changes. Lipid profile and HsCRP are common and specific marker for cardiac disease. Method: study conducted was a cross sectional study carried out in Department of Biochemistry of tertiary health care institution in southern Rajasthan. The study consist of 50 cases of post-menopausal women with coronary heart diseases and 50 control consisting of Post-menopausal women of age 50-70yr Lipid profile was analyzed by spectrophotometric method in Roche Cobas 6000 and HsCRP was estimated by turbidimetric immunoassay method on semi auto analyzer. Results: In our study we found significantly low levels of HDL and significantly high levels of serum cholesterol, LDL, VLDL, TG, in cases than control group. The level of serum HsCRP in cases was 3.23± 1.01while in control it was 1.40± 0.61, that was statistically significant. **Conclusion:** post-menopausal women having cardiac disease have significant difference in lipid profile and HsCRP than control which further establishes importance of these markers out of large battery of markers.

KEYWORDS

CAD, HsCRP, IL-6, lipid profile.

INTRODUCTION: -

Menopause is an important time in women's life and it is a natural event in the process of aging. Decreased levels of estrogen in postmenopausal women leads to variations in lipid profile leading to atherosclerosis thereby increasing risk of coronary artery disease in postmenopausal women.(1) India is now in the middle of Coronary Artery Disease (CAD) epidemic.(2) Earlier Medical researches on heart diseases were primarily focused on men. Now CAD is the most common cause of death in women. (3) Since the clinical picture in women is different from men, therefore the diagnosis can be missed or delayed. C-reactive protein (CRP), a prototype marker of the inflammatory process, is the most studied both as a causal factor and in the prediction of CHD.(4) CRP is one of the substances present in the atherosclerotic lesion, more specifically in the vascular intima, where it co-localizes with monocytes, monocyte-derived macrophages and lipoproteins. This localization makes a direct contribution to the atherosclerotic process.(5) HsCRP is more specific marker of small tissue inflammation such as cardiac tissue .(6)Indian women tends to have low level of HDL compared to others. Total cholesterol in women is 10 mg/dl lower compared to men before the age of 45. But beyond 65 years of the age reverse is true, means its 10 mg/dl higher in women.20% difference in TC level is associated with a 50–60% increase in CAD risk over lifetime. (7) LDL is strong predictor of CAD mortality in women as well as in men. LDL level increases steadily by an average of 2 mg/dl/year between the ages of 40–60 years. (8)Low HDL is an important risk factor even if TC and TG levels are normal. It is a strong predictor of CAD in women than in men especially after the age of 65. A high TG level is a strong predictor of CAD in women than in men. An increase in TG level of 90 mg/dl increases the CAD risk by 75% in women vs. 30% in men. (9)

METHODOLOGY:

Study Design: cross sectional observational study.
Study period: December 2017- May2018

Sample Population: It was conducted on female patients of age between 50 to 70 years attending the cardiology department of Geetanjali Medical College and Hospital, Udaipur.

The study population comprised of total 100 Subjects consisting of two groups:-

GROUP I: - It consists of Post-menopausal women age 50-70yr control subjects (n=50).

GROUP II: - It consists of post-menopausal women with coronary heart diseases age 50-70 yrs subject case (n=50) diagnosed by cardiology department.

Informed consent from all participants was obtained, after that 5 ml of venous blood was drawn from anticubital vein in a sterile plain vial under all aseptic precautions. REMI centrifuge at 3000 RPM was used for centrifugation for a period of 15 minutes. Serum thus separated was used for further analysis.

The lipid profile parameters were analyzed on Roche Cobas 6000 by spectrophotometric method, TC by CHOD-POD method, TG by Lipoprotein Lipase Glycerol Method, HDL by PEG-cholesterol esterase, LDL and VLDL by calculation. HsCRP was estimated by turbidimetric immunoassay method at 570 nm by ERBA CHEM 5 PLUS V2 semi auto analyzer.

Statically analysis: The data was analyzed by using standard statistical software (SPSS version 20). Significance testing for Mean ±SD difference of two groups was done by student T- test (unpaired t-test).

RESULT:-

Most (36%) of the participants belonged to age group of 50-54 years and ≥65 years, followed by 60-64 years (18%). The mean age of cases was 59.36±7.33, and control was 59.76± 7.36.Mean Serum total cholesterol of cases was 287.66 with SD 74.16 and while in control mean Serum cholesterol was 203.39 with SD 54.69. Mean Serum triglyceride of cases was 217.53 with SD 76.84 which was significantly (p<.001) higher than control mean Serum triglyceride (136.14±66.98). Mean value of serum HDL in cases was 33.63 with SD 10.54 while in control mean serum HDL was 47.81 with SD 13.49 which was significantly(p<.001) higher than cases. Mean Serum LDL and VLDL of cases was 210.52 ±65.95 and 43.50±15.37 respectively which was significantly higher than control mean Serum LDL (128.35 ±44.69) and VLDL 27.22 ±13.39.Mean value of serum HsCRP in cases was 3.23 with SD 1.01while in control mean serum HsCRP was 1.40with SD 0.61,and it was found statistically significant.

Table-1 Distribution of participants according to Age Group

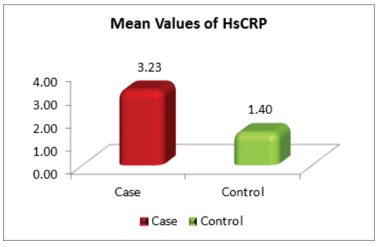
Age group	Group		Total
	Case	Control	
50-54	18(36)	18(36)	36(36)
55-59	7(14)	3(6)	10(10)
60-64	6(12)	12(24)	18(18)
≥65	19(38)	17(34)	36(36)
Total	50(100)	50(100)	100(100)

TABLE:-2 Lipid profile and HsCRP in Post-Menopausal Women and Control.

S.No	Parameter	Case	Control	p-value
1	TC	287.66±74.16	203.39±54.69	<0.001

2	TG	217.53±76.84	136.14±66.98	<0.001
3	HDL	33.63±10.54	47.81±13.49	<0.001
4	LDL	210.52±65.95	128.35±44.69	<0.001
5	VLDL	43.50±15.37	27.22±13.39	<0.001
6	HsCRP	3.23±1.01	1.40±0.61	<0.001

Figure 1:-Level of HsCRP in cases and control



DISCUSSION : -

Our study results shows Most (36%) of the participants belonged to age group of 50-54 years and ≥65 years, followed by 60-64 years (18%). The mean age of cases was 59.36±7.33, and control was 59.76± 7.36.(table 1,2) Similar findings was noticed by Fazlini, et al (10) that Mean age of the subjects at baseline was 60+4 years and with a mean of 11+5 years post menopause. In our study average age of menopause in case was 46.5±3.32 and in control was 48.02±3.35 while overall average age noticed was 47.26±3.41. This appeared to be within the range observed in the study findings of Yahya and Rehan (2002)(11) 47 years and Sharma et al. (2006)(12) 47.5 years. But slightly differ in trend found in Biswas and Kapoor (2004)(13), were the mean age of menopause was 44.6 years.

Lipid profile results in our study shows increased TC LDL, TG and VLDL levels in cases than control group. Whereas HDL was markedly lower in cases. Similarly a prospective study by Assmann et al.(14) also proves HDL cholesterol to be the risk factor associated with cardiac disease.one more similar study done by Shilpa S. Shende, et al. in 2011(15)showed significant increased level of serum total cholesterol, TG, LDL-C and VLDL-C in post-menopausal women compared to pre-menopausal women. Srinivas Reddy Kilim and Srinivasa Rao Chandal (16 in their study showed a significant increase in serum total Cholesterol(TC), Triglycerides(TG), LDL and VLDL level in post-menopausal women as compared to those in pre-menopausal women ($p<0.001$).

In our study the mean value of serum HsCRP in cases is 3.23 ± 1.91while in control mean serum HsCRP is 1.40 ± 0.81, which is significantly high. A study done by Filipa Mascarenhas-Melo et al. (17) also reported significant high levels of hscrp in post menopausal women. A Norwegian study of 247 patients with premature MI also found hsCRP to be a strong predictor of future coronary death (18). Imo A. Ebong et al (6) reported increased levels of hscrp in post menopausal women,in a comparative study between premenopausal, perimenopausal and postmenopausal women.

Conclusion:-In our study we found significantly low levels of HDL and significantly high levels of serum cholesterol, LDL, VLDL, TG, HsCRP in cases than control group. In addition to the evaluation of conventional risk factors in daily clinical practice, the measurement of HsCRP, lipid profile might provide significant prognostic benefits in post-menopausal women having cardiac disease.

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