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### RESEARCH ARTICLE

#### AGE RELATED DIFFERENCE IN LIPID PROFILE BETWEEN MEN & WOMEN.

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#### Manuscript Info

#### Abstract

#### Manuscript History

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#### Introduction:-

Keeping cholesterol levels healthy, is a great way to keep the heart healthy and lower the chances of getting a heart disease or stroke. Not all cholesterol are bad, some are actually good for health.

Cholesterol is an essential chemical in our body present in cell membranes, hormones, bile acids, vitamin D etc. National Cholesterol Education Programme defines serum cholesterol level between 160-199 mg / dl as desirable. Steady increase in cholesterol levels are seen in urban than rural population **Khoo KL et al.** High cholesterol levels are estimated to cause 56 % of global ischaemic heart disease WHO.

Lipid disorder is a major risk factor for the progression of Coronary Artery Disease.

Age is a significant predictor for CAD. The CVD risk increases exponentially for women as they enter menopause and estrogen level declines **Matthews et al.** Lipid Profile Tests were used to assess risk of Heart disease. Two common concerns about dietary lipids are- one is the high caloric value leading to undesired weight gain & other is high total cholesterol levels **Mora et al.**

Women in younger age group, have a much lower risk for CVD compared to men of their age. Total cholesterol and low density lipoproteins are lower in premenopausal than in men of same age group **Jensen et al.** The pulsatile sex hormones secreted in minute quantities during different phases of reproductive life, influence lipid metabolism especially oestrogen and hence has an indirect role preventing in coronary heart disease **Bhagya et al.**

Risk factors for cardiovascular disease are smoking, hypertension, diabetes mellitus, obesity, age above 40 years for men and around 55 for women, abnormal cholesterol / lipoprotein profile and a family history of early heart disease. Great variations of plasma lipid levels are affected by age, sex, socioeconomic status, food habits, race, heredity etc.,

#### Aim and Objectives:-

To compare serum lipid profile , which is the biochemical cardio vascular risk factor between men and women.

#### Materials and methods:-

A cross sectional study involving 50 males and 50 females was carried out at the out patient department of Medicine, Government Rajaji Hospital attached to Madurai Medical College, Madurai. Permission from the Institution and the informed consent of the subjects were obtained for the study.

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Around 5 ml of blood samples were taken from the peripheral veins after an overnight fasting of 12 hours. Then estimation done for Serum total cholesterol by CHOP-PAP method Serum Triglycerides by Enzymatic calorimetric GPO-Trinder method HDL Cholesterol by Direct enzymatic method LDL was calculated by Friedwald's equation  

$$\text{LDL Cholesterol} = \text{Total Cholesterol} - \text{VLDL Cholesterol} - \text{HDL Cholesterol}$$

$$\text{VLDL Cholesterol} = \text{Triglycerides} \times 0.02$$

### Results and Analysis:-

Datas were analysed statistically by determining the range, frequencies, percentages, mean, standard deviation and 'p' values for each group using SPSS 16 version ( Statistical Package for Social Science ) were calculated.

Datas were compared by using Student's t test for raw data and Chi Square test for consolidated data to test the significance of between variables.

### Statistical Tools:-

The information collected regarding all the selected cases were recorded in a Master Chart. Data analysis was done with the help of computer using SPSS 16 version software.

Using this software range, frequencies, percentages, means, standard deviations and 'p' values were calculated through Student 't' test was used for raw data and chi square test for consolidated data to test the significance of difference between variables.

A 'p' value less than 0.05 is taken to denote significant relationship.

| Age group in years | Men | Women | Total |
|--------------------|-----|-------|-------|
| 40 - 49            | 19  | 17    | 36    |
| 50 - 59            | 13  | 26    | 39    |
| > 60               | 21  | 10    | 31    |
| Total              | 53  | 53    | 106   |

| Serum Total cholesterol mg/dl | Men | Women |
|-------------------------------|-----|-------|
| ≤ 200                         | 45  | 46    |
| 200 - 240                     | 5   | 6     |
| > 240                         | 3   | 1     |
| Total                         | 53  | 53    |

| HDL cholesterol mg/dl | Men | Women |
|-----------------------|-----|-------|
| < 35                  | 0   | 2     |
| 35 - 55               | 52  | 49    |
| >55                   | 1   | 2     |
| Total                 | 53  | 53    |

| LDL       | Men | Women |
|-----------|-----|-------|
| ≤ 130     | 49  | 45    |
| 131 - 160 | 2   | 5     |
| > 161     | 2   | 3     |
| Total     | 53  | 53    |

| VLDL  | Men | Women |
|-------|-----|-------|
| < 30  | 21  | 13    |
| > 30  | 32  | 40    |
| Total | 53  | 53    |

| Triglycerides | Men | Women |
|---------------|-----|-------|
| < 200         | 38  | 39    |
| 201 - 400     | 14  | 14    |
| > 400         | 1   | 0     |

|       |    |    |
|-------|----|----|
| Total | 53 | 53 |
|-------|----|----|

| Total Cholesterol / HDL | Men | Women |
|-------------------------|-----|-------|
| Ideal < 3.5             | 50  | 45    |
| 3.6 to 5.5              | 2   | 7     |
| > 5.5                   | 1   | 1     |
| Total                   | 53  | 53    |

| HDL / LDL ratio | Men | Women |
|-----------------|-----|-------|
| < 3.1           | 52  | 43    |
| 3.1 to 4.1      | 1   | 0     |
| Total           | 53  | 43    |

| LDL / HDL cholesterol ratio | Men | Women |
|-----------------------------|-----|-------|
| Ideal 2.5 - 1               | 38  | 30    |
| 2.6 to 3.5                  | 10  | 15    |
| > 3.6                       | 5   | 8     |
| Total                       | 53  | 53    |

| Variables                     | Male (61) |       | Female (39) |       | p value | Significance |
|-------------------------------|-----------|-------|-------------|-------|---------|--------------|
|                               | Mean      | SD    | Mean        | SD    |         |              |
| Age in years                  | 55.37     | 6.51  | 53.68       | 7.26  | 0.21    | Not Sig      |
| BMI                           | 29.75     | 6.45  | 26.3        | 4.7   | 0.002   | Significant  |
| Sr.Total Cholesterol mg/dl    | 186.98    | 23.85 | 175.85      | 25.48 | 0.022   | Significant  |
| HDL cholesterol               | 50.3      | 7.4   | 48.49       | 7.1   | 0.202   | Not Sig      |
| LDL Cholesterol               | 122.83    | 16.2  | 125.18      | 15.4  | 0.446   | Not Sig      |
| VLDL Cholesterol              | 31.04     | 6.3   | 32.55       | 5.9   | 0.206   | Not Sig      |
| Triglycerides                 | 216.79    | 18.9  | 220.19      | 19.36 | 0.362   | Not Sig      |
| Total cholesterol / HDL ratio | 3.13      | 0.86  | 3.32        | 1.08  | 0.319   | Not Sig      |
| HDL / LDL ratio               | 2.92      | 0.92  | 2.86        | 0.86  | 0.729   | Not Sig      |
| LDL / HDL ratio               | 2.23      | 0.78  | 2.47        | 0.83  | 0.128   | Not Sig      |

### Discussion:-

High oestrogen level in younger women has a beneficial effect lowering the LDL-C by acting on LDL receptors. **Notelovitz et al. Gandhi BM** demonstrated Triglyceride in plasma increased with age. Increase in the HDL – C is caused by increased production of apo A1 and decreased hepatic lipase activity which is attributed to hormonal changes. This HDL-C slowly decreases in peri and postmenopausal period. A total cholesterol level of less than 200 mg /dl puts one at lower risk for CHD. Sr. cholesterol level is found to be increased in males compared to females.

Low HDL Cholesterol is a major risk factor for Heart disease. Less than 40 mg / dl for men and less than 50 mg /dl for women contributes maximally for CAD. The average HDL cholesterol in women is 55-60 mg /dl and a decrease in HDL-C of 10 mg/ dl increases coronary heart disease risk by 40-50 %. A HDL –C of 60 mg /dl and above is considered as protective against heart disease.

The risk of CVD increases exponentially for women as they enter menopause as oestrogen levels decline. This transition in menopause becomes vitally important when preventive measures can help in improving both the quality and quantity of their lives.

### Conclusion:-

Despite these changes in atherogenic lipids following menopause, total cholesterol and LDL levels can favourably be reduced by dietary modifications, estrogen treatment and lipid lowering medications. Hence regular monitoring with lipid profile would be helpful to prevent the age related risk of coronary heart disease.

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