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RESEARCH ARTICLE

A STUDY OF LIPID PROFILE IN RHEUMATOID ARTHRITIS.

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Manuscript Info

Abstract

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Keywords:-

Rheumatoid arthritis, Atherogenic index, arachidonic acid pathway.

Introduction: Rheumatoid arthritis is a chronic systemic inflammatory autoimmune disease, usually involving peripheral joints in a symmetric distribution. Lipids contribute to synovitis in RA through participation in the arachidonic acid pathway within joint space.

Aims & Objectives: To study lipid profile along with different atherogenic indices among RA patients & to compare it with healthy matched controls

Materials & Methods: This study conducted in the Department of Biochemistry, GGH, Kurnool Medical college, with 25 diagnosed cases of RA and 25 controls over six months

Results: In RA cases, females outnumbered males, around 76% of cases are females. The present study shows that 37.5% of RA cases were of the age group of 31-40Yr, 32% of the RA cases were of 20-30 Years of age, 28% of RA cases were of age group 41-50 & 6.5% of RA cases were of age 51-60Yrs. A higher index implies an increased cardiovascular risk, and lowering this ratio has shown decrease this risk.

Discussion: Total cholesterol, Triglycerides VLDL & LDL among increased, HDL cholesterol decreased among RA study group compared to the control group

Conclusion: The present study showed that RA predominantly found among the middle-aged female population. Patients with RA have significantly lower values of HDL compared to controls¹⁰. Significantly higher values of other parameters of lipid profile found among RA patients. Higher atherogenic indices indicate higher cardiovascular risk among RA patients.

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Introduction:-

Rheumatoid arthritis is a chronic systemic inflammatory autoimmune disease, usually involving peripheral joints in a symmetric distribution¹. Lipids and lipoproteins play a significant role in development and progression. Lipids contribute to synovitis in RA through an arachidonic acid pathway within joint space.

Epidemiology: RA occurs in **1%** of the world population. 0.1-0.4% in India. Most common: **30-50** years of age. RA affects twice **females** when compared to males.

Etiopathogenesis: Genetic, Environmental factors play a vital role in the etiopathogenesis of rheumatoid arthritis. Oxidative damage leads to the generation of Free radicals, causes Endothelial cell damage by Production of proinflammatory cytokines (IL-6, TNF- α) & adhesion molecules

Aims & objectives:-

To study lipid profile & atherogenic indices among RA patients, compared with controls as cardiovascular disease is the leading cause of mortality in rheumatoid arthritis patients².

Materials & methods:-

This study, conducted in the Department of Biochemistry, Kurnool Medical college, GGH, in collaboration with the Department of medicine, GGH with 25 diagnosed cases of RA and 25 controls. Design: Cross-sectional case-control study, Period of study: Six months. Ethical approval: from ethical committee. Consent: Obtained from all patients.

Inclusion criteria:

Patients who satisfied **American College of Rheumatology –European League against rheumatism criteria 2010**. 25 control subjects, willing to participate after informed consent

American College Of Rheumatology –European League Against Rheumatism **Criteria 2010 Joint Involvement**

| | SCORE |
|---|----------|
| 1. One large joint | 0 |
| 2. 2-10 large joint | 1 |
| 3. 1-3 small joint | 2 |
| 4. 4-10 small joint | 3 |
| 5. >10 joints(atleast 1 small joint) | 5 |
| 6. SEROLOGY | |
| 7. Negative RF & Negative ACPA | 0 |
| 8. Low positive RF/ACPA | 2 |
| 9. High positive RF/ACPA | 3 |
| 10. ACUTE PHASE REACTANTS | |
| 11. Normal CRP & ESR | 0 |
| 12. Abnormal CRP & ESR | 1 |
| 13. Duration of symptoms \leq 6 weeks | 0 |
| 14. \geq Six weeks | 1 |

Exclusion criteria:

1. Patients are taking Hypolipidemic drugs/OCP. H/O CAD, CVD, Diabetes, Hypertension & Hypothyroidism. Family H/O lipid & lipoprotein disorders, Alcohol, Obesity, a mixed disorder like RA with systemic lupus erythematosus or systemic sclerosis or Mixed Connective Tissue Disorder & overlap syndrome.
2. Blood samples of study people collected in redtop vacutainers after overnight fasting, and samples were centrifuged at 1500RPM for 10 minutes, sera used for analysis.
3. Serum analyzed in Fully automated BECKMAN COULTER AU480 Serum lipid profile was estimated by
4. **Parameters Methodology**
5. 1. Total cholesterol CE/CO/HPO (Enzymatic color test)
6. 2. HDL cholesterol CE/COD/PO
7. 3. Triglycerides GPO method
8. 4. LDL Cholesterol Friedwald's formula
9. 5. VLDL Triglyceride

Atherogenic indices:

1. Total cholesterol/HDL Cholesterol
2. LDL Cholesterol/HDL Cholesterol

Statistical analysis:

Values expressed as mean±SD. The significance of the mean difference between groups analyzed by the distribution of probability 'P.' RA cases, females outnumbered males, around 76%(n=19) cases are females

Results:-

| S.no | Parameter | Controls | Rheumatoid arthritis | P-value |
|------|-----------------------------------|-------------|----------------------|---------|
| 1 | Serum Total Cholesterol | 113.6±13.73 | 276.9±31.84 | 0.001 |
| 2 | Serum triglycerides | 92.93±22.77 | 154.54±17.01 | 0.02 |
| 3 | Serum HDL | 58.83±11.43 | 25.04±6.24 | 0.001 |
| 4 | Serum VLDL | 18.57±4.63 | 30.9±3.33 | 0.01 |
| 5 | S.LDL | 36.2±15.59 | 220.96±34.19 | 0.00 |
| 6 | Total cholesterol/HDL Cholesterol | 1.99±0.42 | 11.78±3.47 | 0.00 |
| 7 | LDL cholesterol/HDL cholesterol | 0.66±0.37 | 9.48±3.18 | 0.00 |

Discussion:-

RA patients have persistently high levels of inflammation & are at greater risk of developing cardiovascular disease. Chronic inflammation leads to oxidative changes that alter HDL structure and reduce apolipoprotein-A-I in RA patients³. Levels of **paraonase-1**, an antioxidant enzyme associated with HDL, are lower in patients of RA compared with healthy controls³. Therefore because of inflammation, there is an impairment of the normal antiinflammatory, antioxidant & cardioprotective function of HDL that turns out to be pro-inflammatory³. The present study shows that 76 % of RA patients were females, 24% were males, showing a high prevalence of RA among females. 37.5% of RA cases were of the age group of 31-40Yr, 32% were of 20-30 Years of age, 28% were of age group 41-50 & 6.5% were of age 51-60Yrs. This finding is consistent with studies of Dr. Uzma Erum et al. & Schieng Guo et al. Total cholesterol, Triglycerides, VLDL & LDL increased but serum HDL decreased among RA cases compared to the control group⁴. In the present study the atherogenic index:

1. Total Cholesterol /HDL Cholesterol
2. LDL Cholesterol/HDL Cholesterol
3. A higher atherogenic index implies an increased cardiovascular risk, and lowering this ratio has shown decrease this risk. This finding consistent with studies of Asitava Roy & Daniel Li.

Conclusion:-

The present study showed that RA is predominately found among the **middle-aged female** population. RA patients had significantly lower values of HDL compared to controls. Significantly higher values of Total cholesterol, Triglycerides, VLDL, LDL of lipid profile found among RA patients. Higher atherogenic indices indicate higher cardiovascular risk among RA patients. RA Patients are at significantly increased risk of cardiovascular disease. Premature mortality in RA due to cardiovascular disease. Lipid profile investigated as part of routine investigations in RA patients.

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