|| Print ISSN: 2589-7837 || Online ISSN: 2581-3935 ||
International Journal of Medical Science and Diagnosis Research (IJMSDR)
Available Online at www.ijmsdr.com
PubMed (National Library of Medicine ID: 101738825)
Volume 3, Issue 6; June: 2019; Page No. 11-14
Original Research Article
crossref DOI: https://dx.doi.org/10.32553/IJMSDR/v3i6.3

STUDY OF LIPID PROFILE ABNORMALITIES IN RHEUMATOID ARTHRITIS PATIENTS

Dr. Kumar Durgeshwar[1], Dr. Kunal Raj[2], Dr. R.K. Das[3]

[1]Senior resident Dept. of General Medicine Darbhanga Medical College and Hospital Laheriasarai Darbhanga, Bihar
[2]Senior resident Dept. of General Medicine Darbhanga Medical College and Hospital Laheriasarai Darbhanga, Bihar
[3]Associate Professor Dept. of General Medicine Darbhanga Medical College and Hospital Laheriasarai Darbhanga, Bihar
Conflicts of Interest: Nil
Corresponding author: Dr. Kunal Raj

Abstract:

Introduction: Rheumatoid Arthritis (RA) is defined as a chronic multisystem disease with heterogeneous presentation characterization with variable disease progression and extra-articular manifestations. Rheumatoid arthritis (RA) is also chronic systemic disease affecting primarily the synovium which leading to joint damage and bone destruction. Significant morbidity caused by RA as a result of synovial inflammation, joint destruction and associated disability. RA has an important impact that related to joint damage partly, disability, poor quality of life and also to increased cardiovascular morbidity and mortality. The irregular ratio between HDL and TC levels, the reduction in HDL-C as a result increase in the TC/ HDL-C ratio which is important prognostic marker for cardiovascular disease (CVD). Actually increase in the risk of myocardial infarction increases substantially when this ratio is higher than five, which should ideally be four or less. The ration between serum TC and HDL-C levels in RA are inversely correlated with disease activity which indicated an important role for inflammation in the atherogenic profile and higher atherosclerotic risk observed in RA. **Aim:** The main objective of this study is to study the lipid abnormalities relation to chronic inflammatory state in RA patients. **Material and methods:** Total 150 patients were included in these studies that were diagnosed of RA of more than 6 month duration, according to the ACR/EULAR criteria 2010. With more than 20 year of age. With the help of clinical history, examination and investigations data was collection. From all the patients with physical and history with clinical findings and Biochemical evidence were include in this study. From all the patient blood samples were taken. On the same day the samples were analyzed for the levels of trigycerides, HDL, LDL, and total cholesterol levels. **Results:** In this study total 150 patients were included with different age group with more than age of 20 years up to 60 years old with the diagnosis of RA. Out of 150 patients 24 (16%) were male and 126(84%) were female. Of all total patients, 87 (58%) had dyslipidemia. The mean values for total cholesterol, HDL and LDL were 170.6±36.8 mg/dL, 41.2±12.2 mg/ dL, and 94.3±25.2 mg/dL respectively. **Conclusion:** There were significantly reduced levels of serum total cholesterol, LDL-cholesterol, triglyceride in patients with Rheumatoid arthritis. Lipid profile is play an important role to identified cardiovascular disease in patients with RA and it may increase cardiovascular mortality. Therefore Dyslipidemia should be early identification and management should be considered an integral part of RA therapeutic strategies for prevention of CV morbidity and mortality in RA patients.

Keywords: Rheumatoid Arthritis (RA), Dyslipidemia, Cholesterol, HDL, LDL

Introduction

Rheumatoid Arthritis (RA) is defined as a chronic multisystem disease with heterogeneous presentation characterization with variable disease progression and extra-articular manifestations[i]. Many studies shows that the estimated prevalence of RA has been reported from adult Indian population are 0.75%[ii]. Rheumatoid arthritis (RA) is also chronic systemic disease affecting primarily the synovium

which leading to joint damage and bone destruction. Significant morbidity caused by RA as a result of synovial inflammation, joint destruction and associated disability. RA have an important impact that related to joint damage partly, disability, poor quality of life and also to increased cardiovascular morbidity and mortality[iii],[iv]&[v]. In patients with rheumatoid arthritis (RA) cardiovascular disease (CVD) is main cause of mortality[vi]. Studies show that general populations suggest that optimizing lipid levels group would help to minimize this risk[vii]. Especially in risk factor for cardiovascular disease and atherosclerotic disease were different gender, increased ages, raised plasma total cholesterol (TC) and low density lipoprotein cholesterol (LDL-C), decreased high-density lipoprotein cholesterol (HDL-C), smoking, high blood pressure and diabetes mellitus[viii], [ix], [x] & [xi]. The irregular ratio between HDL and TC levels, the reduction in HDL-C as a result increase in the TC/ HDL-C ratio which is important prognostic marker for cardiovascular disease (CVD). Actually increase in the risk of myocardial infarction increases substantially when this ratio is higher than five, which should ideally be four or less. The ration between serum TC and HDL-C levels in RA are inversely correlated with disease activity which indicated an important role for inflammation in the atherogenic profile and higher atherosclerotic risk observed in RA[xii],[xiii]& [xiv]. The main objective of this study is to study the lipid abnormalities relation to chronic inflammatory state in RA patients.

MATERIAL AND METHODS:

This is prospective study conducted in Department of General Medicine in collaboration with Central Clinical Laboratory at Darbhanga Medical College and Hospital Laheriasarai Darbhanga; during the period of one year. Total 150 patients were included in these studies that were diagnosed of RA of more than 6 month duration, according to the ACR/EULAR criteria 2010[xv] with more than 20 year of age. With the help of clinical history, examination and investigations data was collection. From all the patients with physical and history with clinical findings and Biochemical evidence were include in this study. From all the patient blood samples were taken. On the same day the samples were analyzed for the levels of trigycerides, HDL, LDL, and total cholesterol levels. For the diagnosis of Dyslipidemia; A total cholesterol of ≥200 mg/dl or HDL Cholesterol < 40 mg/dlor LDL Cholesterol ≥160 mg/dl were used to define the cut-off values for dyslipidemia, according to the National Cholesterol Education Program- Adult Treatment Panel III (NCEP-ATP III) guidelines[xvi].

OBSERVATIONS AND RESULTS:

In this study total 150 patients were included with different age group with more than age of 20 years up to 60 years old with the diagnosis of RA. Out of 150 patients 24 (16%) were male and 126(84%) were female as shown in the table 1 below.

Table1: Gender wise distribution

Gender	Number of patients	Percentage
MALE	24	16
FEMALE	126	84
Total	150	100

Table 2: Age wise distribution

Age in years	Number of patients	Percentage
20-30	43	28.7
31-40	62	41.3
41-50	33	22
51-60	12	8
Total	150	100

The mean age was 35.3±10.6 and mean duration of disease was 3.8±3.3 years. The most common age group of 31 -40 years old patients followed by 20-30 years old and 41 -50 years old with 41.3%, 28.7% and 22% respectively. Therefore majority of dyslipidemia were 26 – 45years of age as shown in above table 2.

Table 3: Showing lipid fraction distribution with dyslipidemia

	Number of patients	Percentage
low HDL High	63	42
Total Cholesterol (mg/dl)	15	10
low HDL, High LDL& T. Cholesterol	9	6
Total	87	58

Out of the total patients who had dyslipidemia lipid fraction analysis were done. Out of total 87(58%) patients had dyslipidemia and lipid fraction analysis shows as 63(42%) has low HDL, 15(10%) had high

Total Cholesterol whereas 9(6%) had combination of low HDL with high LDL and high Total Cholesterol as shown in above table 3.

Table 4: Lipid levels in RA patients.

	Patients values Means ± SD	Max-Min
Total Cholesterol (mg/dl)	170.6 ± 36.8	68-320
HDL (mg/dl)	41.2 ± 12.2	23-61
LDL (mg/dl)	94.3±25.2	56-184

Of all total patients, 87 (58%) had dyslipidemia. The mean values for total cholesterol, HDL and LDL were 170.6±36.8 mg/dL, 41.2±12.2 mg/ dL, and 94.3±25.2 mg/dL respectively as shown in above table 4.

DISCUSSION:

In this study total 150 patients complete analysis of RA were done. They were analysis on the basis of clinical features, biochemical features and other laboratory test report features with special reference to lipid profile. Many studies showed that patients with active RA frequently Dyslipidemia (DL) is observed. A general effect in lowering circulating lipid levels has been observed in Systemic inflammation[xvii],[xviii].

There are complex in RA interaction between lipid profiles, inflammation and cardiovascular disease. Low LDL cholesterol, total cholesterol and HDL cholesterol levels increased risk of cardiovascular disease are common in patients with RA[xix],[xx]&[xxi]. A study from Pakistan showed that overall derangement of lipid profile in 44.87% with different autoimmune diseases which is little bit lower than this study. Another study done by Nisar et al reported abnormality was high cholesterol[xxii]. About 25% of RA patients had suboptimal lipid levels based on current ATP-III guidelines[xxiii]. There are many risk factors in RA patients that induce inflammation like insulin resistance, endothelial dysfunction, increased oxidative stress, pro-thrombotic state, and elevated homocysteine levels as well as non-inflammatory mechanisms like CV toxicity associated with certain anti-rheumatic drugs and genetic polymorphism also contribute to the increased CVD risk[xxiv]. Low HDL is the commonest abnormality pattern of lipid dysfunction seen in South Asian population. There are many studies which reflect the exact prevalence of DL. Many studies had shown a prevalence of 40-87% of dyslipidemia in the context of metabolic syndrome and diabetes which is similar to this study[xxv],[xxvi]. Many research showed that low lipid profile may have beneficial effects in RA by virtue of their immune-modulatory properties and potent anti-inflammatory[xxvii]. In this study also it is conclude that younger than 40 years aging as an exacerbating factor for occurrence of DL which is similar to other studies. There are many studies which showed that increased CVD risk even with marginally deranged risk factors in RA patients compared to the healthy population[xxviii],[xxix]

CONCLUSION:

In this study it was observed that in RA patients Dyslipidemia a frequent occurrence and that may be considered as a secondary impact of chronic inflammatory state. There were significantly reduced levels of serum total cholesterol, LDL-cholesterol, triglyceride in patients with Rheumatoid arthritis. Lipid profile is play an important role to identified cardiovascular disease in patients with RA and it may increase cardiovascular mortality. Therefore Dyslipidemia should be early identification and management should be considered an integral part of RA therapeutic strategies for prevention of CV morbidity and mortality in RA patients.

REFERENCE:

1. Farooqi A, Gibson T. Prevalence of the major rheumatic disorders in the adult population of Northern Pakistan. Br J Rheumatol. 1998;37:491-495.
2. Malaviya AN, Kapoor SK, Singh RR, Kumar A, Pande I. Prevalence of rheumatoid arthritis in the adult Indian population. Rheumatol Int. 1993;13(4):131-134. doi: 10.1007/ BF00301258
3. Van Doornum S, McColl G, Wicks IP. Accelerated atherosclerosis: an extraarticular feature of rheumatoid arthritis? Arthritis Rheum 2002; 464:862–73.
4. John H, Kitas G. Inflammatory arthritis as a novel risk factor for cardiovascular disease. Eur J Intern Med 2012;23:575–9.
5. Boehncke WH, Boehncke S. Cardiovascular mortality in psoriasis and psoriatic arthritis: epidemiology, pathomechanisms, therapeutic implications, and perspectives. Curr Rheumatol Rep 2012; 14:343–8.
6. Wolfe F, Mitchell DM, Sibley JT, Fries JF, Bloch DA, Williams CA, et al. The mortality of rheumatoid arthritis. Arthritis Rheum 1994; 37: 481–94.
7. Kahn R, Robertson RM, Smith R, Eddy D. The impact of prevention on reducing the burden of cardiovascular disease. Circulation 2008;118:576–85

8. Castelli WP, Garrison RJ, Wilson PW, Abbott RD, Kalousdian S, Kannel WB: Incidence of coronary heart disease and lipoprotein cholesterol levels. The Framingham study. JAMA 1986, 256:2835-2838.
9. Kannel WB, Neaton JD, Wentworth D, Thomas HE, Stamler J, Hulley SB, Kjelsberg MO: Overall and coronary heart disease mortality rates in relation to major risk factors in 325,348 men screened for the MRFIT. Multiple Risk Factor Intervention Trial. Am Heart J 1986, 112:825-836.
10. Manninen V, Elo MO, Frick MH, Haapa K, Heinonen OP, Heinsalmi P, Helo P, Huttunen JK, Kaitaniemi P, Koskinen P, et al.: Lipid alterations and decline in the incidence of coronary heart disease in the Helsinki Heart Study. JAMA 1988, 260:641-651.
11. Cui Y, Blumenthal RS, Flaws JA, Whiteman MK, Langenberg P, Bachorik PS, Bush TL: Non-high-density lipoprotein cholesterol level as a predictor of cardiovascular disease mortality. Arch Intern Med 2001, 161:1413-1419.
12. Boers M, Nurmohamed MT, Doelman CJ, Lard LR, Verhoeven AC, Voskuyl AE, Huizinga TW, van de Stadt RJ, Dijkmans BA, van der Linden S: Influence of glucocorticoid and disease activity on total and high density lipoprotein cholesterol in patients with rheumatoid arthritis. Ann Rheum Dis 2003, 62:842-845.
13. Situnayake R, Kitas G: Dyslipidemia and rheumatoid arthritis. Ann Rheum Dis 1997, 56:341-342.
14. Park YB, Lee SK, Lee WK, Suh CH, Lee CW, Lee CH, Song CH, Lee J: Lipid profiles in untreated patients with rheumatoid arthritis. J Rheumatol 1999, 26:1701-1704.
15. Aletaha D, Neogi T, Silman AJ, Funovits J, Felson DJ, Bingham C, et al. Rheumatoid arthritis classification criteria. Arthritis Rheum. 2010;62(9):2569-2581. doi: 10.1002/art.27584.
16. Third report of the National Cholesterol Education Program (NCEP) expert panel on detection, evaluation and treatment of high blood cholesterol in adults (Adult Treatment Panel - ATP-III). IV- General Approach to treatment goals and thresholds. Circulation. 2002;106(25):3143-3421.
17. Park YB, Lee SK, Lee WK, Suh CH, Lee CW, Lee CH, et al. Lipid profiles in untreated patients with Rheumatoid arthritis. J Rheumatol. 1999;26 (8): 1701-1704.
18. Van Leuven SI, Franssen R, Kastelein JJ, Levi M, Stroes ESG, Tak PP. Systemic inflammation as a risk factor for atherothrombosis. Rheumatol. 2008;47(1):3-7.
19. Myasoedova E, Crowson CS, Kremers HM, Fitz-Gibbon PD, Therneau TM, Gabriel SE. Total cholesterol and LDL levels decrease before rheumatoid arthritis. Ann Rheum Dis 2010;69: 1310–4.
20. Myasoedova E, Kremers H, Fitz-Gibbon P, Crowson CS, Therneau TM, Gabriel SE. Lipid profile improves with the onset of rheumatoid arthritis. Ann Rheum Dis 2009;Suppl 3:78.
21. Park YB, Lee SK, Lee WK, Suh CH, Lee CW, Lee CH, et al. Lipid profiles in untreated patients with rheumatoid arthritis. J Rheumatol 1999;26:1701–4.
22. Nisar A, Rasheed U, Aziz W, Farooqi A. Prevalence of dyslipidemia in autoimmune rheumatic diseases. J Coll Phys Surg Pak. 2012;22(4):235-239. doi: 04.2012/jcpsp.235239.
23. Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) final report. Circulation. 2002; 106(25):3143–3421. [PubMed: 12485966]
24. Ku IA, Imboden JB, Hsue PY, Ganz P. Rheumatoid arthritis: model of systemic inflammation driving atherosclerosis. Circ J. 2009; 73(6):977–985. [PubMed: 19430165]
25. Sarfraz M, Sajid S, Ashraf AM. Prevalence and pattern of dyslipidemia in hyperglycemic patients and its associated factors among Pakistani population. S J Bio Sci. 2016;23(6):761-766. doi:10.1016/j.sjbs.2016.03.001.
26. Basit A, Shera SA. Prevalence of metabolic syndrome in Pakistan. Metab Syndr Relat Disord. 2008;6(3):171-175. doi.10.1089/met.2008.005.
27. McCarey DW, McInnes IB, Madhok R, Hampson R, Scherbakov O, Ford I, et al. Trial of Atorvastatin in Rheumatoid Arthritis (TARA): double-blind, randomised placebo-controlled trial. Lancet. 2004;363(9426):2015-2021
28. Haye-Salinas MJ, Bertoli AM, Lema L, Saucedo C, Rosa J, Quintana R, et al. Prevalence of dyslipidemia and elevated cardiovascular risk in patients with rheumatoid arthritis. Medicina (B Aires). 2013;73(1):26-30.
29. Curtis JR, John A, Baser O. Dyslipidemia and changes in lipid profiles associated with rheumatoid arthritis and initiation of anti-tumor necrosis factor therapy. Arthritis Care Res. 2012;64(9):1282-1291. doi: 10.1002/acr.21693.