Section: Anatomy

Original Research Article

COMPARATIVE STUDY OF LIPID PROFILE IN SEDENTARY AND ACTIVE HYPERTENSION POPULATION OF TELANGANA

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Abstract

Background: Lifestyle and lipid profile factors are directly involved in the risk of cardiometabolic diseases. Hence, metabolic status of the lipid profile in hypertensive is mandatory. **Materials and Methods:** 90 active hypertensives (HTN) were compared with 90 sedentary persons of the same age group, and their BP, lipid profile was recorded and compared. **Result:** Comparative study of lipid profile parameter and BP study in both sedentary and active HTN groups were statistically highly significant ($p<0.01$). **Conclusion:** The present pragmatic study will help the clinician to predict the risk factors of cardiometabolic diseases and prevent the mortality and mobility in due course of time.

INTRODUCTION

Lipid profile and lifestyle are intimately correlated because elevation of lipid profile is directly related to cardiometabolic diseases. Apart from this, genetic and socio-economic features also aggravate the cardiometabolic disease morbidities and mortalities.[1] The most common lipids reported are low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), and triglyceride.[2]

High levels of LDL cholesterol increase the risk of cardiovascular complications. The HDL cholesterol carries lipids back to the liver for recycling and disposal; as a consequence, high levels of HDL cholesterol indicate a healthier cardiovascular system. Furthermore, HDL cholesterol acts as an antioxidant and anti-inflammatory and anti-thrombotic activities.[3] Furthermore, in a sedentary lifestyle, there is an increase in blood pressure, total cholesterol (LDL-C cholesterol), and HDL cholesterol.

It is also reported that economically inferior groups have lower levels of physical activity because of lack of resources, unfavorable environments, and low education levels; hence, they have altered lipid profiles.[4] Hence an attempt is made to compare the lipid profile in the active HTN population with the sedentary group.

MATERIALS AND METHODS

90 active hypertensive and 90 sedentary groups of patients regularly attending the OPD of the medicine department of TRR Institute of Medical Sciences, Inole, Patancheru,Telengana state , were studied.

Inclusion Criteria

Active patients and sedentary patients having variations in blood pressure and lipid profile and who gave their consent in writing for study were selected.

Exclusion Criteria

Addiction to alcohol and tobacco. Patients on a diet or having a personal or family history of diabetic mellitus, asthma, and tuberculosis were excluded from the study.

Method: Blood pressure of each patient was recorded by Diamond's mercury sphygmomanometer. Blood samples were collected after an overnight fast of 10-12 hours. About 5 ml of blood was drawn in a dry, autoclaved, disposable syringe and poured into a sterilized plain vial after removing the needle, allowed to clot, and then centrifuged to separate the serum. The serum was stored at 2-6°C for a period of 2-3 days in a refrigerator until it was analyzed. The lipid profile (total cholesterol, HDL, and triglycerides) of both groups was recorded separately.

The duration of the study was September 2024 to February 2025.

Statistical analysis: Lipid profile parameters and blood pressure readings were compared statistically in both groups in 2007 using a Microsoft Word computer. The ratio of males to females was 2:1.

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RESULTS

[Table 1] Comparison of total cholesterol HDL, triglyceride VLDL and LDL between sedentary and active hypertensive

- Total cholesterol: 279.58 (± 0.78) in sedentary, 265.02 (± 0.65) in active HTN group, t-test was 136 and P<0.01
- HDL level: 33.9 (± 0.45) in sedentary, 35.65 (± 0.45) in active HTN group,t-test was 32.2 and P<0.01
- Triglyceride: 201.92 (± 0.52) in sedentary group, 176.87 (± 0.56) in active HTN group, t- test was 386 and P<0.01
- VLDL: 40.68 (± 0.35) in sedentary group, 35.65 (± 0.40) in active HTN group, t-test was 90.6 and P<0.01
- LDL level: 208.65 (± 0.52) in sedentary group, 198.46 (± 0.40) in active HTN group, t test was 147.4 and P<0.01

[Table 2] comparison of systolic and diastolic blood pressure between sedentary and active hypertensive groups

- Systolic BP: 178.4 (± 0.33) in sedentary group, 166.15 (± 0.02) in active HTN group, t test was 351.5 and P<0.01.
- Diastolic BP: 102.02 (± 0.32) in sedentary group, 96.30 (± 0.35) in active HTN group, t test was 114.4 and P<0.01

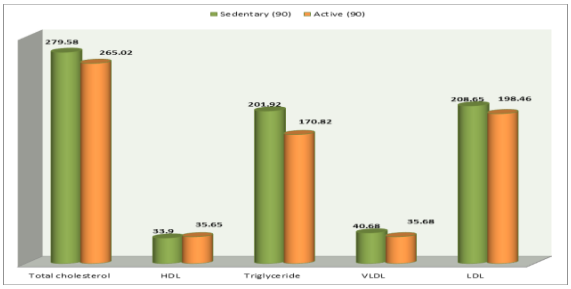

Figure 1: Comparison of Total cholesterol, HDL. Triglyceride, VLDL and LDL between sedentary and Active Hypertensive

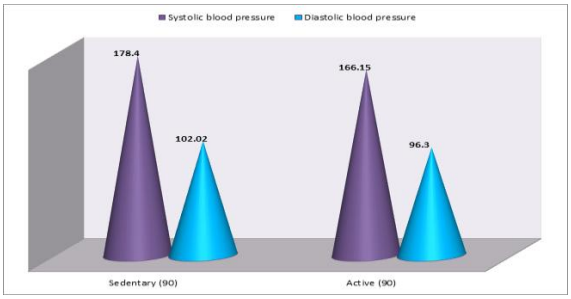

Figure 2: Comparison of systolic and Diastolic blood pressure between sedentary and Active Hypertensive

Table 1: Comparison of Total cholesterol, HDL, Triglyceride, VLDL and LDL between sedentary and Active Hypertensive.

Parameters	Sedentary (90) Mean ±SD	Active (90) Mean ± SD	t-test statistic	p- value
Total cholesterol	279.58 (±0.78)	265.02 (±0.65)	t= 136	P<0.01
HDL	33.90 (±0.45)	35.65 (±0.25)	t= 32.2	P<0.01
Triglyceride	201.92 (±0.52)	170.82 (±0.56)	t= 386	P<0.01
VLDL	40.68 (±0.35)	35.68 (±0.40)	t=90.6	P<0.01
LDL	208.65 (±0.52)	198.46 (±0.40)	t=147.4	P<0.01

Statistically Total cholesterol, Triglyceride, VLDL and LDL values are significantly higher in Sedentary life style peoples than Active life style peoples (P<0.01) while HDL values is significantly less in Sedentary life style peoples than Active hypertensive (p<0.01)

Table 2: Comparison of systolic and Diastolic blood pressure between sedentary and Active Hypertensive

Parameters	Sedentary (90) Mean ±SD	Active (90) Mean ± SD	Test statistic	P value
Systolic blood pressure	178.40 (±0.33)	166.15 (±0.02)	t=351.5	P<0.01
Diastolic blood pressure	102.02 (±0.32)	96.30 (±0.35)	t=114.4	P<0.01

Statistically systolic and Diastolic blood pressure values are significantly higher in sedentary life style peoples than Active Hypertensive (p<0.01).

DISCUSSION

In the present comparative study of lipid profile in the sedentary and active hypertension population of Telangana. Comparison of total cholesterol, HDL, triglyceride, VLDL, and LDL between an active HTN group and parameters had a significant p-value (p<0.001) [Table 1]. Comparison of systolic and diastolic parameters in both groups also had a significant p-value (p<0.001) [Table 2]. These values were more or less in agreement with previous studies.[5-7]

Among the benefits include reduction of HDL cholesterol, triglycerides, and arterial pressure; improvement of glucose-insulin homeostasis in fasting and postprandial; induction and maintenance of weight loss; and improvement of psychological well-being. It is also likely to reduce inflammation and increase endothelial function. The physical activity associated with alteration in HDL-C.[8]

The HDL cholesterol profile protects the individual from HTN and its consequences and the independent protective effect of HDL cholesterol or risk of coronary heart disease, especially the total cholesterol. Physical activity and physical fitness

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have been related to normalcy in lipid profile. Hence, physical activity has been described as a lipid-lowering, antihypertensive, positive inotropic, negative chronotropic, vasodilating, diuretic, anorexigenic, weight-reducing, cathartic, hypoglycemic, tranquilizing, hypnotic, and antidepressant agent.[9]

Atherosclerotic heart disease is the leading cause of mortality among patients with chronic kidney disease associated with dyslipidemia,[10] which is mainly due to a sedentary lifestyle contributed to by the intake of excessive unsaturated fatty food.[11] This leads to endothelial damage and triggers an increase in blood pressure, which may partially account for its strong predictive power for coronary heart disease, followed by vascular constriction and stiffness.

CONCLUSION

The present study of the comparison of lipid profiles in sedentary and active hypertensive populations will be quite useful to physicians, cardiologists, and biochemists and enable them to treat such patients efficiently. Routine monitoring of BP and lipid profiles must be encouraged among such patients. But this study demands further genetic, nutritional, angiological, and pathophysiological correlation & study because the exact pathogenesis of coronary heart disease (CHD) is still unclear.

Limitation of Study: Owing to the remote location of the research center, the small number of patients, and the lack of the latest technologies, we have limited findings and results.

REFERENCES

1. Gordon DJ, probst field JL: High density lipoprotein cholesterol and cardiovascular disease: four perspectives American disuse circulation 1989, 79, 8-15.
2. Roberts WC: An agent with lipid-lowering Am J. Cardio. 1984.53, 261-2
3. S.S Prichard: Impact of dyslipidemia in end-stage renal disease J- of Am. Soc. of Nephrology. 2003, 14(9), 315-20.
4. C.A Herzog, J.Z Ma and Collins: poor long-term survival after acute myocardial infarction among patients on long-term dialysis. The New England Journal of Medicine. 1998, 339(12), 799-805.
5. WHO classification of hypertension Report of WHO scientific group, Technical report series 1976, 657, 87-85.
6. Lee dines: cardiovascular disease A Cecil medicine chapter 7th W.B. Saunders Elsevier, 2008, 430-50.
7. NIOSH: occupational heart disease 2007 (http://www.cdc.gov/noish), topics on heart disease 2007, viewed on 26th May 2019.
8. Hansen HS, Larsen ML: Hypertension and Hyperlipidemia—Ugeskar larger. 2009. 171(24): 2028-30.
9. Feldstein CA- status of hypertension and they a new class of antihypertensive agents. Am J there 2010–17(3)
10. Hansen HS, Larsen ML- Hypertension and hyperlipidemia Ugeskar, Leaguer, 2009. June 8, 171(24), 2028-30.
11. Kostas, Stabiles: Mechanism of Obesity-Induced Hypertension. Hypertensive Res. 2010, 33(5), 386-93.

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