



Serum Lipid profile with postmenopausal osteopenia

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ABSTRACT

Osteopenia is a term used to characterize bone density that is abnormal but not as low as osteoporosis. Bone densitometry T scores between -1 and -2.5 are used by the World Health Organization to determine osteopenia.

This study's goal was to assess the levels of HDL, LDL, VLDL, and TG in individuals with osteopenia. In this particular study, totaling 40 people, they were split in half between two groups. Samples taken from postmenopausal women were analyzed to determine their levels of cholesterol, (HDL), triglycerides , (VLDL), and (LDL).

A spectrophotometer was used to determine total cholesterol, high density lipoprotein, and triglyceride levels.

The results Cholesterol, TG, VLDL, LDL, and HDL of showed a non-significant variation between patients osteopenia and control group.

In conclusion, According to the presented results Cholesterol, TG, VLDL, LDL, and HDL do not affect by osteopenia.

Keywords: *Lipid profile, postmenopausal, osteopenia, bone*

INTRODUCTION

Osteopenia comes before osteoporosis because it causes bone mass loss. Osteoporosis lowers a person's quality of life. Bone mass keeps going up slowly until the mid-30s, when it starts to go down slowly by up to 1% per year (1).

It enhances bone fragility, which leads to an increase in bone fractures following mild damage where a micro-fracture would not occur otherwise. The spinal column, hip, and wrist are

the most typically affected locations, with the wrist being the least common (2).

Dual-energy x-ray absorptiometry (DEXA) is the most extensively used and accurate x-ray technique for assessing bone mineral density (BMD) (3).

Lipids are organic molecules with long chains of hydrocarbon groups that dissolve in organic solvents like chloroform, ether, or benzene but not in water.

Lipids can be made by living things or they can be found in nature. (4). Lipids can be shuttled around the body in two primary ways: by free fatty acids secreted by adipose tissue, or via lipoprotein carriers, which are largely produced in the liver and the stomach. The lipoproteins with the highest density are chylomicrons, followed by very low density lipoprotein (VLDL) for triglycerides, high density lipoprotein (HDL) for cholesterol, and (LDL). The living system facilitates the movement of both of these types of lipids (5).

This study will discuss some of the biochemical parameters that play a role in bone remodeling that can lead to a disease like osteopenia. These parameters include Cholesterol, TG, VLDL, LDL, and HDL.

Substances and Techniques

Choice of Patients

From January to April of 2021, the biochemistry lab was the site of this study, which was approved by an institutional review board and which had the full cooperation of all participants. . We examined twenty patients with osteopenia and twenty controls healthy. After centrifugation, a total of 10 millilitres of venous blood was obtained, which was subsequently used for the analysis of the parameters under study. A spectrophotometer was used to determine the concentrations of cholesterol, TG, and HDL, while a DEXA machine was used to calculate the percentage of the T-score.

Analyses of statistics

The analysis of the data was carried out using the statistical tool (SPSS 25). The T-test was carried out on data with a normal parametric distribution and an alpha level of 0.05.

RESULT AND DISCUSSION

The mean \pm SE of patients diagnosed with osteopenia compared to controls who were of menopausal age [(49.05 \pm 0.7) (50.75 \pm 0.7)] respectively, if there is no statistically significant variance among the groups ($P > 0.05$).

The result means \pm SE patients osteopenia and control [(57.0 \pm 1.5) (58.15 \pm 1.2)] respectively, According to the statistics, there was no statistically significant age difference between the groups ($P > 0.05$). As can be seen in Table (1).

T-score is the best a defining characteristic among patient's osteopenia and control. Patients with osteopenia were significantly different from the controls ($P \leq 0.01$). The mean standard error of healthy control and patients with osteopenia were [(-1.83 \pm 0.08) (-0.36 \pm 0.10)], respectively. This test was commonly used to detect osteoporosis by calculating the T-score by measuring the central and axial skeleton bone mineral density (BMD) (6).

Table (1) showed the BMI results. The results indicate the mean standard error of patients with osteopenia and controls for body mass index. [(31.22 \pm 1.2) (36.88 \pm 0.9)] respectively, there is a significant distinction between two groups.

Obesity has not been identified as a primary cause of osteoporosis. Nonetheless, given to the variety of its effects on various human bodily systems, it may cause osteoporosis and bone fractures (7).

Wu D y, et al discovered in their study that raising BMI reduces the risk of osteoporosis (8).

Cholesterol values were not significantly different ($P > 0.05$).The patients with osteopenia and the controls had the following mean \pm SE [(147.75 \pm 15.9) (157.75 \pm 11.6)] respectively.

HDL results demonstrated the mean standard error of osteopenia and control [(18.15 \pm 3.0)(16.65 \pm 1.3) respectively, According to Table(1), there was no statistically significant difference in HDL levels between the two groups ($P > 0.05$).

The mean \pm SE of patient's osteopenia and control were [(159.43 \pm 24.9) (187.88 \pm 35.4)] respectively, as indicated in Table (1), There was no statistically significant difference between the groups on the TG ($P > 0.05$).

The VLDL data did not exhibit any discernible pattern of change ($P > 0.05$). The mean standard error of patients with osteopenia and control were

[(37.03± 7.1) (37.57± 7.0)] respectively, as shown in Table (1).

The findings of the LDL showed a mean standard error of osteopenia patients and controls [(103.20± 15.4)(101.90± 10.7) respectively, The Table(1) displays the results of a statistical test showing that there was no change in LDL levels among the studied groups (P>0.05).

Karimifard, M, et (2021), in their study, found no significant differences in serum lipid profile between pre-diabetic postmenopausal women with osteopenia and controls (9).

In their study, Zhao, H., et al. (2021), There was no difference between the osteopenia/OP group and the control group with regards to total cholesterol, triglyceride, or low-density lipoprotein cholesterol levels. HDL-C values were usually greater in the OP group than in the osteopenia group. Again, there was no difference between the healthy control and osteopenia groups among postmenopausal women. The risk of developing osteopenia or osteoporosis can be mitigated by maintaining healthy blood lipid levels (10).

TABLE 1: Statistical distribution of some biochemical parameters serum osteopenia patients and control.

Parameters	Group	N	Mean± S E	P-value
Menopause age	Osteopenia	20	49.05 ± 0.7	0.1
	Control	20	50.75 ± 0.7	
Age	Osteopenia	20	57.0± 1.5	0.5
	Control	20	58.15± 1.2	
T_score	Osteopenia	20	-1.83 ± 0.08	0.00
	Control	20	-0.36 ± 0.10	
BMI	Osteopenia	20	31.22 ± 1.2	0.01
	Control	20	36.88 ± 0.9	
Cholesterol	Osteopenia	20	147.75 ± 15.9	0.6
	Control	20	157.75± 11.6	
HDL	Osteopenia	20	18.15± 3.0	0.6
	Control	20	16.65± 1.3	
TG	Osteopenia	20	159.43± 24.9	0.5
	Control	20	187.88± 35.4	
VLDL	Osteopenia	20	37.03± 7.1	0.9
	Control	20	37.57± 7.0	
LDL	Osteopenia	20	103.20± 15.4	0.9
	Control	20	101.90± 10.7	

CONCLUSION

In this study of postmenopausal women, researchers observed no correlation between serum lipid profile levels and mineral density.

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