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To Study Lipid Profile Status in Chronic Obstructive Pulmonary Disease Patients

Dr Brij Lal Sharma

Principal Specialist Medicine, Government Hospital Medicine, Sri Ganganagar

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Corresponding author: Dr Brij Lal Sharma
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Abstract

Background: To study lipid profile in chronic obstructive pulmonary disease patients.

Method: This cross-sectional study was conducted on 50 COPD patients and including 50 healthy controls were enrolled in the study.

Results: The lipid profile in COPD patients showed significantly higher serum levels of TC, TG, LDL as compare to controls and serum concentrations of HDL were also decreased significantly compared to controls.

ConclusionL: COPD patients showed significantly higher serum levels of TC, TG, LDL and serum concentrations of HDL were also decreased significantly compared to controls.

Keywords: Lipid profile, chronic obstructive pulmonary disease, patients.

Introduction

According to the statistics, chronic obstructive pulmonary disease (COPD) accounts for almost three million (5%) deceases worldwide in 2015. This disease is likely to increase in the coming years due to the growing prevalence of smoking and population aging in many countries.Metabolic syndrome which includes central obesity, diabetes, hypertension, and hyperlipidaemia, is known entity in COPD patients. Metabolic syndrome was associated with markers of systemic inflammation like Interleukin-6, C reactive protein, and fibrinogen etc. [1] There are limited number of studies investigating dyslipidemia in the COPD patients.

These studies have generally relied on questionnaires or diagnostic codes to determine the frequency of dyslipidemia in the patients with COPD, and it is unknown if dyslipidemia is another independent factor that could explain the increased risk of cardiovascular morbidity and mortality in the COPD patients. [2] The COPD patients are expected to have a deranged lipid profile for various reasons like smoking, aging, and using such drugs as steroids.

Materials and Methods

This cross-sectional study was conducted on 50 COPD patients and including 50 control were enrolled in the study.

Uncooperativenes, unwillingness, seriously ill, known case of carcinoma, bronchial asthma, active tuberculosis, diabetes, hypertension, collagen vascular disease, inability to properly perform spirometry and the presence of congenital or valvular cardiomyopathy or other familial hyperlipidemias was excluded from the study

After the informed consent was obtained from all the participants. Subsequently, the COPD patients were segregated and diagnosed based on the GOLD guidelines with such risk factors as dyspnea, chronic cough, chronic sputum

production, history of exposure to the respective risk factors, and age of > 40 years. a detailed history was obtained from all the patients; furthermore, clinical examination and radiological tests were performed to confirm the presence of COPD and the associated cardiovascular complications.

After a 12-hour overnight fast, 5 ml fasting blood samples were collected from all the participants in the morning. The total cholesterol, HDL, and triglycerides were directly analyzed using the standard enzymatic techniques.

Results

The lipid profile in COPD patients showed significantly higher serum levels of TC, TG, LDL as compare to controls and serum concentrations of HDL were also decreased significantly compared to controls.

Table 1: Comparision of parameters in case and controls

Parameters	Case	Control	p-value
Age in yrs	35.02 ± 9.23 years	35.12 ± 8.32 years	>0.05
Male : Female	35:15	34:16	>0.05
Cholesterol	181.02 ± 32.01	15.36± 9.36	<0.05
LDL	120.01 ± 9.36	107.23± 9.12	<0.05
HDL	33.23 ± 2.19	37.21± 4.36	<0.05
Triglycerides	143.02± 9.31	132.50 ± 8.36	<0.05

Discussion

COPD is associated with significantly increased morbidity and mortality and COPD precipitates dyslipidemia. So present was conducted and found that COPD patients showed significantly higher serum levels of TC, TG, LDL and serum concentrations of HDL were decreased significantly. This finding was corroborated with the results of some previous studies [3,4].

Although Kamat SR, et al. In their study has shown the serum of lipid parameters are not different in COPD from healthy controls[5]. Smoking can cause major changes in serum lipid profile simultaneously smoking is a major risk factor in COPD. Smoking affects the lipid profile such a way that the plasma LDL, cholesterol and triglycerides concentration are higher and HDL cholesterol is lower in smoker than in nonsmokers [6].

Nicotine causes the release of adrenaline from the adrenal cortex leading to increased serum concentration of free fatty acids (FFA) which stimulates hepatic synthesis and secretion of cholesterol as well as hepatic secretion of VLDL and hence increased TG. Smoking decreases estrogen levels and further leads to decreased HDL cholesterol concentration. Smoking also increases insulin resistance and LDL, VLDL and TG are elevated in this hyperinsulinemic conditions due to decreased activity of lipoprotein lipase[7].

Conclusion

COPD patients showed significantly higher serum levels of TC, TG, LDL and serum concentrations of HDL were also decreased significantly compared to controls.

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