

Sequels of Smoking on Blood Lipid Levels in a Rural Population of South India.

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Short Communication

Received: 10/02/2014

Revised: 15/02/2014

Accepted: 26/02/2014

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Keywords: LDL -Cholesterol,
Triglycerides, Cigarette Smoking,
CHD

ABSTRACT

Smoking is one of the prime causative factors for the CHD. Smoking leads to altered serum lipid levels which in turn lead to CHD. 50 male smokers and age matched 50 male nonsmokers were recruited for study. Estimation of serum triglycerides and LDL cholesterol was done. Significantly elevated levels of serum triglycerides and LDL cholesterol ($p < 0.001$) was observed in smokers in contrast to non smokers. Smoking inadvertently affects serum lipids thereby accentuating CHD risk.

INTRODUCTION

Heart diseases like Atherosclerosis and Coronary diseases are caused by various types of smoking [1]. Cigarette smoking is as important and independent risk factor for above mentioned disorders [2]. This is further authenticated by the dose response relationship between the number of cigarettes smoked per day and cardiovascular morbidity and mortality [3].

For coronary heart disease, a major risk factor is cigarette smoking more than 10 numbers per day [4]. Cigarette smoking and Hypercholesterolaemia are suggested along with other risk factors contributing as major ones for CHD. Nicotine is the major component of cigarette smoking. Nicotine causes increased secretion of catecholamines resulting in increased lipolysis [5]. This leads to high levels of triglycerides, cholesterol and VLDL, and low levels of HDL [6,7].

The aim of the study was to elicit the variation in the blood lipid levels between rural smokers and non-smokers.

MATERIALS AND METHOD

The current study consisted of 50 male smokers and 50 ages matched male non-smokers as controls. They were in the age group of 25-35 years hailing from the rural area around Sri Siddhartha medical college. Informed consent was taken from the voluntarily participants. Smokers were smoking more than 10 cigarettes per day since 5 years. Diabetics, hypertensives, obese individuals, alcoholics and persons on lipid lowering drugs were excluded.

Fasting venous blood 5 ml was taken from cubital fossa. Samples were centrifuged at 3600rpm for 6 minutes. Supernatant clear serum was extracted to estimate serum LDL cholesterol and Triglycerides.[8]

LDL-cholesterol was determined by direct immunoturbidimetric assay. Triglycerides were estimated by enzymatic method.

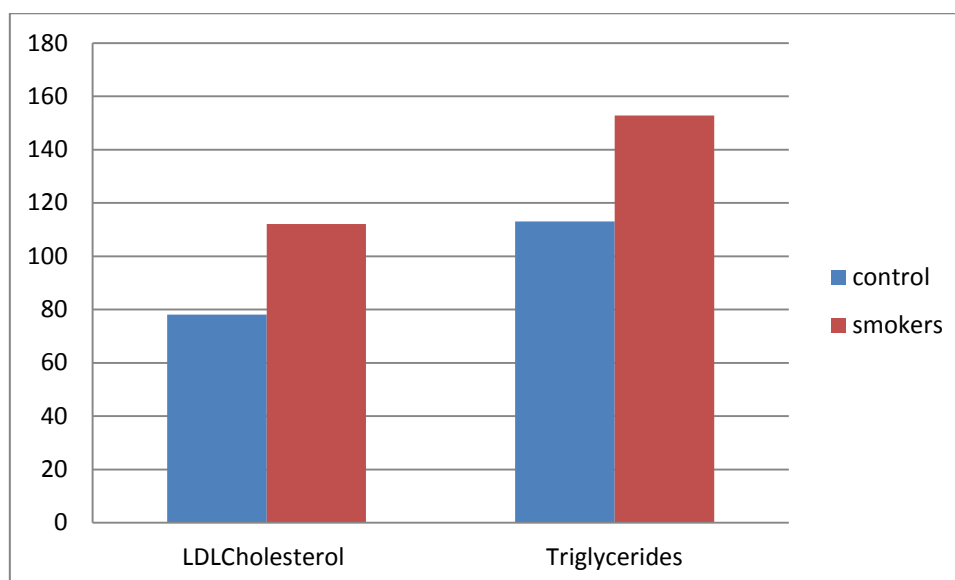
RESULTS

The results of smokers and controls non smokers are tabulated as follows.

Table 1: Descriptive Statistical Analysis

Parameter	Control N=50	Smokers N=50	P value
Serum LDLCholesterol mg%	78.12+/- 12.14	112.06+/-16.2	P<0.001
Serum triglycerides mg%	113.10+/-18.8	152.8+/-19.4	P<0.001

Chart 1: Serum TG and LDLC levels in smokers and non-smokers



Values are expressed as mean +/- SD

There is a statistically significant (P<0.001) increase in the serum triglycerides and LDL cholesterol of smokers when compared to controls in non smokers.

DISCUSSION

Cigarette smoking accentuates coronary heart diseases and atherosclerosis. Smoking more than ten cigarettes per day pertains to be a major risk factor for Ischemic heart diseases [9].

It is a well-known fact that nicotine is one of the important constituent of tobacco which has predominant influence on increasing lipid levels in blood. The cause of high levels of blood lipids is due to the catacholamines and adenylyl cyclase axis induced tissue lipolysis. This is initiated by the stimulation of nicotine. Smoking leads to increase in oxidised LDL-cholesterol which in turn initiates atherosclerosis [10].

Our study reveals statistically significant (P<0.001) levels of serum triglycerides and LDL cholesterol in smokers in comparison to non smokers. Increased levels of serum triglycerides and LDL cholesterol in smokers is in agreement with previous reports [11,12,13]. IHD is related to fasting levels of triglycerides and cholesterol [14].

Cessation of smoking will lessen the risk of developing ischemic heart disease in rural population Further studies in a larger rural population is suggested to formulate policy on banning smoking for the benefit of mankind.

CONCLUSION

Our study establishes a significant relevance between smokers and non smokers. Elevated levels of serum LDL-Cholesterol and triglycerides in smokers predispose them to CHD in comparison to non smokers.

REFERENCES

1. Judith Macky, John Crofton. Tobacco and the developing world. British Med Bull. 1996;52 (1):206-221.
2. DA Adedji, MH Etukudo. Lipid Profile of cigarette smokers in calabar municipality. Pakistan J Nutr. 2006; 5(3):237-238.
3. NS Neki. Lipid profile in smokers a clinical study. JIACM.2002;3(1):51-54
4. Garrison RL, Kannel WB. Cigarette smoking & HDL -C. Atherosclerosis. 1979;30:17

5. Muscat JE, Harris RE . Cigarette smoking and plasma cholesterol. *American Heart J.*1991;121:141-147.
6. Clutte- Brown J, Huga S. Oral nicotine induces an athrogenic lipoprotein profile. *Proc Soc Exp Bio Med.* 1986;182:409-413.
7. Hojnack J, Mulligan J, Cluette – Brown. Oral nicotine impairs clearance of plasma Low density lipoproteins. *Proc Soc Exp Bio Med.* 1986;182:414-418.
8. Carr JJ, Dreker JJ .Simplified rapid technique for extraction and determination of serum cholesterol without saponification. *Clin Chem.*1956;2:235
9. Benouwitz HL. Pharmacological aspects of cigarette smoking and nicotine addiction. *New England J Med.*1998;319:318-330.
10. Zimmermanm Mc, Geachine J. The effect of nicotine on aortic endothelial cell turn over. *Atherosclerosis.* 1985;58:39-47.
11. Rastogi R. Lipid profile in smokers. *J Assoc Phys India.* 1989;37(12):764-767.
12. Sinha,AK. Effect of smoking on lipid profile in young. *J Assoc Phys India.* 1995;43(3):551-552.
13. Tiwari R .Effect of smoking on lipid profile. *J Assoc Phys India.* 1997;45(7):551-552.
14. Carlson LA, Bottinger LE. Ischemic heart disease in relation to fasting values of plasma triglycerides and cholesterol. Stockholm Prospective study. *Lancet.* 1972;865.