Punjab Univ. J. Zool., Vol. 27 (2), pp. 0079-0082, 2012 ISSN 0079-8045 (Print)

Original Article

Lipid profile in smoking employees of University of Azad Jammu and Kashmir Muzaffarabad

Syeda Faiza Qulander, Abdul Qayyum Nayyer, Shaukat Ali* and Hafiz Abdullah Shakir

Department of Zoology, The University of Azad Jammu and Kashmir, Muzaffarabad (SFQ, AQN, SA), Department of Zoology, University of Punjab, Lahore-54590 (HAS), Pakistan.

(**Article history:** Received: November 21, 2012; Revised: December 12, 2012)

Abstract

The study was conducted to determine the Lipid profile in smoking employees of University of Azad Jammu and Kashmir. The blood samples were collected using strip method to check the level of cholesterol and triglycerides. The blood pressure was also measured using standard Sphygmomanometer and stethoscope. Total Fifty employees divided into five groups by age (24-29, 30-35, 36-41, 42-47 and 48-53 years). A personal interview was conducted according to questionnaire which included different questions such as name, age, number of cigarettes smoked /day, price of cigarette/pack and daily diet. The mean cholesterol level in five groups was 122.9, 116.1, 162.8, 145.6 and 151.5 mg/dl, respectively, while the mean triglyceride level was 187.1, 292.7, 218.5, 167 and 202.3 mg/dl, respectively. The mean systolic and diastolic blood pressure in five groups was 122.3 and 82.6 mmHg, 127.9 and 90.3 mmHg, 131.2 and 87.3 mmHg, 110.5 and 81.8 mmHg and 127 and 87.4 mmHg, respectively. The average smoked cigarette/day was 15.5, 17.7, 15.7, 19.4 and 16.5 respectively in five groups. The results of the study would help in combating the risk of cardiovascular diseases and hypertension.

Key words: Lipid profile, cholesterol, triglycerides, hypertension.

To cite this article: QULANDER, S, F., NAYYER, A.Q., ALI, S. AND SHAKIR, H.A., 2012. Lipid profile in smoking employees of University of Azad Jammu and Kashmir Muzaffarabad. *Punjab Univ. J. Zool.,* **27**(2): 79-82.

INTRODUCTION

Lipids are those organic compounds that are insoluble in water but only soluble in non-polar solvents or in other lipid solovents. . They are those fats which are stored in special type of cells of tissues of body. These fats soring tissues are called as adipose tissues (Michelle *et al.,* 1993). They are composed of carbon, hydrogen and oxygen, and sometimes phosphorus. There are three common groups of them: simple lipids, compound lipids and derived lipids (Fahy *et al*., 2005). Oxidation of lipis and carbohydreates fulfill the maximum energy requirement of human being (Michelle *et al.,* 1993). Lipid profiling is an important parameter to determine the levels of total cholesterol and triglyceride of an individual. These kind of profiles indicate the level of of good and bad cholesterol (Hunter, 2006). Cholesterol which is waxy steroid and very important structural component of mammalian cell membrane synthesizes in the liver or intestines and is precursor of various hormones. Its presence is required to establish proper membrane permeability and fluidity (Pearson *et al*., 2003). Good cholesterol which is known as High density lipoprotein (HDL). The most important and abundant form of lipids produced in animals is Triglyceride. . The level of Triglyceride is abruptly raised in the body by taking the sugar, fats riched meah and drinming alcohol (Parks, 2002). To determine the exact level of triglyceride in body, it is repeadtly measured after 12 h of fasting. Cigarette smoking is one of the most noticeable risk factor for peripheral, coronary and cerebral atherosclerotic vascular disease. The absorption and inhalation of various dangerous of compounds and metabolites is increased in smokers. There are many way to use tobacco such as cigarette, cigars, berri, pipe smoking and hookah. Latest research of the American Biologists has confirmed that cigarette smoking also disturbs the process of cell division in the cardiac muscle. Like other toxicants, there is also dose-dependent response between the number of cigarette/bidis smoked and cardiovascular morbidity and mortality (Kannel, 1981).Kshitiz *et al*. (2010) A study was performed incentral

0079-8045/12/0079-0082 $ 03.00/0

*Corresponding author: shaukatali134@yahoo.com

Bihar, India in which the lipid and vitamin C metabolism in chronic smokers was determined Kshitiz *et al*. (2010). It was found that adverse effects can cause serious metabolic diseases like atherosclerosis. Rah (2008) conducted acomprehension study to determine the percentage of dislipidemia among smokers in association with non smokers to know the change of lipid profile in smokers and non smokers. Lipid profile was significantly changed in smokers as compared to non smokers. The relationship between parental educational level and cardiovascular risk factors between young male adults was studied by Stea *et al.* (2009). In that study cardiovascular disease risk factors among young men were determined. Gepner *et al.* (2001) reported a study to find the effects of smoking cessation on lipoproteins. Despite weight gain, smoking cessation improved HDL-C, total HDL and large HDL particles, particularly in women. Smoking termination did not affect LDL or LDL size. Increases in HDL may mediate part of the reduced cardiovascular disease risk observed after smoking cessation.

The aim of present study was to demonstrate the smoking as risk factor for different ailments.

MATERIALS AND METHODS

A questioner was distribute to university employees containing 10 parameters and employees were suppose to fill each column honestly so that the researcher could get reliable data concerning to smoking. The employees were of different categories relating to grade and monthly income. All the subjects responded positively. Following questions were asked to get information about lipid profile and cigarette smoking. The name, age, profession, income status and smoker were asked. How did you start cigarette smoking? On average how many cigarettes smokes daily? Are you suffering from any cardiovascular diseases? What are they eating *i.e.,* meat, chicken, fish, vegetables, milk products and fruit? Why did you start smoking?

The data was collected through personal interviewed method. Before taking interviews the purpose of the study was explained to avoid any misunderstanding among the respondents and to remove hesitation of respondents in giving their personal information. The employees were also asked to cooperate in lipid profile analysis. The blood of employees was assayed for cholesterol and lipid estimation. For this assay, glucose challenge test GCT meter was used (made ROCHE JAPAN). Cholesterol and lipid test strips for quantitative determination were also used.

RESULTS

Fifty smoking employees were taken from the University of Azad Jammu and Kashmir for this research. They were further divided into five groups according to their age. The mean age of group 1 was 26.5 years, mean systolic blood pressure was 122.3±4.84 mmHg, mean diastolic blood pressure was 82.6±3.30 mmHg, the mean cholesterol level was 122.9±18.04 mg/dl and the mean triglyceride level was 187.1±21.50 mg/dl. Mean cigarette smoked/day was 15.5±2.80. The mean age of group 2 was 32.5 years, mean systolic blood pressure was 127.9±3.85 mmHg, mean diastolic blood pressure was 90.3±4.51 mmHg, the mean cholesterol level was 1161.117.24± mg/dl and the mean triglyceride level was 292.7±48.48 mg/dl. Mean cigarette smoked/day was 17.7±2.65. The mean age group 3 was 38.5 years, mean systolic blood pressure was 131.2±8.74 mmHg, mean diastolic blood pressure was 87.3±4.58 mmHg, the mean cholesterol level was 162.8±51.92 mg/dl and the mean triglyceride level was 218.5±31.35 mg/gl. Mean cigarette smoked/day was 15.7±2.60. The mean age group 4 was 44.5 years mean systolic blood pressure was 110.5±9.08 mmHg, mean diastolic blood pressure was 81.8±2.08 mmHg, the mean cholesterol level was 145.6±24.39 mg/dl and the mean triglyceride level was 167±26.55 mg/dl (Fig. 1). Mean cigarette smoked/day was 19.4±20.6. The mean age group 5 was 50.5 years, mean systolic blood pressure was 127±6.46 mmHg, mean diastolic blood pressure was 87.4±6.38 mmHg, the mean cholesterol level was 151.5±17.75 mg/dl and the mean triglyceride level was 202.3±34.78 mg/dl. Mean cigarette smoked/day was 16.5±2.29.

DISCUSSION

The lipid profile is vital indicator to assess the risk of coronary heart disease inthose individuals that may to have a heart attack or stroke caused by obstruction of blood vessels of hardening of the arteries (atherosclerosis).

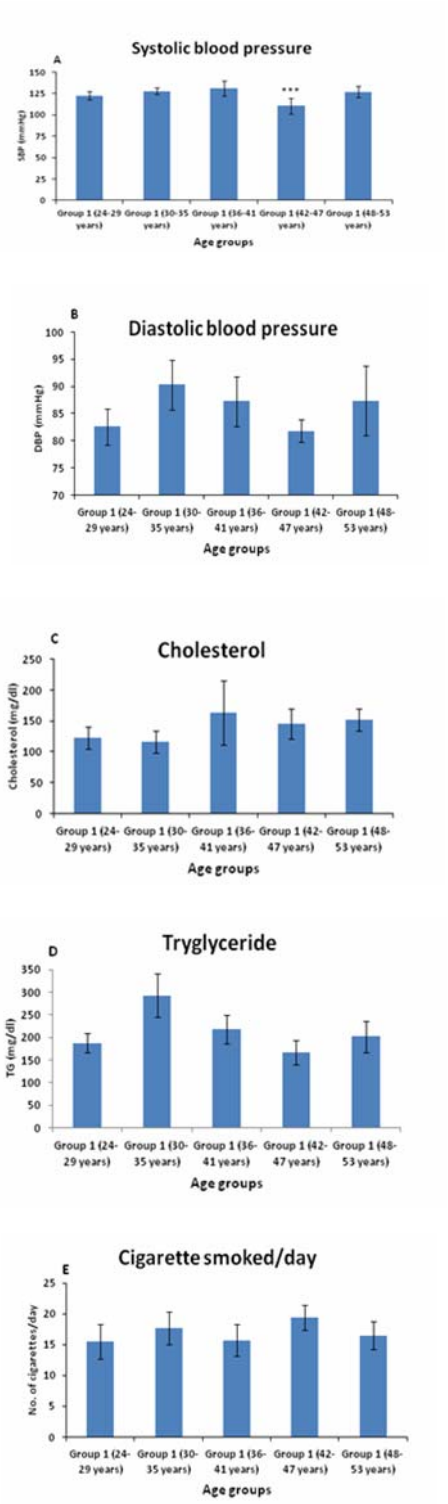

Figure 1: The mean values of age, systolic blood pressure, diastolic blood pressure, cholesterol, triglyceride and cigarette smoked/day.

The total cholesterol, high density lipoprotein (HDL) cholesterol low density lipoprotein (LDL) cholesterol and triglycerides are often determined for lipid profiling. It is closely related to the terms “hyperlipidemia” and “hyperlipoproteinemia”. Inconsistent observations were noticed for smoking medicated LDL cholesterol change. Some suggested that the effect of smoking on LDL cholesterol is mediated through reduction in lipoprotein lipase which was contradicted by Moriguchi *et al*. (1997) that no difference in lipoprotein lipase activity observed between smokers and non-smokers (Guven and Tolun, 2012).

Hypercholesterolemia has been associated strongly with cardiovascular disease, an abnormality in the body’s production of cholesterol can cause adverse consequences as well. Possible causes of low cholesterol are hyperthyroidism or overactive thyroid gland, adrenal insufficiency, manganese deficiency, leukemia and other hematological disease. The result of the study showed that the mean of cholesterol in different groups was 122.9 mg/dl, 116.1 mg/dl, 145.6 mg/dl and 151.5 mg/dl. These values were less than the normal values of cholesterol which showed that subjects in this study had no chances of hypercholesterolemia but were suffering from hypercholesterolemia. Similarly, the increase or decrease in the normal level of triglycerides also cause diseases. Hypertriglyceridemia was induced due to high blood levels of triglycerides, the most common fatty molecule in most organisms. It has been linked with atherosclerosis, even in the absence of hypercholesterolemia. It could also cause pancreatitis in excessive concentrations. The mean of triglycerides in this study was 187.1 mg/dl, 292.7 mg/dl, 218.5 mg/dl and 202.3 mg/dl. These values were higher than the normal values of triglycerides which meant that these subjects in this study were suffering from hypertriglyceridemia. Cigarette smoking is a common risk factor for peripheral, coronary and cerebral atherosclerotic vascular disease. Cigarette smoking has been found to change the lipoprotein levels. The mean of cigarette smoking was 15.5, 17.7, 15.7, 19.4 and 16.5 which alter the lipoprotein levels which could caused the atherosclerosis in these subjects.

Conclusion

It could be concluded that the changes in biomolecules including triglycerides and

cholesterols and blood pressure by smoking bcan cause severe disease.

REFERENCES

FAHY, E., SUBRAMANIAM, S. AND BROWN, H.A., 2005. A comprehensive classification system for lipids. *Journal of Lipid Research*. **46**(5): 839-61.

GEPNER, ADAM, D., PIPER, A., MEGAN, E., JOHNSON, G., HEATHER, M., FIORE, D., MICHAEL, B.B. AND JAMES, H., 2001. Effects of smoking and smoking cessation on lipid and lipoproteins: Outcomes from a randomized clinical trial. *American Heart Journal*, **161**(1): 145-151.

GUVEN, A. AND TOLUN, F., 2012. Effects of smokeless tobacco "Maras powder" use on nitric oxide and cardiovascular risk parameters. *Int J Med Sci*., **9**(9):786-92

HUNTER, J.E., 2006. Dietary trans fatty acids: review of recent human studies and food industry response. *Lipids*, **41** (11): 967-92.

KANNEL, W.B., 1981. Update on the risk of cigarette smoking in coronary artery disease. *Am. Heart J*., **101**: 319-28.

KSHITIZ, K.K., SINHA, R.B. AND BHATTACHARJEE, J., 2010. A study of effects of smoking on lipid and vitamin c metabolism. A pilot study in central Bihar. *International Journal of Pharma and BioSciences*, **1**: 202-204.

MICHELLE, A., HOPKINS, J., MCLAUGHLIN, C.W., JOHNSON, S., WARNER, M.Q., LAHART, D. AND WRIGHT, J.D., 1993. *Human Biology and Health*. Englewood Cliffs, New Jersey, USA: Prentice Hall.

MORIGUCHI, E., FUSEGAWA, Y., TAMACHI, H. AND GOTO, Y., 1991. Effects of smoking on HDL subfractions in myocardial infarction patients: effects on lecithin-cholesterol acyltransferase and hepatic lipase. *Clin Chim. Acta*., **195**: 139-143.

PARKS, E.J., 2002. Dietry carbohydrate's effects on lipogenesis and the relationship of lipogenesis to blood insulin and glucose concentrations. *British Journal of Nutrition*, **87**: S247-S253.

PEARSON, A., BUDIN, M. AND BROCKS, J.J., 2003. Phylogenetic and biochemical evidence for sterol synthesis in the bacterium Gemmata obscuriglobus. *Proc. Natl. Acad. Sci*. *U.S.A*., **100**(26): 15352-7.

RAH, A.R., 2008. A comparative study on alterations of lipid profile among smokers and non smokers. *Journal Toxicology Environ. Health*., **16**: 523-534.

STEA, WANDEL, T.H., MANSOOR, M., UGLEM, M.A., FROLICH, S. AND WENCHE., 2009. BMI, lipid profile physical fitness and smoking habits of young male adults and the association with parental education. *European Journal of Public Health*, **19**: 46-51.