Assessment Of Serum Cholesterol Ratio To Know The Risk Of Development Of Cardiovascular Disease In Smokers.

Naisargi Joshi*, Shital Ghataliya**

*Tutor in Physiology,**Associate Professor, Department of Physiology, P.D.U. Medical College, Rajkot.

Abstract: Introduction: Smoking in different forms is a major risk factor for atherosclerosis and coronary heart disease. Smoking leads to increase in concentration of serum total cholesterol, low density lipoprotein. It leads to alteration in physiological factors which includes altered coagulation state, damaged vascular wall and alteration in lipid and lipoprotein content. Total cholesterol/HDL ratio is a simple investigation which helps to estimate future cardiovascular morbidity and mortality among smokers. Material And Method : The present study was conducted on 50 healthy male smokers selected from staff, volunteers and patients attending the hospital OPD. Serum cholesterol and serum HDL was measured. Ratio of total cholesterol/HDL was assessed. The statistical analysis was done by computer programs using Microsoft Excel. Result:The total cholesterol/HDL ratio helps to assess the risk of development of cardiovascular disease. The result shows that smoking influences the ratio of lipid profile adversely causing dyslipidaemia in smokers. More than 50% of smokers have average risk of developing cardiovascular disease. Conclusion: Total cholesterol/HDL ratio is a good indicator for the risk assessment of cardiovascular disease. Early detection of risk level helps to take prophylactic steps like cessation of smoking, change in life style, exercise etc [Joshi N NJIRM 2018; 9(1): 136-137]

Key Words: Serum Cholesterol, Cardiovascular Disease, Smokers

Author for correspondence: Dr. Shital P. Ghataliya, Assoicate Professor, Department of Physiology, P.D.U. Govt. Medical College, Rajkot, Gujarat, India E-Mail: ghataliyashital@yahoo.com M: 9427562589

Introduction: Smoking is considered to cause heart disease, cancer, stroke and also have close relationship with gastric ulcer, periodontal disease, sudden infant death syndrome, and metabolic syndrome[1-5]. Smoking in different forms is a major risk factor for atherosclerosis and coronary heart disease[6,7,8,9]. Smoking cigarette/bidi leads to increase in concentration of serum total cholesterol, low density lipoprotein[10-14] .

There is a relationship between cigarettes/bidis smoked and cardiovascular morbidity and mortality[6,7]. It leads to altered physiological factors which include altered coagulation state, damaged vascular wall and alteration in lipid and lipoprotein content.

Thus total cholesterol/HDL ratio is a simple investigation which helps estimate future cardiovascular morbidity and mortality among smokers. The present study was conducted to demonstrate the effect of smoking on lipid profile and thus on cardiovascular system.

The aim of study is to make aware smokers, the hazards of smoking and discourage tobacco usage in any form

Methods: The present study was conducted on 50 healthy male smokers selected from staff, volunteers and patients attending the hospital OPD.

Procedure of Selection: The smokers were defined as those who had smoked at least once every week for last one year. The inclusion and exclusion criteria were as follows:

Inclusion Criteria: Age Range – 25 – 45 years, Subjects – Who smoked at least once every week for a year or more, and are asymptomatic.

Exclusion Criteria: Evidence of any chronic disease (or history) : Diabetes and endocrine Disorder: Both itself can lead to dyslipidemia or oxidation of LDL. Diabetes is a known risk factor for coronary heart disease as it increases vascular reactivity and microvascular disease.

Hypertension: It is a known risk factor for coronary heart disease as it promotes atherosclerosis by increasing vascular permeability or endothelial injury that promotes oxiLDL. Renal Disorder: It leads to altered lipid profile by itself. Coronary Artery Disease. History of Drug intake – B-Blocker, Lipid lowering drugs, Steroid

History of Alcohol Intake/Drug abuse: A detailed history was taken. Subjects were explained in detail about the study and written informed consent was taken. Blood Sample was collected after overnight fasting under all aseptic precautions and sample was centrifuged at 2000rpm for one minute. Lipid profile

estimation which includes serum cholesterol, High density lipoprotein was done on Miura Autoanalyzer. It works on spectrophotometric principle. The statistical analysis was done by computer programs using Microsoft Excel.

Results: The total cholesterol/HDL ratio helps to assess the risk of development of cardiovascular disease. It can be observed from the table that out of the subjects assessed, 11 subjects have ½ average risk, 33 have average risk, 7 have 2 times of average risk for development of cardiovascular disease. (Table 1)

Table 1: Shows risk classification of cardiovascular disease and mean value of subjects total cholesterol/HDL ratio.

Risk Classification	½ Average Risk	Average Risk	2 times of Average Risk	3 times of Average Risk
Grade	<3.4	3.4-5.0	5.1-9.6	9.7-23.0
Number of subjects	11	33	7	nil
Mean value	2.92	4.20	5.86	nil

Discussion: According to Framingham Heart Study, a cholesterol ratio of 5 indicates average risk of heart disease for men. In this study result show that smoking affects the lipid profile and thus affects total cholesterol/HDL ratio. The result shows that smoking influences the ratio of lipid profile adversely causing dyslipidaemia in smokers. Smoking results in increase in oxidized LDL-cholesterol level which plays a key role in the development of atherosclerosis, and also raising the cardiovascular disease risk. Nicotine contained in cigarette increases the circulatory pool of atherogenic LDL through accelerated transfer of lipids from HDL and impaired clearance of LDL from plasma compartment.

Conclusion: Total cholesterol/HDL ratio is a good indicator for the risk assessment of cardiovascular disease. Early detection of risk level helps to take prophylactic steps like cessation of smoking, change in life style, exercise etc. which improves cardiovascular efficiency and thus further cardiovascular complications can be prevented.

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