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Assessment Of Serum Total Cholesterol And HDL Levels In Oral Potentially Malignant Disorders Patients- A Prospective Study

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Abstract
Total Cholesterol and Good cholesterol (HDL), important lipid constituents of cell are essential to carry out several biochemical functions. In oral cancer serum Total cholesterol and HDL undergoes early and significant changes. In the present study Cholesterol and HDL were determined in potentially malignant disorders patients and healthy individuals. Cholesterol and HDL levels were significantly lower in oral precancer patients as compared to the controls.

Key words *– Oral Precancer, High Density Lipoproteins(HDL) or good cholesterol*

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I. Introduction

In developing countries like India cancer (neoplasm) is among the ten commonest cause of mortality. Oral cancer is one of the most common cancers. They result from changes in the genetic material in the cell origin that may have occurred spontaneously or were induced by an chemical agent or mutations in genes. A mutated gene may results in abnormal growth and multiplies at an uncontrolled rate. Where cell can't repair self DNA and refuse to self destruct. Chemical agents or carcinogens include tobacco, alcohol, certain viruses such as hepatitis B virus, human papillomavirus, Bacteria like helicobacter pylori radiation, sunlight and certain chemicals (1,4).

Traditional form of smokeless tobacco like betel quid, tobacco with lime and tobacco tooth powder are commonly used in not only men but also among children, teenagers, women of reproductive age, medical and dental students in India, where chewing tobacco is used with betel nuts and reverse smoking is practiced, only few studies have been carried out in the central India (2).

Oral cancer is easily accessible to visual inspection by a health care provider. Such that screening for visible oral precancerous lesions such as white patches, oral sub mucous fibrosis, red lesions and early oral cancer is inexpensive, accurate and feasible even in poorest country (3).

Cholesterol undergoes early changes in in malignant diseases in human body. Low level of Cholesterol in the proliferating tissues and in the blood, a significant marker in could be due to the process of carcinogenesis (5,6,7,8).

II. Methodology

The present study was conducted in Peoples College of Dental Sciences and Research Centre, Peoples University Bhopal and RKDF Dental College and Research Centre. Fifty two patients with precancer lesions and fifty normal healthy individuals were selected from the department of Oral Medicine and Radiology. After obtaining an informed consent a detailed case history was taken and patients were examined. 5 ml of fasting blood sample was collected in the Department of Biochemistry. Rapid enzymatic determination of the Total Cholesterol was done by CHOD-PAP method. HDL Cholesterol was determined by PEG-CHOD-PAP end point assay with lipid clearing factor (11).

Exclusion Criteria – Patients with any systemic diseases were not included in the study

III. Discussion

Cholesterol and fats are important lipid constituents of cell. It is not only involved in the activity of the membrane bound enzymes but also essential for maintenance of the structural and functional integrity of cell membrane. Cholesterol is important for stabilization of DNA helix, cellular uptake and regulation of cholesterol is mediated by lipoprotein receptors. In cancer low levels of cholesterol in related tissues and plasma could be due to the process of carcinogenesis. Many prospective and retrospective studies have shown an inverse association between lipid profile and cancers. They have shown a inverse relation between lower cholesterol level and oral cancer (9, 10,15)

IV. Observation And Results –

In the present study, a significant decrease was observed in serum HDL in cancer patients. This is in accordance with previous report. that low HDL is an additional predictor of cancer and it might be a cholesterol for membrane biogenesis. In our study about 95% of the patients with oral precancer and 85% of cancer patients were tobacco consumer. Therefore levels of the lipids in subjects in patients with OPC and Cancer patients were compared with plasma lipid profile of group of controls.

High cholesterol and HDL were observed in controls without habit of tobacco consumption than controls and patients with tobacco habits. There is a strong relationship between vitamin E and lipid and cholesterol (12,13,14).

V. Conclusion

In conclusion 66% higher mortality rated due to cancer in the group of cancer patients with lower blood cholesterol than in the high cholesterol. Our results add to this evidence of an inverse relationship between lower plasma lipid and precancerous conditions. The lower lipid profile is a biochemical tool for initial change in neoplastic tissue. Our study observed higher level of cholesterol and HDL in the control group. The patients suffering from oral cancer showed lower blood level of total cholesterol and HDL as majority of patients were with habit of tobacco consumption.

Authors contribution

The author was principal investigator of the study and involved in the design conduct, report writing, review of manuscript and analysis.

Conflicts of interest

The authors declare that they have no conflict of interest.

Funding

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Table 1:

Finding in control subjects :

S.N.	Parameters	Plasma level	Mean value
1.	Total cholesterol	190-220 mg/dl	200+/-5 mg/dl
2.	HDL cholesterol	35-60 mg/dl	40 +/- 6.3 mg/dl

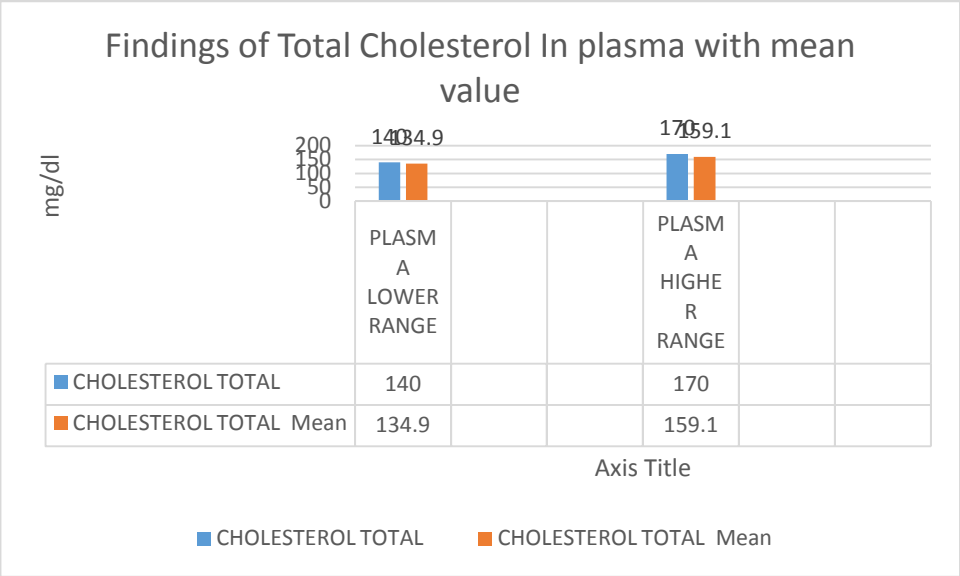
Table 2:

Finding in oral precancer subjects :

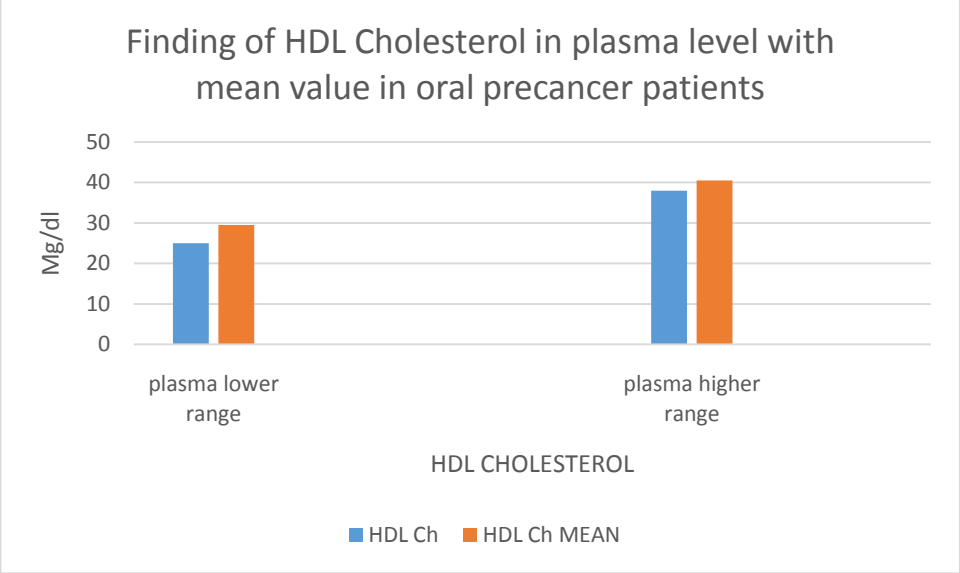
S.N.	Parameters	Plasma level	Mean value
1.	Total Cholesterol	140-170 mg/dl	147+/-12.1
2.	HDL Cholesterol	25-38 mg/dl	35 +/- 5.5

Table 3: Comparison between mean values of plasma lipid and hemoglobin profiles of control subjects and oral precancer patients

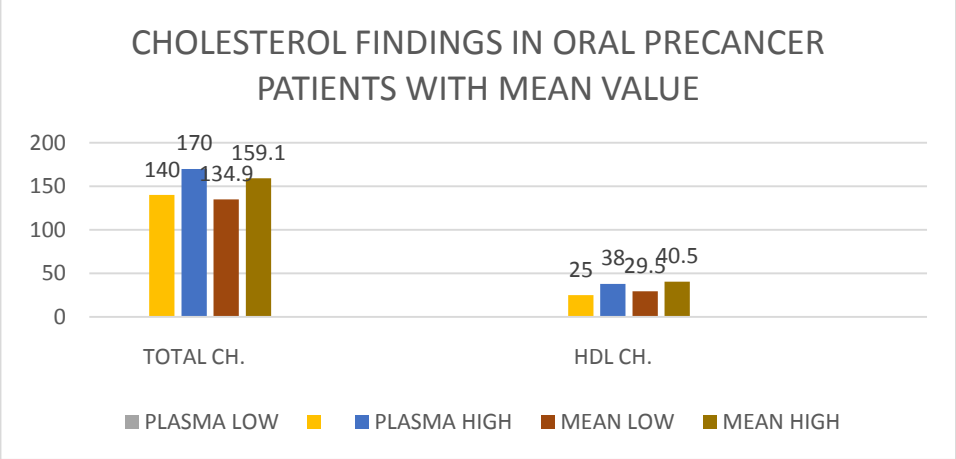
S.N.	Parameters	Plasma level	Mean value
1.	Total Cholesterol mg/dl	206.6+/-14.37	147+/-12.1
2.	HDL Cholesterol mg/dl	40+/-6.3	35+/- 5.5



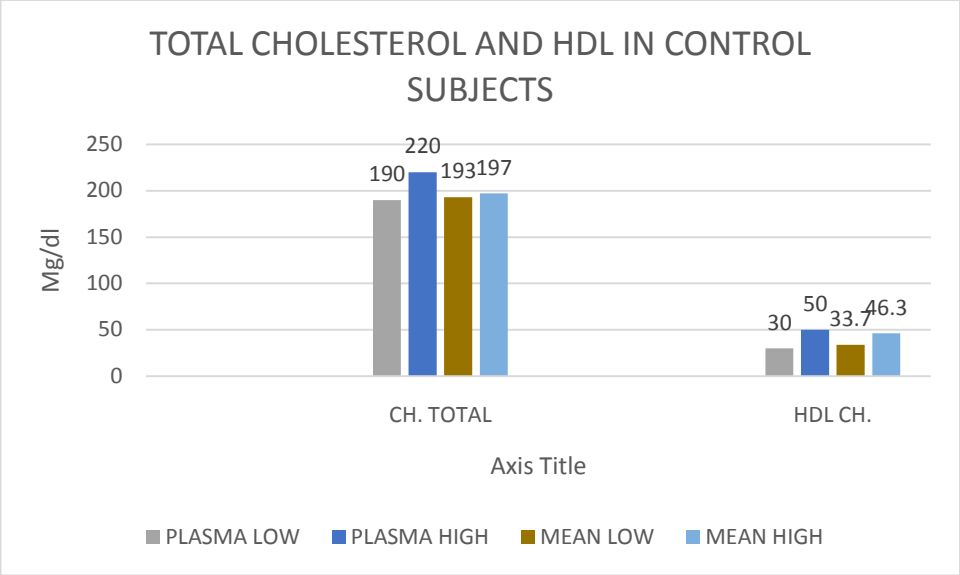
Graph 1: Total Cholesterol level in plasma with mean value in Precancer patients.



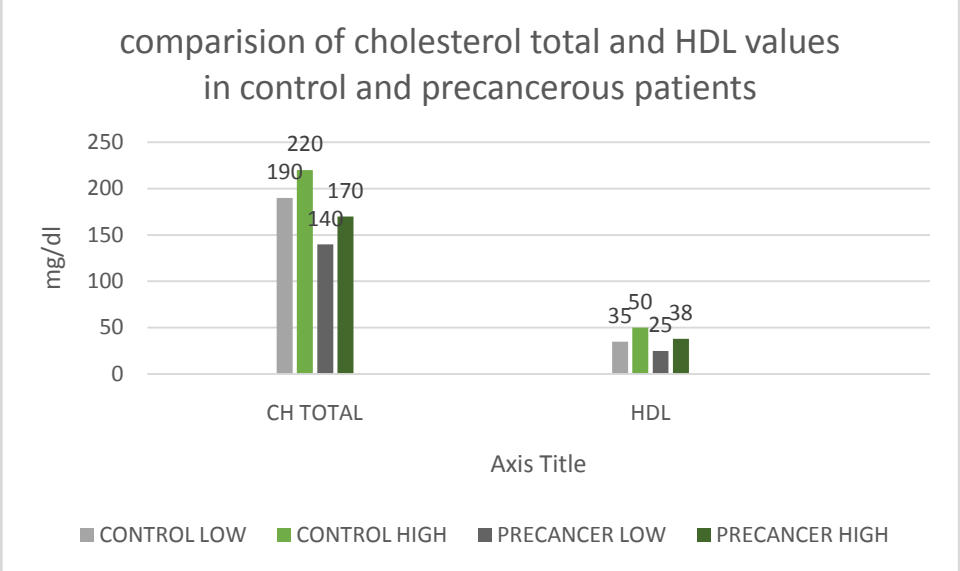
Graph 2: HDL Cholesterol in plasma level with mean value in oral precancer patients.



Graph 3. Comparision between Total cholesterol and HDL Cholesterol findings in oral precancer patients.
p-value =0.05



Graph 4: Level Of Total Cholesterol And Hdl In Control Subjects
P value= 0.05



Graph 5: Comparison of Cholesterol total and HDL values in Control and precancerous Patients P – value< 0.05

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