

Original Research

Assessment of serum lipid profile level in patients with oral squamous cell carcinoma- A clinical study

Vaibhav Rai¹, Bhagwat Swaroop Sharma², Ipseeta Menon³, Hemant Kumar Halwai⁴, Rabab Khan⁵, Upasana Tyagi⁶

¹Lecturer, Department of Oral Medicine and Radiology, UCMS college of dental surgery, Bhairahwa, Nepal;

²Lecturer, Department of Oral Pathology, UCMS college of dental surgery, Bhairahwa, Nepal;

³Professor, ITS-Dental College, Muradnagar, Ghaziabad;

⁴Professor, Department of Orthodontics, UCMS college of dental surgery, Bhairahwa, Nepal;

⁵Private Practitioner, Lucknow;

⁶Private Practitioner, Ghaziabad

ABSTRACT:

Background: Oral cancer (OC) is the leading cause of morbidity and mortality due to cancer in India. The present study was conducted to assess serum lipid profile in patients with oral squamous cell carcinoma (OSCC) patients. **Materials & Methods:** This study was conducted on 25 OSCC patients of both genders. Equal number of controls was selected. 5ml of blood sample was collected from each patient and stored in vacutainers. Blood was allowed to clot and then centrifuged for 15 min at 3000 rpm to separate the serum for lipid analysis on chemical analyzer. **Results:** Out of 25 patients, males were 18 and females were 07. The mean cholesterol in OSCC patients was 143.7mg/dl and in control was 180.2 mg/dl, HDL was 37.8 mg/dl in OSCC and 55.6 mg/dl in control, triglycerides was 105.2 mg/dl in OSCC and 148.2 mg/dl in control. LDL was 105.4 mg/dl in OSCC and 140.6 mg/dl in control. VLDL was 24.5 mg/dl in OSCC and 23.5 mg/dl in control. The difference was significant ($P < 0.05$). **Conclusion:** Authors found that there was significant reduction in lipid profile in patients with oral squamous cell carcinoma.

Key words: Lipid, Triglyceride, SCC

Received: 20 July, 2019

Revised: 5 August, 2019

Accepted: 25 August, 2019

Corresponding Author: Dr Vaibhav Rai, Lecturer, Department of Oral Medicine and Radiology, UCMS college of dental surgery, Bhairahwa, Nepal

This article may be cited as: Rai V, Sharma BS, Menon I, Halwai HK, Khan R, Tyagi U. Assessment of serum lipid profile level in patients with oral squamous cell carcinoma- A clinical study. Int J Res Health Allied Sci 2019;5(5):47-50.

INTRODUCTION

Oral cancer (OC) is the leading cause of morbidity and mortality due to cancer in India and is most commonly preceded by clinically definable premalignant lesions and conditions. Around 0.3-25% of leukoplakias and 7-12% of oral submucous fibrosis cases will undergo malignant transformation.¹

Early detection of these lesions can dramatically improve the treatment outcome and prognosis in such patients. Carcinoma development is a complex mechanism comprising of proliferation, apoptosis and differentiation and the interplay between these intricate processes

decides tumor development and progression. Thus, the development of newer diagnostic and predictive approaches that are safe, economical, and amenable to repeated sampling is imperative. Blood-based/serum-based tests offer the aforementioned advantages.²

Lipids are cell membrane components essential for various biological functions. Although their prime role in pathogenesis of cardiovascular disease has been consistently found, researchers have reported an association of serum lipids with different cancers. However, only a few reports are available on plasma lipid profile in head and neck cancers. The question of whether

hypolipidemia at the time of diagnosis is a causative factor or a result of cancer has remained unanswered.³ Hypolipidemia can be considered as one of the biochemical marker in early detection of cancer. Research studies reveal an association of plasma lipids and lipoproteins with different cancer. These lipids get altered quantitatively in the serum during tumour development and maybe considered as one of the biochemical markers in the early detection of cancer.^{4,5} The present study was conducted to assess serum lipid profile in patients with oral squamous cell carcinoma patients.

MATERIALS & METHODS

The study subjects were selected from those who visited the Department of Oral Medicine and Radiology of UCMS College of dental surgery, Nepal. The duration of study was from January 2016 to January 2019. Participants were divided into two groups. Group 1 comprised of 25 patients of both genders consisted of clinically and histo-pathologically diagnosed new cases of oral squamous cell carcinoma. Patients suffering from any other major illness in the recent past or any other

systemic diseases were not included in the study. Obese participants were also excluded from the study. Equal number of controls was selected. The Group 2 was control group and it included 25 patients who visited the hospital for some other minor dental procedures such as prophylaxis and restorative treatment who were otherwise healthy. Patients were informed regarding the study and written consent was obtained from all the participants of the study. Ethical clearance was taken prior to the study. General information such as name, age, gender etc was recorded. A through clinical examination was performed in all patients. The participants were sent to department of Oral Pathology for pathological evaluation. 5ml of blood sample was collected from each patient and stored in vacutainers. Blood was allowed to clot and then centrifuged for 15 min at 3000 rpm to separate the serum for lipid analysis on chemical analyzer. Statistical analysis was done by using SPSS 18 and results were obtained. P value less than 0.05 was considered significant.

RESULTS

Graph I Distribution of patients

Total- 25		
Gender	Male	Female
Number	18	07

Table I, graph I shows that out of 25 patients, males were 18 and females were 07.

Graph I Distribution of patients

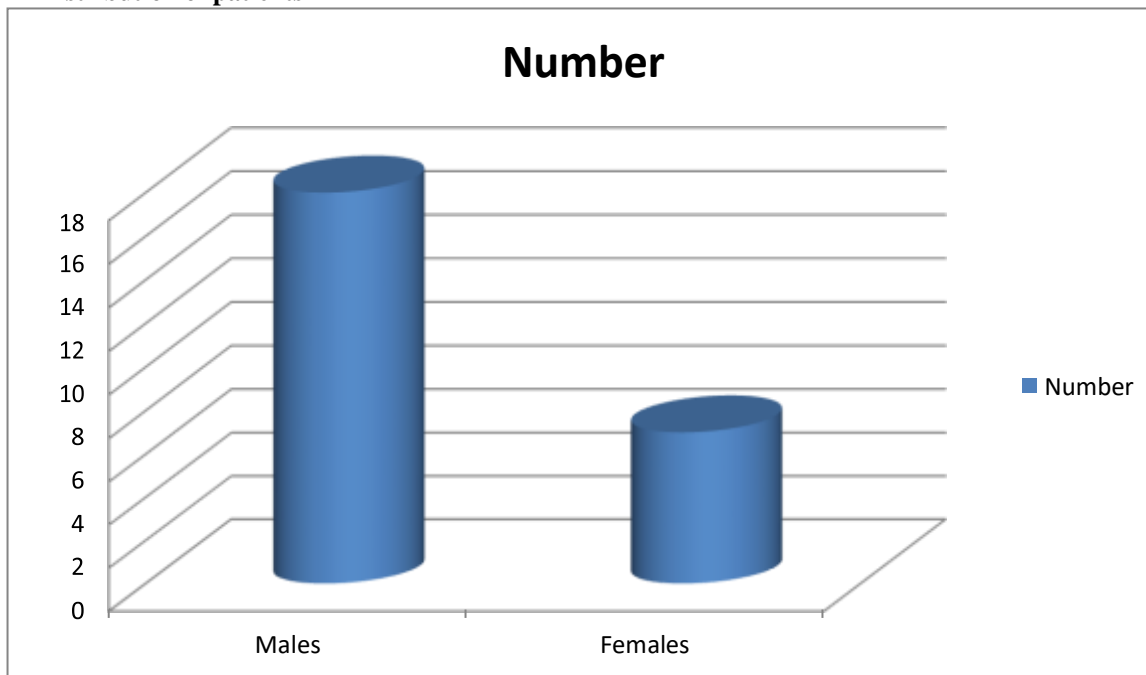
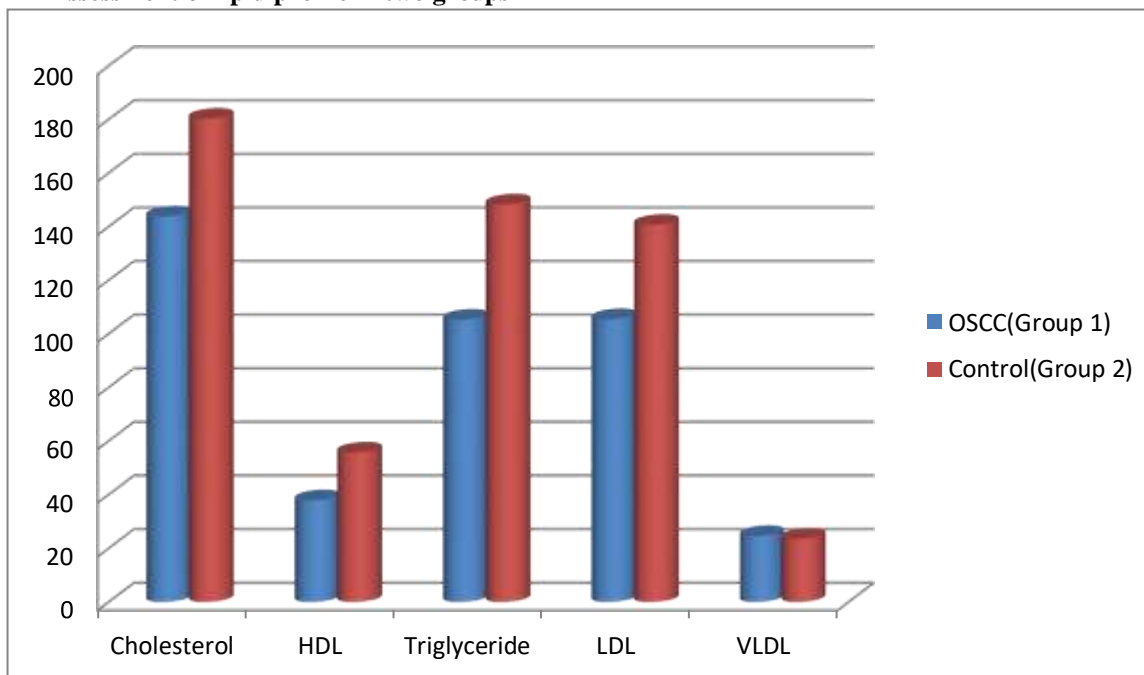


Table II Assessment of lipid profile in both the groups

Lipids (Mean)	OSCC (Group 1)	Control (Group 2)	P value
Cholesterol	143.7	180.2	0.05
HDL	37.8	55.6	0.02
Triglyceride	105.2	148.2	0.01
LDL	105.4	140.6	0.010
VLDL	24.5	23.5	0.92

Table II, graph II shows that mean cholesterol in OSCC patients was 143.7mg/dl and in control was 180.2 mg/dl, HDL was 37.8 mg/dl in OSCC and 55.6 mg/dl in control, triglycerides was 105.2 mg/dl in OSCC and 148.2 mg/dl in control. LDL was 105.4 mg/dl in OSCC and 140.6 mg/dl in control. VLDL was 24.5 mg/dl in OSCC and 23.5 mg/dl in control. The difference was significant (P< 0.05).

Graph II Assessment of lipid profile in two groups



DISCUSSION

In some malignant diseases, blood cholesterol undergoes early and significant changes. Low levels of cholesterol in the proliferating tissues and in blood compartments could be due to the process of carcinogenesis.⁶ The previous literatures evidence that hypolipidemia may result due to the direct lipid lowering effect of tumor cells or secondary to malfunction of the lipid metabolism.⁷ There are three main competing hypotheses to explain the relation between low cholesterol and oral cancer. (a) Low cholesterol may be an indicator of cancer process even before cancer manifests clinically. (b) Low cholesterol serves as a marker for some other causal sets of variables, and its association with oral cancer may be secondary even though if it precedes cancer. (c) Low cholesterol levels may precede the development of cancer and may be causally associated with some forms of cancer.⁸ The present study was conducted to assess serum lipid profile in patients with oral squamous cell carcinoma patients.

In present study, out of 25 patients, males were 18 and females were 07. Chawda et al⁹ conducted a study in three groups of patients OSMF, OSCC, and control. There are twenty participants in each group. Calorimetric method using semi auto-analyzer was used for analyzing the lipid levels (cholesterol, triglycerides [TGL], and high density lipids [HDL]) after collecting 2 ml of fasting blood from these patients. Low density lipid [LDL] values were obtained by calculator method. There was a significant decrease in serum lipid levels of patients with OSMF and OSCC.

We found that mean cholesterol in SCC patients was 143.7mg/dl and in control was 180.2 mg/dl, HDL was 37.8 mg/dl in SCC and 55.6 mg/dl in control, triglycerides was 105.2 mg/dl in SCC and 148.2 mg/dl in control. The difference was significant (P< 0.05). Kritchevsky et al¹⁰ assessed difference in lipid profile in various types of TA, that is, smokeless tobacco (SLT), smoking tobacco (ST), and a combination (Comb) usage

of both forms. TC, HDL, and LDL were much lower in the OC group compared with control. Although these parameters were low in the OPC group compared with controls, the difference was not significant. On histological analysis, TC and HDL were found to decrease marginally with loss of tumor differentiation in OC. No correlation was found between the mean serum lipid profiles and degree of dysplasia in OLP. TC and HDL were significantly lesser in all forms of TA when compared with control.

Kaur et al¹¹ conducted a study to determine the significance of total cholesterol (TC), high-density lipoprotein cholesterol (HDL) triglycerides as tumor markers in the diagnosis of OSMF. Thirty cases each of clinically diagnosed and histopathologically confirmed oral squamous cell carcinoma (OSCC), OSMF, and 30 controls were selected and serum lipid analysis was done. The serum lipid level was statistically significantly lowered in patients with oral cancer and OSMF when compared with normal control group. There is an inverse relationship between serum lipid profile pattern in oral cancer as well as in OSMF. Patel et al¹² found a significant decrease in plasma total cholesterol and HDL in patients with oral precancerous condition (OPC) as compared to control.

CONCLUSION

There was significant reduction in lipid profile in patients with squamous cell carcinoma due to its utilization by the cells during the cancer process.

REFERENCES

1. Lohe VK, Degwekar SS, Bhowate RR, Kadu RP, Dangore SB. Evaluation of correlation of serum lipid profile in patients with oral cancer and precancer and its association with tobacco abuse. *J Oral Pathol Med* 2010;39:141-8.
2. Ghosh G, Jayaram KM, Patil RV, Malik S. Alteration in serum lipid profile pattern in oral squamous cell carcinoma patients. *J Contemporary Dent Pract* 2011;12:451-6.
3. Gupta S, Gupta S. Alterations in serum lipid profile pattern in oral cancer and oral precancer lesion and condition: A clinical study. *Ind J Dent* 2011;2:1-7.
4. Kumar P, Singh A, Sankhla B, Naraniya A. Alteration in plasma lipid profile in oral submucous fibrosis patients: A case control study. *South Asian J Cancer* 2013;2:147-9.
5. Patel PS, Shah MH, Jha FP, Raval GN, Rawal RM, Patel MM, *et al.* Alteration in plasma lipid profile pattern in head and neck cancer and oral precancerous conditions. *Ind J Cancer* 2004;41:25-31.
6. Subbulakshmi AC, Mohan N, Thiruneervannan R, Naveen S. Comparative evaluation of serum lipid profile in patients with oral submucous fibrosis and oral squamous cell carcinoma with that of control subjects: A case control study. *J Pharm Bioall Sci* 2017;9:S191-6.
7. Rajendran R. Benign and malignant tumors of the oral cavity. *Shafer's Textbook of Oral Pathology*. 6th ed. New Delhi: Elsevier; 2009. p. 101-5.
8. Manoharan S, Kolanjiappan K, Suresh K, Panjamurthy K. Lipid peroxidation & antioxidants status in patients with oral squamous cell carcinoma. *Indian J Med Res* 2005;122:529-34.
9. Chawda JG, Jain SS, Patel HR, Chaduvula N, Patel K. The relationship between serum lipid levels and the risk of oral cancer. *Indian J Med Paediatr Oncol* 2011;32:34-7.
10. Kritchevsky SB, Wilcosky TC, Morris DL, Truong KN, Tyroler HA. Changes in plasma lipid and lipoprotein cholesterol and weight prior to the diagnosis of cancer. *Cancer Res* 1991;51:3198-203.
11. Kaur M, Veaseemuddin S, Punia RP, Bains SK. Comparative evaluation of alterations in serum lipid profile in patients with oral leukoplakia. *J Adv Med Dent Sci Res* 2018; 6 (1): 17-19.
12. Patel PS, Shah MH, Jha FP, Raval GN, Rawal RM, Patel MM, *et al.* Alterations in plasma lipid profile patterns in head and neck cancer and oral precancerous conditions. *Indian J Cancer* 2004;41:25-31