(e) ISSN Online: 2321-9599

(p) ISSN Print: 2348-6805

Original Research

Serum Lipid Profile Level in Oral Squamous Cell Carcinoma patients

Sandeep Gupta[1], Santosh kumar Gupta[2]

[1]Senior lecturer, Department of Oral Pathology, People's College of Dental Sciences, Bhopal (M. P)
[2]Professor, Department of Pathology, People's Medical College, Bhopal (M. P)

***ABSTRACT*:**
Background: Oral cancer is the sixth most common cancer worldwide with a report of 75000–80000 new cases in India annually. It 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 50 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 50 patients, males were 36 and females were 14. The mean cholesterol in OSCC patients was 142.7mg/dl and in control was 179.2 mg/dl, HDL was 36.8 mg/dl in OSCC and 54.6 mg/dl in control, triglycerides was 104.2 mg/dl in OSCC and 147.2 mg/dl in control. LDL was 104.4 mg/dl in OSCC and 139.6 mg/dl in control. VLDL was 23.5 mg/dl in OSCC and 22.5 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. It is due to its utilization by the cells during the cancer process.
Key words: Lipid profile, oral cancer, Triglyceride.

Corresponding Author: Dr Sandeep Gupta, Senior lecturer, Department of Oral Pathology, People's College of Dental Sciences, Bhopal (M. P)

This article may be cited as: Gupta S, Gupta SK. Assessment of serum lipid profile level in patients with oral squamous cell carcinoma- A clinical study. J Adv Med Dent Scie Res 2014;2(1):149-151.

INTRODUCTION

Oral cancer is the sixth most common cancer worldwide with a report of 75000–80000 new cases in India annually. It 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]

Hypocholesterolemia has been observed in patients with cancers of various organs; however the potential role of alterations in serum lipid profile in oral cancer remains controversial.

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 Department of Oral Pathology, People's College of Dental Sciences, Bhopal (M. P). Participants were divided into two groups. Group 1 comprised of 50 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 50 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- 50		
Gender	**Male**	**Female**
Number	36	14

Table I, shows that out of 50 patients, males were 36 and females were 14.

Table II Assessment of lipid profile in both the groups

Lipids (Mean)	OSCC (Group 1)	Control (Group 2)	P value
Cholesterol	142.7	179.2	0.05
HDL	36.8	54.6	0.02
Triglyceride	104.2	147.2	0.01
LDL	104.4	139.6	0.010
VLDL	23.5	22.5	0.92

Table II, shows that mean cholesterol in OSCC patients was 142.7mg/dl and in control was 179.2 mg/dl, HDL was 36.8 mg/dl in OSCC and 54.6 mg/dl in control, triglycerides was 104.2 mg/dl in OSCC and 147.2 mg/dl in control. LDL was 104.4 mg/dl in OSCC and 139.6 mg/dl in control. VLDL was 23.5 mg/dl in OSCC and 22.5 mg/dl in control. The difference was significant (P< 0.05).

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 lipidmetabolism.[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 50 patients, males were 36 and females were 14. Chawda et al[9]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 142.7mg/dl and in control was 179.2 mg/dl, HDL was 36.8 mg/dl in OSCC and 54.6 mg/dl in control, triglycerides was 104.2 mg/dl in OSCC and 147.2 mg/dl in control. LDL was 104.4 mg/dl in OSCC and 139.6 mg/dl in control. VLDL was 23.5 mg/dl in OSCC and 22.5 mg/dl in control. The difference was significant (P< 0.05).
Kritchevsky et al[10] 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.
Ghosh G et al[11] observed a significant decrease in serum total cholesterol (TC) levels, triglyceride levels (p = 0.007, p = 0.029 respectively) were observed in oral squamous cell carcinoma patients as compared to the healthy control group. The mean serum HDLC levels (p = 0.003) were significantly lowered in the tobacco habituates when compared to the healthy controls. The mean serum total cholesterol levels were significantly lower in subjects with oral squamous cell carcinoma (p = 0.000) as compared to the tobacco habituates. Likewise, LDLC levels and TC:HDLC ratios (p = 0.000 and p =

0.000 respectively) were significantly decreased in oral squamous cell carcinoma patients as compared to the tobacco habituates. This study strengthens the evidence of an inverse relationship between serum lipid levels and oral squamous cell carcinoma. They concluded that the lower level of serum cholesterol and other lipid constituents in the patients is thought to be due to their increased usage by tumor cells for new membrane biogenesis. Patel et al[12]found a significant decrease in plasma total cholesterol and HDLC 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 oralcancer and precancer and its association with tobacco abuse. J OralPathol Med 2010;39:141-8.
2. Ghosh G, Jayaram KM, Patil RV, Malik S. Alteration in serum lipidprofile pattern in oral squamous cell carcinoma patients. J ContemporaryDent Pract 2011;12:451-6.
3. Gupta S, Gupta S. Alterations in serum lipid profile pattern in oralcancer and oral precancer lesion and condition: A clinical study. Ind JDent 2011;2:1-7.
4. Kumar P, Singh A, Sankhla B, Naraniya A. Alteration in plasma lipidprofile in oral submucous fibrosis patients: A case control study. SouthAsian 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 andoral precancerous conditions. Ind J Cancer 2004;41:25-31.
6. Mehrotra R, Pandya S, Chaudhary AK, Singh HP, Jaiswal RK, Singh M, et al. Lipid profile in oral submucous fibrosis. Lipids Health Dis. 2009;8:29.
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. Lipidperoxidation & antioxidants status in patients with oral squamouscell carcinoma. Indian J Med Res 2005;122:529‑34.
9. Chawda JG, Jain SS, Patel HR, Chaduvula N, Patel K. Therelationship between serum lipid levels and the risk of oralcancer. 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 cholesteroland weight prior to the diagnosis of cancer. Cancer Res1991;51:3198-203.
11. Ghosh G, Jayaram KM, Patil RV, Malik S. Alterations in serum lipid profile patterns in oral squamous cell carcinoma patients. J Contemp Dent Pract. 2011 Nov 1;12(6):451-6.
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