

Assessment of Serum Lipid Profile among Oral Squamous Cell Carcinoma Patients: A Case-Control Study

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ABSTRACT

Background: Of the most common epithelial malignant disorder affecting a significant human population is Oral squamous cell carcinoma (OSCC). One of the key factors involved in controlling cancer is early cancer detection. Hence; we planned the present study to assess the serum lipid profile among oral cancer patients.

Materials & Methods: The present investigation included assessment and comparison of serum lipid profile among patients with OSCC and normal healthy controls. A total of 25 OSCC patients and 25 healthy controls were included in the present study. 5 ml blood was withdrawn and was sent to the laboratory under aseptic conditions in a sterile disposable syringe. Auto analyser was used for evaluation of serum lipid profile. All the results obtained were compiled in Microsoft excel sheet. All the results were assessed by SPSS software version 7.0.

Results: Significant results were obtained while comparing the mean TC levels and mean high density lipoprotein (HDL) levels among the subjects of both the study groups. We also observed significant difference while comparing the mean low density lipoprotein (LDL) values among the subjects of the study group and the control group. Non- significant results were obtained while comparing the serum triglycerides value in between the subjects of the study group and the control group.

Conclusion: Alteration in serum lipid profile does occur in oral cancer patients.

Keywords: Lipid, Oral squamous cell carcinoma, Serum.

INTRODUCTION

Of the most common epithelial malignant disorder affecting a significant human population is Oral squamous cell carcinoma (OSCC). The major etiologic factor associated with development of OSCC is tobacco. Although early diagnosis is relatively easy, presentation with advanced disease is not uncommon.^{1- 3} The standard of care is primary surgical resection with or without postoperative adjuvant therapy. Improvements in surgical techniques combined with the routine use of postoperative radiation or chemoradiation

therapy have resulted in improved survival statistics over the past decade.^{4- 6} One of the key factors involved in controlling cancer is early cancer detection.⁵ Hence; we planned the present study to assess the serum lipid profile among oral cancer patients.

MATERIALS & METHODS

The present investigation was carried out in the department of oral pathology of the dental institute and it included assessment and comparison of serum lipid profile among patients with OSCC and

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normal healthy controls. Written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 25 OSCC patients and 25 healthy controls were included in the present study. Diagnosis of OSCC was confirmed based on the histopathologic findings. Diagnosis was confirmed by experienced and skilled oral pathologist. All the subjects were called in the morning time and blood samples were obtained. 5 ml blood was withdrawn and was sent to the laboratory under aseptic conditions in a sterile disposable syringe. Auto analyser was used for evaluation of serum lipid profile. All the results obtained were compiled in Microsoft excel sheet. All the results were assessed by SPSS software version 7.0. Chi- square test was for evaluation of level of significance. P- value of less than 0.05 was taken as significant.

RESULTS

Table 1 shows the demographic data of the subjects of the present study. Mean age of the subjects of the OSCC group was 49.5 years. Mean age of the subjects of the healthy control group was 47.8 years. There were 15 males in the OSCC group while there were 16 males in the control group. Mean Total cholesterol (TC) levels of the subjects of the OSCC group and the control group was 179.2 mg/dl and 212.8 mg/dl respectively. Mean high density lipoprotein value of the subjects of the OSCC group and the healthy control group was 46.5 and 53.9 mg/dl respectively. Significant results were obtained while comparing the mean TC levels and mean high density lipoprotein (HDL) levels among the subjects of both the study groups. We also observed significant difference while comparing the mean low density lipoprotein (LDL) values among the subjects of the study group and the control group. Non- significant results were obtained while comparing the serum triglycerides value in between the subjects of the study group and the control group.

DISCUSSION

Even though an affordable, acceptable, easy to use, accurate, and effective screening test for oral cancer is available in high-risk countries, a decision to introduce population-based screening should take into account the level of health service development and available resources to meet the increased

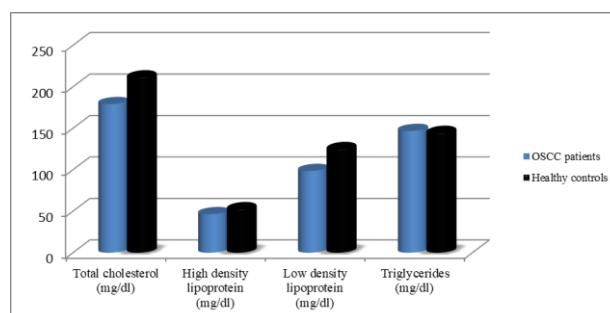
treatment demand that screening generates. The target population for oral cancer screening consists

Table 1: Demographic details.

Parameter	OSCC patients	Healthy controls
Mean age (years)	49.5	47.8
Number of subjects	25	25
Males	15	16
Females	10	9

Table 2: Comparison of mean serum lipid profile among OSCC patients and healthy controls.

Serum lipid profile	OSCC patients	Healthy controls	P- value
Total cholesterol (mg/dl)	179.2	212.8	0.02*
High density lipoprotein (mg/dl)	46.5	53.9	0.03*
Low density lipoprotein (mg/dl)	98.6	126.4	0.01*
Triglycerides (mg/dl)	146.8	145.9	0.28



Graph 1: Comparison of mean serum lipid profile among OSCC patients and healthy controls.

of those age 30 years and older who use tobacco and/or alcohol.⁷⁻⁹ In the present study, mean Total cholesterol (TC) levels of the subjects of the OSCC group and the control group was 179.2 mg/dl and 212.8 mg/dl respectively. Mean high density lipoprotein value of the subjects of the OSCC group and the healthy control group was 46.5 and 53.9 mg/dl respectively. Significant results were obtained while comparing the mean TC levels and mean high density lipoprotein (HDL) levels among the subjects of both the study groups. Mehta R et al

compared the levels of plasma total cholesterol (TC), low density lipoprotein (LDL), high density lipoprotein (HDL), very low density lipoprotein (VLDL) and triglycerides in patients with oral precancerous lesions/conditions, oral cancer and normal subjects. The study comprised of 60 patients with oral precancerous lesions/conditions, 60 patients with oral cancer and a control group of 60 healthy individuals. The diagnosis of oral precancerous lesions/conditions and oral cancer was confirmed histopathologically. Under aseptic condition 5 ml venous blood of overnight fasting patient was withdrawn from each individual. Serum was separated by centrifugation and plasma levels of TC, LDL, HDL, VLDL and triglycerides were estimated. Descriptive statistical analysis has been carried out in the present study. Significance is assessed at 5% level of significance. Statistically significant decrease in levels of plasma TC, LDL, HDL, VLDL and triglycerides was observed in the precancerous and cancerous groups as compared to the control group. On comparison between precancerous and cancerous groups, significant decrease was observed in cancerous group. The change in lipid levels may have an early diagnostic or prognostic role in the oral premalignant lesions/conditions and oral cancer.¹⁰

We also observed significant difference while comparing the mean low density lipoprotein (LDL) values among the subjects of the study group and the control group. Non-significant results were obtained while comparing the serum triglycerides value in between the subjects of the study group and the control group. Garg D et al evaluated the alterations in serum lipid profile in untreated patients of oral submucous fibrosis (OSMF), oral leukoplakia, and oral lichen planus and proven cases of oral cancer with respect to healthy controls. In this case control study, 20 clinically and histopathologically proven patients of oral precancer and oral cancer each were compared with 20 healthy controls. In these groups, serum lipids including: (i) Total cholesterol. (ii) Triglycerides (TGL). (iii) High density lipoprotein cholesterol (HDL), low density lipoprotein cholesterol (LDL) and very low density lipoprotein cholesterol (VLDL) were analyzed. Decrease in plasma total cholesterol, triglycerides, HDL, LDL, VLDL in the subjects with the oral precancer and oral cancer as compared to the controls was

statistically significant. There was also decrease in plasma levels of TGL and VLDL in oral cancer subjects as compared to precancer subjects. Thus, it was found that there is an inverse relationship between plasma lipid levels and patients. Post-operative morbidity was increasing along with more operating time and increase in the depth of mandibular third molar impaction.¹¹ Subbulakshmi AC et al evaluated the serum lipid profile among untreated oral squamous cell carcinoma (OSCC) and oral submucous fibrosis (OSMF) patients. This study was done in three groups of patients - OSMF, OSCC, and control. There are twenty participants in each group. Calorimetric method using semi-autoanalyzer 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. The decrease in lipid levels in OSMF and OSCC patients is due to its utilization by the cells during the cancer process.¹²

CONCLUSION

Under the light of above mentioned data, the authors conclude that alterations in serum lipid profile do occur in oral cancer patients. However; further studies are recommended to for assessment of prognostic role of serum lipid profile of OSCC patients.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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