

ORIGINAL ARTICLE

Evaluation of Serum Lipid Profile in Patients Suffering from Oral Submucous Fibrosis

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ABSTRACT

Objective: To evaluate and compare the levels of plasma total cholesterol, low density lipoprotein, very low density lipoprotein, high density lipoprotein and triglycerides among the oral sub mucous fibrosis patients and control group.

Design of the Study: It's a comparative study done with simple random sampling.

Study Settings: The study was done at Oral pathology department of Fatima Jinnah Dental College and Hospital from 01-04-2017 to 30-09-2017.

Material and Methods: This research was conducted on 30 clinically diagnosed cases of OSMF and 30 healthy controls. The total lipid profile including triglycerides, total cholesterol, low density lipoprotein cholesterol, high density lipoprotein cholesterol and very low density lipoprotein cholesterol was evaluated.

Results of the Study: CTSS The serum lipid values were decreased considerably in the cases than in the controls.

Conclusion: There is a converse affiliation between lipid profile and occurrence of oral submucous fibrosis. Consequently the reduced lipid values may be used as a valuable tool in the premature detection of oral submucous fibrosis.

Keywords: Oral squamous cell carcinoma, lipids, premalignant condition

INTRODUCTION

Oral submucous fibrosis (OSMF) is a continual malady of the oral cavity that is featured by a juxta epithelial inflammatory response succeeded by fibroelastic changes in the sub mucosa. Mostly it occurs in South East Asia but cases in countries like China, Kenya, Saudi Arabia, UK and other parts of the world have also been reported.¹ In a research conducted in central India demonstrated OSMF as the main disease in a set of premalignant conditions. Yashveer et al. acknowledged that areca nut is the principal etiological source for OSMF development.² Neeta et al, established that pan masala having areca nut is the foremost hazardous reason for OSMF, especially in the early ages and the histopathological grading of OSMF got raised with the increased time of usage and frequency.³ Prevalence of OSMF was found to be 6.6% among school going children in Karachi in a study by Khan et al.⁴ Over use of chewing tobacco like areca nut causes lipid peroxidation to increase, which in turn causes increased breakdown of membrane structure mostly the lipids and can be contributory to carcinogenesis.⁵ OSMF affects the oral tissues and upper part of esophagus as well, characterized by the blanching and rigorousness of mucosa leading to constrained mouth opening and scorching perception.⁶

Lipids are chief cell membrane apparatus that are vital for different natural behavior as well as cell development and division of normal and malignant tissues. In the cases of colorectal and breast carcinomas, a change in the circulatory cholesterol levels has been observed in different studies A change in the circulatory cholesterol

levels has been observed to have a link in the malignancy of colorectal and breast.⁷ In literature the proof of correlation between plasma lipid profile and the lesions of head and neck region is scarce. So, there is a need for a prognostic indicator which is simple, time-effective and inexpensive which provides consistent results in OSMF cases. In future, the lipid profile values can be very helpful diagnostic and prognostic criteria in assessing the outcome of OSMF. The lipid profile values assessment can be an important prognostic indicator in OSMF patients helpful in assessing the prognosis of such cases in upcoming generations.

The current study attempts to find an association between serum lipid values of OSMF patients. Furthermore, this may also depict the pathophysiology for the development of these lesions.

MATERIAL AND METHODS

The research was conducted on 30 clinically diagnosed patients of OSMF attending the Department of Oral Pathology at Fatima Jinnah Dental College and Hospital Karachi, Pakistan from 01-04-2017 to 30-09-2017, after due approval of the ethical committee. WHO sample size calculator was used to compute sample size. Case proforma including patient's consent was taken to record detailed history as well as habits and complete lipid profile estimation. The OSMF cases were staged clinically according to Haider et al 8. depending upon the existence of fibrous bands at different anatomical locations, and functional staging was carried out depending upon the range of mouth opening how much is the mouth opens.

Clinical Staging:

- 1 Stage : bands on faucial surface only
- 2 Stage : buccal bands and faucial bands
- 3 Stage : labial bands and faucial bands

Functional Staging:

- 1 Stage : >20 mm of mouth opening
- 2 Stage : 11-19 mm of mouth opening
- 3 Stage : <10 mm of mouth opening

30 healthy persons, matched for genders and age, which presented to the department and had no undesirable habits or oral lesions, or any major medical issue, were included as controls. Informed consent was obtained from the participants in both groups.

Exclusion criteria included patients with systemic diseases that may be linked with change in the serum lipid values like obese individuals, cases of uncontrolled diabetes mellitus, disorders related to thyroid gland, patients having cardiac problems, hepatic dysfunction, malabsorption syndrome and patients who had received any treatment for OSMF in the past.

Fasting (12 hours) blood samples of 3ml were collected in plain vials. After centrifugation, serum was collected and stored in the refrigerator at 4°C till analysis was done. Serum levels of TC, TG, HDL, LDL and VLDL were analyzed by using the urban kits in ERBA Chem – 5 Plus Analyzer (TRANSASIA Bio Medicals Pvt Ltd.).

STUDY RESULTS

Present study comprised, out of 30 OSMF cases and 30 individuals in control group, matched by gender, 20(66.6%) were males and 10 (33.3%) were females with the age range of 32-68 years. The control group comprised of 20 (66.6%) males and 10 (33.33%) females, with age range of 28-57 years. (Table I). Normality test was applied to check the normal distribution of the data, which showed that data is not equally distributed, so Mann-Whitney U test was applied. Mean standard deviations of all lipid values among case and controls are given in Table II. Mean values of TC, VLDL, LDL, HDL, and TG in cases and controls are given in figure 1. Table III depicts the output of the Mann-Whitney U test ANOVA analysis and statistically significant difference between the means of both the groups. The significance value (p = .021), is less than 0.05; and shows a statistically significant difference in the mean values (in mg/dl) of TC, VLDL, HDL, LDL and TG both in Cases and Controls.

Table I: Gender and age wise distribution of controls and cases

Details	Cases	Controls
Number of subjects	30	30
Age range	32-68 years	28-57 years
Males	20	20
Females	10	10

Table II: Mean + Standard Deviation of all Lipid Values among cases and controls

Patient groups	TC	VLDL	LDL	HDL	TG
OSMF Group	123.8±8.36	13.6±2.84	81.9±8.4	21.2±4.7	78.5±14.3
Control Group	181.4±11.21	23.4±3.62	119.2±16.7	38.7±5.8	121.6±15.8
P value	0.004	0.03	0.01	0.005	0.02

Table III: Comparison of mean values of lipid profile parameters between OSMF and healthy groups using Mann-Whitney U test

Lipid profile mg/dl	Groups	Mean	Std dev.	Mean diff	P value
TC	OSMF	123.8	8.36	-57.6	0.004
	Control	181.4	11.21		
VLDL	OSMF	13.6	2.84	-9.8	0.03
	Control	23.4	3.62		
LDL	OSMF	81.9	8.4	-37.3	0.01
	Control	119.2	16.7		
HDL	OSMF	21.2	4.7	-17.5	0.005
	Control	38.7	5.8		
TG	OSMF	78.5	14.3	-43.1	0.02
	Control	121.6	15.8		

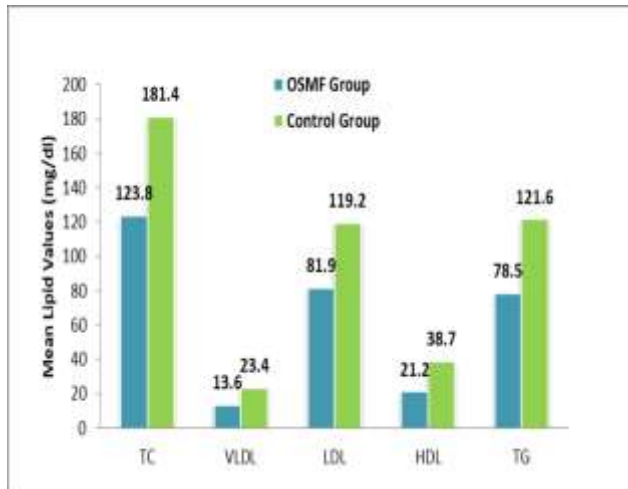


Fig 1: Mean Values (in mg/dl) of TC, VLDL, LDL, HDL and TG in Cases and Controls

DISCUSSION

The relationship of serum lipid levels in coronary heart diseases is well documented. Yashveer and Pankaj stated an inverse relationship among blood cholesterol values and hazards for the malignancy and gives foundation for supplementary epidemiological studies.² Ever since, contradictory hypotheses have been place forward by various researchers. A number of researchers suggested that hypercholesterolemia is a causative reason for cancer growth.⁹ There are mostly three different challenging hypotheses which entails the details about the inverse relationship involving cholesterol concentrations and the occurrence of malignancy. Initially, lower cholesterol readings, even prior to the appearance or recognition of cancerous lesion, can be a consequence of the malignancy. Secondly, low cholesterol levels may lead to the development of malignancy but the link with tumor is secondary, i.e. cholesterol acts as an indicator for various other contributory set of variables. Thirdly, lower cholesterol readings may lead

to the progression of malignancy and may be linked with the occurrence of various types of malignancies.⁹

The pathogenesis of OSMF includes the enhanced collagen fabrication owing to alkaloids in betel nut. The collagen clearance is also reduced due to flawed extracellular matrix and stabilization of collagen. The serum levels of copper present in betel quid, increases as OSMF is progressively transferred into Oral squamous cell carcinoma. OSCC. In plasma; cholesterol and triglycerides are packaged into lipoproteins and these lipoproteins are subsequently used up and degraded by the cells which are required for working of cells. It is supposed that levels of lipids differ with the presence or absence of tumor. Lipids are being used in maintaining the integrity of cells in the tumor tissue. Hypolipidemia often goes neglected and often doctors are ignorant of the etiology and result of hypolipidemia. Lower values of lipids have been stated to be related with septicaemia, seriously ill patients and at times with the present malignancy. It might not play a part in the development process of cancer but lesser values of lipids may show fast mitosis in tumor.¹⁰

Results of the current study are parallel to the work done by Anusha et al., in which they showed a substantial decrease in HDL, TC, TG, LDL and VLDL in patients with OSMF as compared to the controls.¹¹

A study was done by Sachdev and colleagues have shown that all parameters of lipid profile were reduced significantly in the precancerous study strata as compared to the carcinoma study group. 12

Vyas and co-researchers reported decrease in TC, LDL, HDL, and VLDL in subjects with oral squamous cell carcinoma, OSMF and leukoplakia as equated to healthy beings 13.

Anand conducted a study on clinically and histopathologically identified cases of oral carcinoma and OSMF comparative to normal healthy individuals and stated an inverse proportion of lipid profile among oral cancer and OSMF patient 14.

In another study by Sharma et al a significant decrease in serum cholesterol, LDL in OSMF patients was observed, which was comparable to the present study but in contrast to that they also observed increased levels of HDL 15.

In comparison to our study Goyal et al., found no statistically substantial changes in the lipid profile parameters namely TC, TGs, HDL, VLDL and LDL in cases of oral precancerous lesions, when compared to controls 16.

The present study exhibited a significant decrease in all the lipid parameters, namely TC, TG, HDL, VLDL and LDL in OSMF patients with respect to clinical and functional staging.

The results of all parameters with respect to lipid profile experienced in current research are not in harmony with some researches done on OSMF patients. This may be due to differences among the studies when variety of parameters is measured, independently. This contradiction in the lipid profile values in OSMF may be due to several causes such as nutritional status, age, alcohol use, body mass index, and exercising habits.

CONCLUSION

The TC, HDL, VLDL, LDL and TG levels in OSMF patients were reduced as compared with controls, suggesting that a lower serum lipid profile is a helpful marker to diagnose early changes taking place in the cells of potentially malignant disorders like OSMF. The TC and HDL levels were decreased as the clinical stage of OSMF advances indicating their role as a reliable biochemical indicator.

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