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Research Article

**STUDY TO KNOW THE ASSOCIATION BETWEEN ORAL  
SQUAMOUS CELL CARCINOMA AND SERUM LIPID  
PROFILE**<sup>1</sup>Dr.Fatima Arshad, <sup>2</sup>Dr.Muhammad Zeeshan Azam, <sup>3</sup>Dr.Abrar UI Haq<sup>1</sup>Fatima Memorial College Of Medicine and Dentistry, <sup>2</sup>Medical Officer RHC Qazian , Gujar Khan , Rawalpindi, <sup>3</sup>Medical Officer DHQ Hospital , Narowal.**Article Received:** January 2019**Accepted:** February 2019**Published:** March 2019**Abstract:**

*Alterations in plasma lipid profile have relation with various cancers and pre-cancerous conditions of the oral cavity. Low lipid levels serve as a marker and prognostic indicator for the early detection of pre-cancerous and cancerous oral diseases.*

***Objective:** The purpose of this study was to determine the changes in plasma lipid profile in patients with squamous cell carcinoma of the mouth (SCC).*

***Study Design:** An Observational Study.*

***Place and Duration:** In the Oral and Maxillofacial Surgery Department and in collaboration with Medicine Unit I of Nishter Hospital Multan for Six months duration from August 2018 to January 2019.*

***Methods:** 120 patients, 60 SCC and 60 healthy controls were included in the study. Low density lipoproteins (LDL), Very low density lipoproteins (VLDL), total cholesterol (TC), fasting plasma lipid profile including triglycerides (TG) and high density lipoproteins (HDL) were recorded with an automated analyzer. Obtained data were analyzed by independent 't' sample test.*

***Results:** When compared with the control group, a statistically significant decrease in total cholesterol was observed in plasma, TG, VLDL, HDL and LDL in patients with oral SCC.*

***Conclusion:** Low lipid levels associated with oral SCC suggest an inverse relationship between oral cancer and serum lipid profile. Reduction in lipid levels can be considered as a useful biochemical marker for early oral malignancy detection.*

***Key words:** oral carcinoma of squamous cells, lipids, biochemical marker.*

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**INTRODUCTION:**

Oral cancer is most commonly seen in middle-aged and elderly people, but younger adults have documented a disturbing number in young adults in recent years. The most common cancer include Oral cancer and the tenth most common cause of death. Smoking have been one of the main contributors to oral cancer. Alcohol and Tobacco use consumption act synergistically result in causing oral cavity cancer. Survival rates and Cancer incidence are clearly associated with socioeconomic status. Low-income and disadvantaged groups are often more exposed to preventable risk factors such as alcohol, environmental carcinogens, tobacco use and infectious agents. These groups have minimum access to health education and health care. The biological activity of oral squamous cell carcinoma (SCC) is considered to be high, medium and poorly differentiated as descriptive and classified. Lipids are important components of the cell membrane required for various biological functions, including cell growth and malignant tissues and division of normal cells. The main alkaloid in the Areca nut undergoes nitrosation and leads to N-Nitrosamine, which may have cytotoxic effect on the cells. These carcinogens result in formation of reactive oxygen species and free radicals which are the cause for the high peroxidation/oxidation rate of polyunsaturated fatty acids. This peroxidation also releases peroxide radicals. This damages the cell membrane and its basic component and may play a role in carcinogenesis / tumorigenesis. Lipids play a important role in maintaining cell integrity. Because of lipid peroxidation, lipids, including lipoproteins, triglycerides and TC are used for novel biogenesis of membrane. Cells perform their circulatory requirements by synthesizing by metabolism or by cleaving the main fraction of lipoproteins such as LDL, HDL and VLDL.

**MATERIALS AND METHODS:**

This Observational Study was carried out by the Oral and Maxillofacial Surgery Department and in collaboration with Medicine Unit I of Nishtar Hospital Multan for Six months duration from August 2018 to January 2019. Sixty patients with clinically and histopathologically tested oral squamous cell carcinoma (SCC) were enrolled in the 20-80 age group in Kanpur LLR hospitals. The study subjects are composed of the following 2 groups:

Group 1: Oral SCC Group.

Group 2: Control group.

Group 1 (oral SCC group), sixty patients in the 20 to 80 age group were diagnosed with histopathology confirmed oral squamous cell carcinoma.

Group 2 (control group) consisted of an equal number of healthy subjects in the same age group, gender was the same as in the oral SCC group, and no harmful oral habits or linked oral lesions were present. Exclusion criteria: Patients with diseases / systemic conditions that may be associated with changes in serum levels of lipid profile such as obesity, diabetes mellitus, hypertension, thyroid disorder, chronic liver disease, chronic heart disease, malabsorption syndrome were excluded from the study.

About the study method, Patients were explained in detail. Officially informed consent was received in writing. Systemic and detailed examination of the oral cavity was performed. Histopathological examination was performed in all cases after incisional biopsy of the affected area of the oral cavity. Statistical analysis: All variables of the study were statistically analyzed by an independent t-test performed by the SPSS, version 18.0.

**RESULTS:**

The mean age of patients with oral SCC was 51.40. Maximum patients (22,36,67%) were between 40 and 50 years of age. The ratio between men and women was 1.73: 1. Mean serum cholesterol, serum LDL, serum VLDL, serum TG and serum HDL concentrations in the oral SCC group were 125.97 mg / dL, 38.86 mg / dL, 64.45 mg / dL, 23.20 mg / dL, and 103.23, respectively. mg / dL. However, the corresponding values in the control group were 184.38 mg / dL, 57.44 mg / dL, 86.50 mg / dL, 36.17 mg / dL and 116.25 mg / dL, respectively. A statistically significant reduction was observed between the control group and all SCC cases for all lipid parameters [P <0.001].

**DISCUSSION:**

Tobacco consumption is a known etiologic factor in the development of precancerous oral diseases and head / neck cancer. Cholesterol, an amphipathic lipid, is a fundamental structural component of all cell membranes and the outer layer of plasma lipoproteins. It is offered as free cholesterol or combined with a long chain fatty acid such as cholesterol and plasma lipoprotein tissues. It is synthesized from acetyl-CoA in many tissues and is eliminated from the body as cholesterol or bile salts.



A: Patients with OSMF showing trismus (mouth opening 1 finger)



B: Blanching and fibrosis in OSMF



C: Malignancy of buccal mucosa



D: Tongue malignancy

In circulation, the lipoprotein carries free cholesterol and readily balances cholesterol in other lipoproteins and membranes. Free radicals and reactive oxygen species are produced from tobacco carcinogens responsible for the high oxidation / oxidation rate of

polyunsaturated fatty acids. This results in more use of lipids containing the total cholesterol, lipoproteins, and triglycerides for the new biogenesis of the membrane.



Cells meet these requirements by circulating or synthesizing by metabolism, or by cleaving the main lipoprotein fractions such as VLDL, LDL and HDL. Previous studies have shown changes in plasma lipid profiles in the head and neck and other cancers. In this study, we observed a significant decrease in total cholesterol in plasma, HDL, LDL, VLDL and TG compared to the control group in patients with oral SCC.

### CONCLUSION:

Our study shows that there is an inverse association between oral SCC and serum lipid profile. Changes in plasma lipid levels can be used as a prognostic or diagnostic biochemical marker for early detection of malignant and premalignant oral conditions. However, a detailed study of the size of the large sample and the role of cholesterol in the neoplasm should be done to better understand this inverse relationship of serum lipid profiles and malignant and malignant oral conditions.

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