



## Original Research

### Evaluation of Serum Lipid Profile Level in Oral Cancer Patients

<sup>1</sup>Shivendra Choudhary, <sup>2</sup>Ritika Agarwal, <sup>3</sup>Sakshi Kumari.

<sup>1</sup>Professor & Head, Department of Dentistry, Patna Medical College and Hospital, Patna, <sup>2</sup>Senior resident, Department of Dentistry, Patna Medical College and Hospital, Patna, <sup>3</sup>Private Dental Practitioner, Ashiana Nagar, Patna.

#### Abstract

**Background:** The present study was conducted to assess serum lipid profile in patients with oral cancer. **Materials & Methods:** This study was conducted on 112 SCC patients of both genders. 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 112 patients, males were 82 and females were 30. The mean triglycerides was 102.2 mg/dl in SCC and 142.4 mg/dl in control, cholesterol in SCC patients was 140.4 mg/dl and in control was 182.6 mg/dl, HDL was 36.2 mg/dl in SCC and 54.8 mg/dl in control, LDL was 102.4 mg/dl in SCC and 138.6 mg/dl in control. VLDL was 24.8 mg/dl in SCC and 23.4 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 cancer.

**Key words:** Lipid, Cholesterol, Oral cancer

**Corresponding Author:** Dr. Ritika Agarwal, Senior Resident, Department of Dentistry, Patna Medical College and Hospital, Patna. [[Email:dr.ritikaagarwal@gmail.com](mailto:dr.ritikaagarwal@gmail.com)]

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#### INTRODUCTION

Oral cancer is the sixth most common cancer worldwide with a report of 75000–

80000 new cases in India annually. Nearly 94% of all oral cancer cases are oral squamous cell carcinomas (OSCC). 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.<sup>1</sup>

Early detection is otherwise called secondary prevention. Early detection is the key for oral cancer control. Premalignant lesions and conditions usually precede oral cancer.<sup>2</sup> 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.<sup>3</sup>

Hypolipidemia may result due to the direct lipid lowering effect of tumor cells or secondary to malfunction of the lipid metabolism.<sup>4</sup> There are three main competing hypotheses to explain the relation between low cholesterol and oral cancer. Low cholesterol may be an indicator of cancer process even before cancer manifests clinically.<sup>5</sup> 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. Low cholesterol levels may precede the development of cancer and may be causally associated with some forms of cancer.<sup>6</sup> The present study was conducted to assess serum lipid profile in oral cancer patients.

## MATERIALS & METHODS

This study was conducted on 112 patients with oral cancer of both genders. Age and gender matched control was also selected.

Ethical clearance was taken prior to the study. All subjects were informed regarding the study and written consent was obtained.

Patient data such as name, age, gender etc was recorded. A through oral examination was performed in all patients. 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 thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

## RESULTS

Total- 112		
Gender	Male	Female
Number	82	30

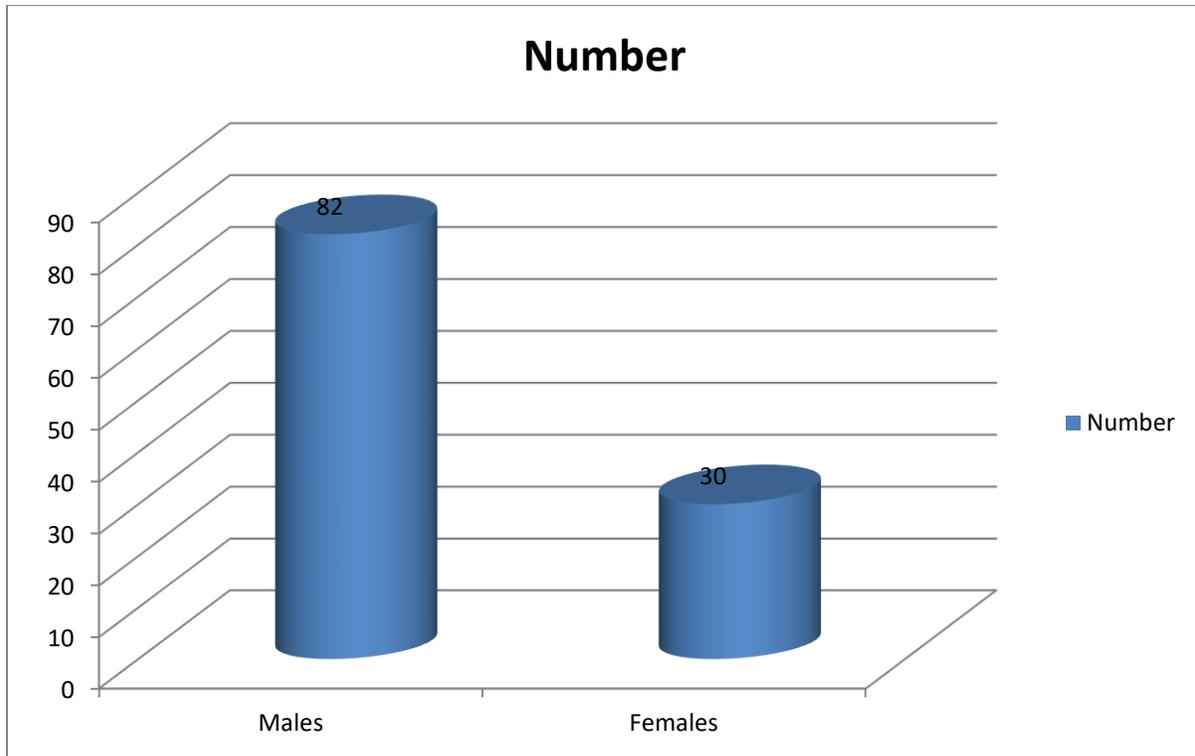
**Table I: Distribution of patients**

Table I, graph I shows that out of 112 patients, males were 82 and females were 30.

Table II, graph II shows that mean triglycerides was 102.2 mg/dl in SCC and 142.4 mg/dl in control, cholesterol in SCC patients was 140.4 mg/dl and in control was 182.6 mg/dl, HDL was 36.2 mg/dl in SCC and 54.8 mg/dl in control, LDL was 102.4 mg/dl in SCC and 138.6 mg/dl in control. VLDL was 24.8 mg/dl in SCC and 23.4 mg/dl in control. The difference was significant ( $P < 0.05$ ).

## DISCUSSION

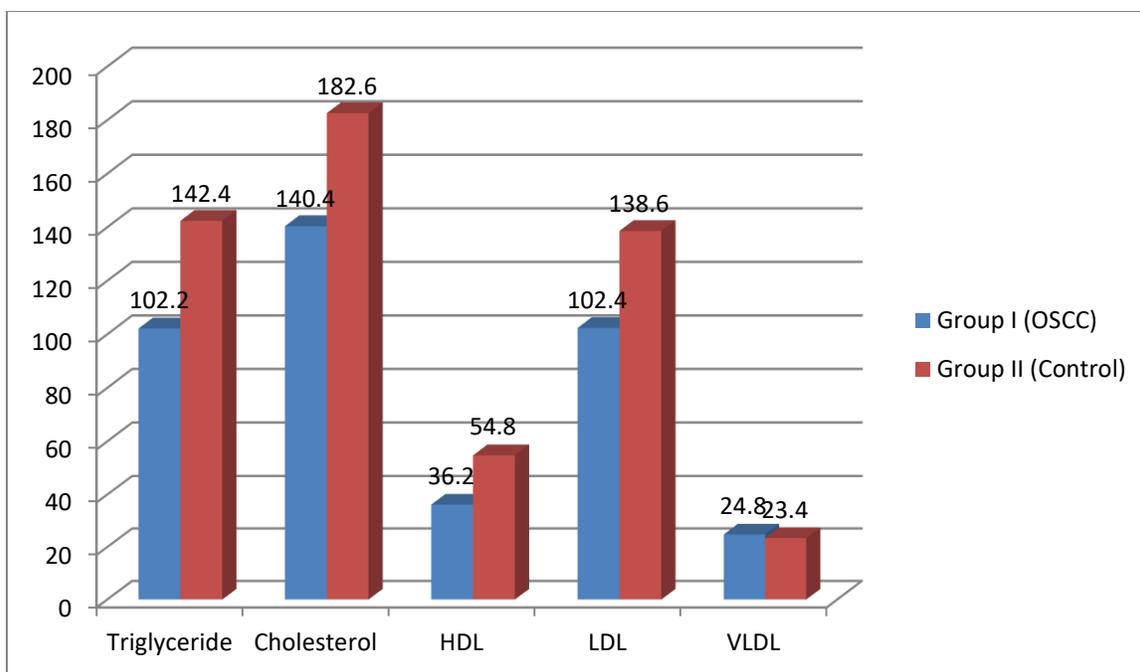
Hypolipidemia can be considered as one of the biochemical marker in early detection of cancer. Research studies reveal an association of plasma lipids and lipoproteins



**Graph I: Distribution of patients**

<b>Lipids</b>	<b>Group I (OSCC)</b>	<b>Group II (Control)</b>	<b>P value</b>
Triglyceride	102.2	142.4	0.02
Cholesterol	140.4	182.6	0.04
HDL	36.2	54.8	0.01
LDL	102.4	138.6	0.02
VLDL	24.8	23.4	0.91

**Table II: Assessment of lipid profile**



**Graph II: Assessment of lipid profile**

with different cancer.<sup>7</sup> These lipids get altered quantitatively in the serum during tumour development and may be considered as one of the biochemical markers in the early detection of cancer. In some malignant diseases, blood cholesterol undergoes early and significant changes.<sup>8</sup> Low levels of cholesterol in the proliferating tissues and in blood compartments could be due to the process of carcinogenesis.<sup>9</sup> The present study was conducted to assess serum lipid profile in oral cancer patients.

In present study, out of 112 patients, males were 82 and females were 30. Kumar et al<sup>10</sup> found that 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. There may be an inverse relationship between serum lipid profile and OC. No significant reduction in lipid profile was observed in the OLP group. This may indicate that hypolipidemia is a late change occurring during carcinogenesis or is an effect rather than the cause of cancer.

We found that mean triglycerides was 102.2 mg/dl in SCC and 142.4 mg/dl in control, cholesterol in SCC patients was 140.4 mg/dl and in control was 182.6 mg/dl, HDL was 36.2 mg/dl in SCC and 54.8 mg/dl in control, LDL was 102.4 mg/dl in SCC and 138.6 mg/dl in control. VLDL was 24.8 mg/dl in SCC and 23.4 mg/dl in control. Chawda et al<sup>11</sup> conducted a study 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.

Subalakshmi et al<sup>12</sup> 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.

The shortcoming of the study is small sample size.

## CONCLUSION

Authors found that there was significant reduction in lipid profile in patients with oral cancer.

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