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## Assessment of lipid profile status in oral squamous cell carcinoma patients

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Article History:	ABSTRACT
Received on: 30.03.2018 Revised on: 12.05.2018 Accepted on: 15.05.2018	Malignant tumor of the squamous epithelium is known as the squamous cell carcinoma. It has been a major cause of morbidity and mortality worldwide. It is causing a major health problem across the world. 40 Patients were selected from those attending the outpatient department of Saveetha Dental College, and hospitals. Among them 20 are normal healthy individuals and 20 are patients with OSCC. Informed consent was obtained from the patient before sample collection. 5ml of fasting venous blood was collected and centrifuged in 3000rpm for 10 minutes. Then serum was separated and then it is analysed for serum cholesterol by Cholesterol esterase-Oxidase method, Serum triglycerides by colorimetric enzymatic method, HDL-c by Phosphotungstic acid method, LDL-c and VLDL-c were calculated by Friedwald's formula. There is a significant increase in LDH ( $p < 0.005$ ) levels in OSCC patients when compared with healthy controls, by the influence of OSCC on LDH metabolism. Our findings suggest that assessment of LDH can be used an effective biochemical diagnostic tool for the manifestation of OSCC and other type of malignancy in patients.
<b>Keywords:</b>	
OSCC, Cell damage, Carcinoma, Oral cavity, Lipid profile status	



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### INTRODUCTION

Malignant tumor of the squamous epithelium is known as the squamous cell carcinoma. It has been a major cause of morbidity and mortality worldwide. It is causing a major health problem across the world. Among the most common cancers seen in both Indian men and women as can be gauged from the records of the National Cancer Registry Programme. From the clinical point of view squamous cell carcinoma are important. They have a wide variety of fields, including medicine, pathology, surgery, nuclear medicine, and radiation therapy (Sanjeev Narang *et al.*, 2014,

Adigun IA *et al.*, 2006, Iype EM *et al.*, 2001). It have been identified that oral cavity squamous cell carcinoma contains cancer stem cells. Cancer stem cells have the ability for proliferation and perpetual self-renewal, producing downstream progenitor cells and cancer cells that drive tumor growth. Studies of many cancer types including oral cavity squamous cell carcinoma have identified cancer stem cells using specific markers (Ranui Baillie., 2017, Warnakulasuriya S., 2009, Krolls SO *et al.*, 1976)

Although during the past decades large progress has been made in cancer research, throughout the world oral squamous cell carcinoma remains a malignancy. Screening method and public awareness are lacking. Due to this, disease is diagnosed at an advanced stage accompanied by metastasis in patients, and it leads to a poor prognosis. 50% is five-year survival rate of this disease (Wang *et al.*, 2017, Bloebaum M *et al.*, 2014). Squamous cell carcinoma being the most prevalent type in the oral cancer which is the common cancer throughout the world. Approximately there are 260000 new cases of oral squamous cell carcinoma and 124000 deaths worldwide annually (Vinay Randhawa *et al.*, 2015).

During the recent years inspite of the advanced therapeutic strategies applied in treating oral squamous cell carcinoma, only little improvement was achieved in the overall prognosis of this disease, and the five-year survival rate is still below 50%. Therefore the far better understanding of the molecular determinants in oral squamous cell carcinoma prognosis and valuable biomarkers is still needed (Yao Yuan *et al.*, 2017, Messadi DV., 2013). Early detection is otherwise called secondary prevention. The key for oral cancer control is the

early detection. Oral cancer is preceded by premalignant lesions and conditions. 6<sup>th</sup> most common cancer worldwide is the oral cancer. 94% of the total oral cancer cases are oral squamous cell carcinomas the relation of high lipid profile and coronary heart disease is well established. By contrast, the relation of serum lipid profile and oral cancer is inversely proportional (A. Cicilia Subbulakshmi., 2017).

The most common malignant tumor of the oral cavity, oropharynx and lip (90% of the cases) is the oral squamous cell carcinoma. Oral carcinoma

Individuals with other systemic illness like cardiovascular disease, Renal failure, Stroke, endocrine illness.

Immunocompromised individuals

### Sample collection and Procedure

Informed consent was obtained from the patient before sample collection. 5ml of fasting venous blood was collected and distributed in plain collection tubes and centrifuged in 3000rpm for 10 minutes. Then serum was separated and then it is analysed for serum cholesterol by Cholesterol esterase-Oxidase method, Serum triglycerides by colorimetric enzymatic method, HDL-c by Phosphotungtic acid method, LDL-c and VLDL-c were calculated by Friedwald's formula.

### RESULTS AND DISCUSSION

Patients with cancer have been observed that they are affected with hypocholesterolemia, however the alterations of the potential role in serum lipid profile in oral cancer remains controversial. The fasting blood lipid profile, including total cholesterol (TC), triglyceride (TG), high density lipoprotein (HDL), and low density lipoprotein

**Table 1: Mean, SD and Significance value of LH, FSH and LH, FSH ratio in two groups**

Parameters	Controls	OSMF patients	p-Value
TC	159.8 ± 25.87	114.5 ± 19.86	<0.05
TGL	100.2 ± 64.26	93.9 ± 19.63	<0.07
HDL	37.4 ± 8.51	24.14 ± 6.45	<0.05
LDL	102.5 ± 27.67	71.58 ± 17.6	<0.05
VLDL	20.5 ± 12.82	18.78 ± 3.93	<0.09

which is a serious disorder, creates great mortality and morbidity in the human population. The oral carcinoma has a lower incidence when compared to other malignant tumors. Discomfort of the patient and the mortality as a consequence of both the tumor itself and of the treatment itself is relatively higher (S. Rohini *et al.*, 2017, Shaha A *et al.*, 1984, Fu K *et al.*, 1976)

### MATERIALS AND METHOD

Patients were selected from those attending the outpatient department of Saveetha Dental College, and hospitals and divided into two groups as follows

Group I – Normal healthy individuals – 20 individuals

Group II - Patients with OSCC – 20 individuals

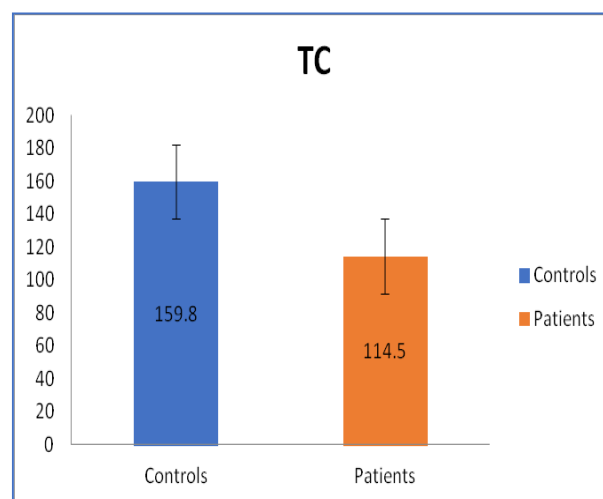
### Inclusion Criteria

Individuals with the age group of thirty five to Sixty five years

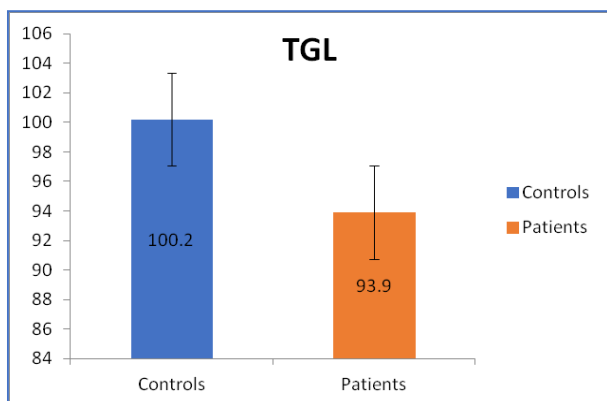
OSCC Patients

### Exclusion Criteria

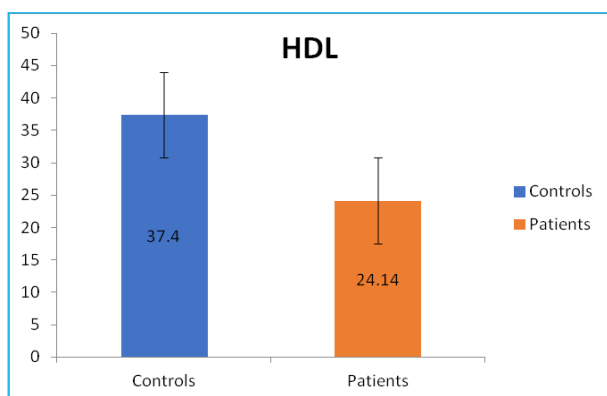
(LDL), was evaluated (Martin Grimm *et al.*, 2014).



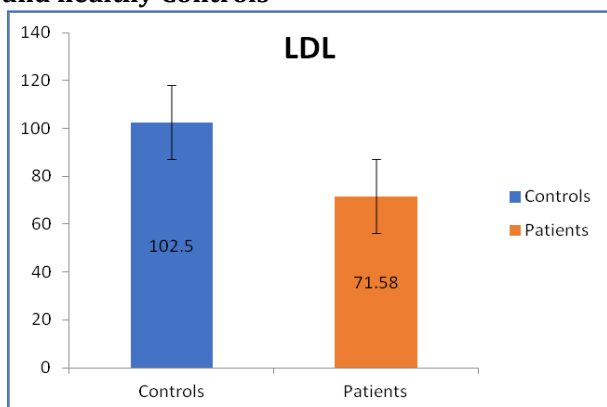
**Figure 1: Changes in total cholesterol levels between OSMF and healthy Controls**



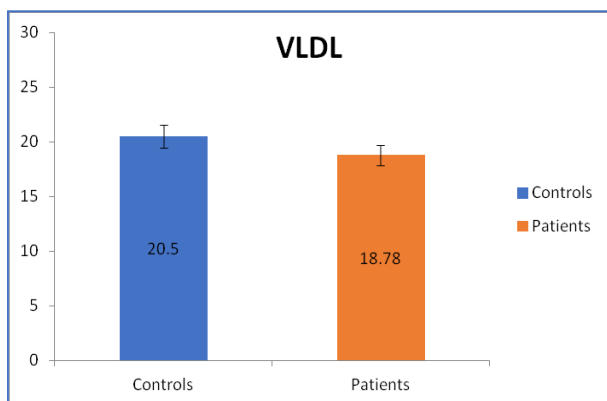
**Figure 2: Changes in triglyceride levels between OSMF and healthy Controls**



**Figure 3: Changes in HDL levels between OSMF and healthy Controls**



**Figure 4: Changes in LDL levels between OSMF and healthy Controls**



**Figure 5: Changes in VLDL levels between OSMF and healthy Controls**

Mitochondrial enzymes such as SDHA, SDHB, ATP synthase are found in increased expression in oral squamous cell carcinoma patients when compared with normal oral mucosa. This study is done when the investigation on cancer metabolism-related proteins in the carcinogenesis of oral squamous cell carcinoma are conducted (Qihui Wang *et al.*, 2014).

Oral squamous cell carcinoma patients in early stage are observed with greater level of lactic acid. More energy is required for the excessive proliferation of cancer cells, therefore large amounts of lactic acid is often produced by the tumors by carrying out glycolysis even under aerobic conditions (Qihui Wang *et al.*, 2014). Major public health problem worldwide is represented by the cancers of the upper aerodigestive tract. In 2014, 73,240 new cases were diagnosed, with an estimated mortality of 27,450 (Yao Liu *et al.*, 2015).

Even before the detection or manifestation of cancer, lower cholesterol values may be a result of the cancer process and may precede the cancer development and be casually associated with the cancer occurrence of some forms. As compared to the controls, a significant reduction in plasma total cholesterol, TGs and high density lipoprotein was observed in patients of oral cancer. Among the two groups, both plasma low density lipoprotein and VLDL levels didn't reveal any significant difference. The patients with tumors have reduced levels of serum HDL and this may be a consequence of the disease. In the change of overall pattern of total cholesterol, the role of LDL and TGs is less clear (Jyoti G *et al.*, 2011). Mean and standard deviation of TC, TGL, HDL, LDL and VLDL is more in healthy individuals when compared to affected individuals that is patients with oral squamous cell carcinoma.

## CONCLUSION

There is a significant increase in LDH ( $p < 0.005$ ) levels in OSCC patients when compared with healthy controls, by the influence of OSCC on LDH metabolism. Our findings suggest that assessment of LDH can be used an effective biochemical diagnostic tool for the manifestation of OSCC and other type of malignancy in patients.

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