

# Study of Biochemical Profile in Newly Diagnosed Oral Squamous Cell Carcinoma in North Indian Populations- A Tertiary Care Centre Study

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## ABSTRACT

**Background:** Globally 'oral cancer' is the sixth most common cause of cancer-related death. Oral cancer accounts for approximately 30-40% of all cancers in India. The present study was conducted to assess biochemical parameters in newly diagnosed oral cancer.

**Methods:** The present study was conducted to assess biochemical parameters in newly diagnosed oral squamous cell carcinoma. The study was conducted at GSVM Medical College, Kanpur among 196 newly diagnosed patients with oral squamous cell carcinoma and 196 healthy individuals. Serum samples from the participants were collected. The data were expressed as mean±SD. Values of  $p < 0.001$  were considered significant.

**Results:** The present study was conducted to assess biochemical parameters in newly diagnosed oral cancer. The study was conducted at GSVM Medical College, Kanpur among 196 newly diagnosed patients with oral cancer and 196 healthy individuals. The levels of random blood sugar, serum total bilirubin, direct bilirubin, indirect bilirubin, glutamic-oxalacetic transaminase (SGOT), glutamic-pyruvic transaminase (SGPT), Serum Protein, Serum Albumin, Serum Creatinine, Serum Sodium, Serum Potassium were increased in cases as compared to controls. The  $p$ -value was non-significant for all the biochemical parameters.

**Conclusion:** The present study concluded that the levels of Random Blood Sugar, Serum Total Bilirubin, Direct Bilirubin, Indirect Bilirubin, SGOT, SGPT, Serum Protein, Serum Albumin, Serum Creatinine, Serum Sodium, Serum Potassium were increased in cases as compared to healthy controls.

**Key-words:** Biochemical parameters, Oral cancer, Oral squamous cell carcinoma (OSCC), Serum

## INTRODUCTION

Oral cancer is the sixth most prevalent cancer worldwide [1,2]. In the Indian subcontinent, it ranks among the three most common types of cancer [3]. The history of oral cancer shows that it is preceded in more than 70% of the patients by a recognized premalignant lesion (PML) [4].

Even though it is one of the most mortal cancers, the survival rate could be enhanced by quick diagnosis and referrals [5]. So, to prevent various pathological manifestations and for early detections, variation in the levels of trace elements needs to be treated [6]. In connection with the visual localization of tumors of the oropharyngeal zone, the primary diagnosis is most often established based on examination and biopsy data [7]. In the current international practical recommendations, the standard diagnostic method is computer tomography (CT) and/or magnetic resonance imaging with intravenous contrast [8]. Various studies are devoted to the use of "omics" technologies, including genomic,

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transcriptomic, proteomic and metabolic profiling for the detection of biomarkers of oral cancer in tissues, blood, cell lines, urine, etc [9-11]. The prognostic significance of various factors has been studied in a sufficient number of studies, but at the moment, unfortunately, no single indicator or combination thereof has been found that unequivocally allows us to assess the prognosis of the course of the disease and the risk of its relapse [12-14]. The aim of the study was a comprehensive assessment of the biochemical parameters in newly diagnosed oral squamous cell carcinoma.

## MATERIALS AND METHODS

**Study design and subjects-** The present study was conducted to assess biochemical parameters in newly diagnosed oral squamous cell carcinoma at GSVM Medical College, Kanpur among 196 newly diagnosed patients of OSCC and 196 healthy individuals. Only those subjects, who have given written permission in the form of informed consent were included in the study.

### Oral squamous cell carcinoma cases

#### Inclusion criteria

- ✓ Subjects newly diagnosed with histopathologically confirmed Oral SCC.
- ✓ Age group between 21 to 90 years, male or female.

#### Exclusion criteria

- ✓ The cases should not have yet received any specific therapy (radiotherapy, chemotherapy or any other adjunctive treatments).

### Healthy control group

#### Inclusion criteria

- ✓ Subjects without any oral lesion.
- ✓ Sex-matched subjects aged between 21 to 65 years.

#### Exclusion criteria

- ✓ No current use of prescribed or non-prescribed medications.
- ✓ No chronic acute illness like diabetes, hypertension, TB, HIV positive or any other endocrinal disorder.
- ✓ Pregnant and lactating subjects were excluded.

**Sample collection-** Serum samples from the participants were collected before any therapeutic procedure as below mentioned:

**Serum-** 5 ml of the intravenous blood sample from each participant was drawn through venipuncture. The whole blood was collected into a plain vacutainer until blood

clot formation. Serum was separated by centrifugation at approximately 1000×g for 10 min and removed serum and was stored at -20°C till the further process of biochemical analysis.

**Statistical Analysis-** Data were tabulated and statistically analyzed using the software Statistical Package for Social Sciences (SPSS, v. 22). The data were expressed as mean±SD Values of  $p < 0.001$  were considered significant.

**Ethical Approval-** The study was ethically approved by the Ethics Committee of GSVM Medical College, Kanpur (39/E.C./Acad./24.07.2019). This case-control study was carried out at the JK Cancer Institute, Kanpur and the Department of Dental Surgery and Biochemistry, GSVM Medical College, Kanpur, India.

## RESULTS

The present study was conducted to assess biochemical parameters in newly diagnosed oral cancer. The study was conducted at GSVM Medical College, Kanpur among 196 newly diagnosed patients with oral cancer and 196 healthy individuals. The Biochemical profiles among the study groups are summarized in Table 1. The random blood sugar levels in cases were 131.69 mg/dL and controls were 128.6 mg/dL. The haemoglobin levels in cases were 12.78 g/dL and in controls were 12.99 g/dL. The Serum Total Bilirubin levels in cases were 1.08 mg/dL and in controls were 1.00 mg/dL. The Direct Bilirubin levels in cases were 0.79 mg/dL and in controls were 0.68 mg/dL. Indirect Bilirubin levels in cases were 0.75 mg/dL and in controls were 0.65 mg/dL. The SGOT levels in cases were 23.36 mg/dL and in controls were 21.44 mg/dL. The SGPT levels in cases were 34.02 mg/dL and in controls were 32.03 mg/dL. The serum protein levels in cases were 7.72 g/dL and in controls were 7.61 g/dL. The serum albumin levels in cases were 4.14 g/dL and in controls were 4.65 g/dL. The serum creatinine levels in cases were 1.16 g/dL and in controls were 1.0 g/dL. The serum sodium levels in cases were 133.8 g/dL and in controls were 131.4 g/dL. The serum potassium levels in cases were 3.91 g/dL and in controls were 3.60 g/dL. The p-value was non-significant for all the biochemical parameters. The levels of random blood sugar, serum total bilirubin, direct bilirubin, indirect bilirubin, SGOT, SGPT, serum protein, serum albumin, serum creatinine, serum sodium, serum potassium was increased in cases as compared to controls.

**Table 1:** Comparison of Biochemical parameters between cases and controls

Parameter	Case (Mean± SD)	Control (Mean± SD)	t-test	p-value
Random Blood Sugar	131.69±35.61	128.6±35.61	0.35	0.56
Haemoglobin	12.78±1.48	12.99±1.47	1.03	0.31
Serum Total Bilirubin	1.08±0.33	1.0±0.32	1.64	0.10
Direct Bilirubin	0.79±0.32	0.68±0.32	2.41	0.04
Indirect Bilirubin	0.75±0.33	0.65±0.33	2.12	0.03
SGOT	23.36±8.25	21.44±8.07	1.65	0.10
SGPT	34.02±23.16	32.03±23.19	0.3	0.76
Serum Protein	7.72±0.74	7.61±0.72	0.61	0.69
Serum Albumin	4.14±0.58	4.65±0.55	2.19	0.13
Serum Creatinine	1.16±0.37	1.0±0.14	2.07	0.24
Serum Sodium	133.8±8.74	131.4±6.83	1.16	0.55
Serum Potassium	3.91±0.53	3.60±0.49	1.38	0.32

SGOT: Serum glutamic-oxaloacetic transaminase, SGPT: Serum glutamic pyruvic transaminase

## DISCUSSION

Oral cancer is prevalent worldwide and it is also a common cause of morbidity and mortality. Cancers of the oral cavity are surface malignancies whose signs and symptoms can be recognized early. The typical demographic profile of an individual with OSCC, as described in the literature is that of a man in the fifth to the eighth decade of life, who is a smoker and a drinker [2,4,16,17]. The random blood sugar levels in cases were 131.69 mg/dL and controls were 128.6 mg/dL. The haemoglobin levels in cases were 12.78 g/dL and in controls were 12.99 g/dL. The Serum Total Bilirubin levels in cases were 1.08mg/dL and in controls were 1 mg/dL. The Direct Bilirubin levels in cases were 0.79 mg/dL and in controls were 0.68 mg/dL. Indirect Bilirubin levels in cases were 0.75 mg/dL and in controls were 0.65 mg/dL. The SGOT levels in cases were 23.36 mg/dL and in controls were 21.44 mg/dL. Serum SGPT levels in cases were 34.02 mg/dL and in controls were 32.03 mg/dL. The serum protein levels in cases were 7.72g/dL and in controls were 7.61 g/dL. The serum albumin levels in cases were 4.14 g/dL and in controls were 4.65 g/dL. The serum creatinine levels in cases were 1.16 g/dL and in controls were 1.0 g/dL. The serum sodium levels in cases were 133.8 g/dL and in controls were 131.4 g/dL. The serum potassium levels in cases were 3.91 g/dL and

in controls were 3.60 g/dL. The *p-value* was non-significant for all the biochemical parameters. The levels of random blood sugar, serum total bilirubin, direct bilirubin, indirect bilirubin, sgot, sgpt, serum protein, serum albumin, serum creatinine, serum sodium, serum potassium was increased in cases as compared to controls.

Against the background of OSCC, according to some data, the author noted an increase in the level of calcium, inorganic phosphate, magnesium, and sodium and a decrease in the level of potassium.<sup>[18]</sup> The studies of Shetty *et al.*<sup>[19]</sup> and Sanjay *et al.*<sup>[20]</sup> respectively, have reported increased values of salivary LDH and total proteins in oral cavity lesions. Awasthi<sup>[21]</sup> suggests that concurrent analysis of salivary CYFRA 21-1, LDH, total protein, and amylase can be utilized for early detection of oral cancer.

## CONCLUSIONS

The present study concluded that the levels of Random Blood Sugar, Serum Total Bilirubin, Direct Bilirubin, Indirect Bilirubin, SGOT, SGPT, Serum Protein, Serum Albumin, Serum Creatinine, Serum Sodium, Serum Potassium were increased in cases as compared to healthy controls.

Prospective use of these markers in the clinical setting will enable early detection, prediction of response to



treatment, improvement in treatment selection, and early detection of tumour recurrence for disease monitoring. However, most of these markers for OSCC are yet to be validated.

#### CONTRIBUTION OF AUTHORS

**Research concept-** Dr. Shreya Nigoskar, Shilpi Singh

**Research design-** Dr. Prashant Tripathi

**Supervision-** Dr. Shreya Nigoskar, Dr. Prashant Tripathi

**Materials-** Shilpi Singh

**Data collection-** Dr. Pramod Kumar Singh, Shilpi Singh

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