

Comparison of Serum and Salivary Cancer Antigen 125 as Biomarker in Oral Squamous Cell Carcinoma - A Cross - Sectional Study

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Abstract

Background: Cancer antigen 125 (CA-125), a glycoprotein commonly detected at increased levels in a variety of tumors, has shown potential as a biomarker for a variety of malignancies.

Objective: To determine the potential of CA-125 as a prognostic marker by comparing and contrasting its serum and salivary concentrations among patients with oral squamous cell carcinoma and healthy individuals.

Methods: Thirty participants were categorized into two groups OSCC and controls. Unstimulated saliva and venous blood were obtained. CA-125 concentrations were quantified using enzyme - linked immunosorbent assay kits. Statistical evaluations were conducted.

Results: The O group had considerably higher mean serum and salivary levels of CA-125 than the control group ($P < 0.01$). Serum and salivary CA-125 levels showed a strong positive correlation in pre- therapy patient group ($r = +0.1233$). Controls ($r = -0.0294$), mid therapy ($r = -0.2959$) and post therapy ($r = -0.3086$) has negative correlation coefficients.

Conclusion: Serum and salivary CA-125 levels increased in oral cancer, suggesting salivary testing as a noninvasive prognostic tool for early oral cancer detection.

Keywords: CA-125, Bio Marker, Oral Cancer, Salivary.

Introduction

Head and neck cancers comprise a heterogeneous group of tumors, each with distinct etiologies. Among them, cancers of the oral cavity and oropharynx represent a common malignancy, with an increasing incidence in younger individuals. Oral cancer accounts for approximately 3% of all malignancies in men and 2% in women. Although it most frequently occurs in middle-aged and older adults, recent years have seen a growing number of cases documented in younger populations.

Bast et al were the pioneers in the study of CA125, introducing it in 1981.¹ As an epithelial - derived marker, CA-125 may be detected in both saliva and serum, indicating local and systemic disease alterations.²

The purpose of the present study was to estimate CA-125 levels in both serum and saliva of patients with oral squamous cell carcinoma at three distinct phases: pre-

therapy, mid-therapy, and post-therapy. By analyzing these levels across treatment stages, the study aimed to develop a strategy for improving therapeutic response and guiding further lines of management.

Aims and Objectives

- To assess use of salivary CA-125 estimation as a screening procedure.
- To determine the effect of Surgery and chemotherapy / radiotherapy on serum and salivary CA-125 levels.
- To determine the correlation between serum and salivary CA-125 levels

Materials and methods

This cross sectional observational study was conducted from January 2025 to July 2026 in Department of ENT, Shri Balaji Institute of Medical Science, Raipur (C.G.). Admitted patients of oral cancers from Dept. of ENT, were selected for study.

Inclusion criteria

Participants were above 18 year of age, divided in two groups. In patient group diagnosed cases of oral malignancy which were admitted and planned for surgery in the Dept. of ENT were selected. In control group healthy individuals were taken from outdoor patients of Department of ENT, with history of addiction. Serum and saliva were collected from them.

Exclusion criteria

Patients with carcinoma breast, colorectal carcinoma, ovarian cyst, fibroid, endometriosis, inflammatory bowel disease, cirrhosis, peritonitis, pancreatitis were excluded.

Methodology

All the cases and controls were registered with name, age, sex, address, education, occupation, religion, dietary habits and addiction. Detailed history included presenting complaints with duration of onset, personal and addiction history, family history, treatment history. Complete general, local, systemic and hemato-radiological

examination was done. TNM classification for staging of tumour was as per AJCC.

Sample collection

Serum and saliva were collected from the patients in the pre-therapy phase i.e. before surgery, mid-therapy phase (3 weeks after surgery) and post therapy phases (3 weeks after completion of radiotherapy/chemotherapy) to evaluate the effect of therapy on serum and salivary CA-125 levels.

Saliva was collected under no stimulatory conditions in a quiet room between 8 AM and noon, at least 1 hour after eating. Patients were asked to generate saliva and to spit into a wide test tube for 10 minutes. The saliva was centrifuged at 3000 RPM for 10 minutes to remove squamous cells and debris. The supernatant fluid was stored at - 80°C. 5 ml of morning sample of blood was collected in a plain vial without additives. Blood was allowed to clot and the supernatant was centrifuged at 3000 RPM for 10 minutes and the serum fraction was separated & stored at -80°C. Salivary & serum samples were analysed & CA-125 was determined with a micro particle enzyme-linked immunoassay.

Analysis

All the data collected were analysed to find out values in controls and diseased group and sensitivity & specificity of serum and salivary levels of CA-125 were assessed. In present study, salivary level of CA-125 439.23 U/ml and serum level upto 2.275 U/ml was considered to be within normal. Both these values were average readings of healthy control group.

Observations

The present study was conducted in the Department of ENT, Shri Balaji Institute of Medical Science, Raipur from January 2025 to July 2026. Study included 15 diagnosed cases of Oral Squamous Cell Carcinoma and

15 healthy controls. All the clinical characteristics are mentioned in Table 1.

Table 1: Clinical Characteristics

Variables	n	%
Gender		
Male	21	70
Female	9	30
Age group		
31-40	4	13.33
41-50	13	43.33
51-60	4	13
61-70	8	26
71-80	1	3.33
Duration of lesion		
0-3 month	4	26.66
3-6 month	5	33.33
6-12 month	5	33.33
>12 month	1	6.66
Site of lesion		
Buccal mucosa	7	46.66
Lip	1	6.66
Alveolus	2	13.33
Tongue	3	20
Gingivobuccal	1	6.66
Angle of mouth	1	6.66
Lymph node involvement		
N0	6	40
N1	9	60
N2	0	0
N3	0	0
TNM Staging		
Stage I	1	6.66
Stage II	4	26.66
Stage III	9	60
Stage IV	1	6.66
HPE grading		
Well differentiated	14	93
Moderately differentiated	1	7

The commonest age group involved in order of frequency was 61 to 70 years followed by 41 to 50 years. The youngest patient was 26-year-old and the oldest patient belong to 65 years of age. The male to female ratio was 3:2. In all the cases estimation of CA-125 was done in serum and saliva in pre-therapy, mid-therapy and post-therapy cases. In the controls, estimation of serum and

saliva CA-125 was done only once. Serum CA-125 values of < 5 U/ml was present in 86% of controls. The lowest and highest value was 0.15 U/ml and 7.24 U/ml respectively in controls. In the cases, lowest and highest limit of seru1m CA-125 level was 2.18 U/ml and 125.8 U/ml respectively. 46% of the cases showed values below 5U/ml (Table 2). Salivary CA-125 values of <300 U/ml was present in 67% of controls. The lowest and highest value was 134.2 U/ml and 1211.5 U/ml respectively. In the cases lowest and highest limit of CA-125 level found was 146 U/ml and 5799.9 U/ml respectively. In 47% of the cases values were between 400 to 1000U/ml (Table 2).

In the pre-therapy phase, no case showed value of serum CA-125 below 2 U/ml while in the post-therapy phase 60% cases showed value of serum CA-125 below 2 U/ml (Table 3). Salivary CA-125 value of < 100 U/ml were found in 6.66% of cases in pre-therapy, and 66.66% of cases in post-therapy phase. 13.33 % of the cases showed a value between 5000 to 6000 U/ml in pre- therapy phase (Table 4).

Table 2: Serum and salivary CA 125 level in pre therapy cases and controls

Sn.	Cases			Controls		
	Age (Yrs)	Serum CA125 (U/ml)	Salivary CA 125 (U/ml)	Age (Yrs)	Serum CA125 (U/ml)	Salivary CA 125 (U/ml)
1.	33	3.07	476.8	35	0.15	177.1
2.	46	6.02	806.2	38	1.44	278.8
3.	48	4.35	433.1	39	1.28	277.9
4.	51	125.8	5799.9	41	0.01	948
5.	50	4.23	342.1	44	2.08	160
6.	51	12.18	543	45	1.76	228.1
7.	55	6.92	1281	45	3.53	233.6
8.	59	12.96	146	48	2.40	845.5
9.	60	7.18	409	49	1.78	184.9
10.	61	3.60	531	50	5.81	134.2
11.	63	7.55	1480	51	2.10	1211.5
12.	63	2.81	580	52	1.94	1094
13.	64	2.55	10.07	68	7.24	370

14.	65	2.18	5458	69	1.62	206.5
15.	65	13.70	4756	72	0.98	227.9

In the present study 70% of the cases reported to the hospital after developing ulcerative lesion from a period of 3 to 6 months. Cases reporting late with the disease showed elevated levels of CA-125. One of the patients with 3 to 6 months of lesion showed unduly high levels in serum and saliva.

The present study showed 46% of cases having lesion in Buccal mucosa, 20% with lesion over tongue, 13.33% with lesion at alveolus, 6.66% cases each of gingivo-buccal sulcus, lip and angle of mouth. 85.7% cases of Buccal mucosa lesion showed positive lymph nodes.

In the study, all the cases were posted for surgery.

Pre-therapy samples were collected before surgery, while mid-therapy samples were collected after completion of three weeks of surgery.

Table 3: Distribution of cases as per serum CA-125 level in pre, mid & post-therapy phases

S.N.	Serum CA-125 U/ml	Pre-therapy		Mid-therapy		Post-therapy	
		No of cases	%	No of cases	%	No of cases	%
1	0 to 2	0	0	3	20	9	60
2	2.1 to 4	5	33.33	4	26.66	3	20
3	4.1 to 6	2	13.33	4	26.66	2	13.33
4	6.1 to 8	4	26.66	1	6.66	0	0
5	8.1 to 10	0	0	1	6.66	0	0
6	10.1 to 12	0	0	1	6.66	0	0
7	12.1 to 14	3	20	0	0	0	0
8	14.1 to 16	0	0	1	6.66	1	6.66
9	16.1 to 18	0	0	0	0	0	0
10	18.1 to 20	0	0	0	0	0	0
11	> 20	1	6.66	0	0	0	0
Total		15	100	15	100	15	100

Table 4: Distribution of cases as per salivary CA-125 level in pre, mid & post-therapy phases

S.N.	Salivary CA-125 U/ml	Pre-therapy		Mid-therapy		Post-therapy	
		No of cases	%	No of cases	%	No of cases	%
1	0 to 100	1	6.66	2	13.33	10	66.66
2	101 to 200	1	6.66	3	20	2	13.33
3	201 to 300	0	0	3	20	0	0
4	301 to 400	1	6.66	4	26.66	2	13.33
5	401 to 1000	7	46.66	1	6.66	0	0
6	1001 to 2000	2	13.33	0	0	1	6.66
7	2001 to 3000	0	0	2	13.33	0	0
8	3001 to 4000	0	0	0	0	0	0
9	4001 to 5000	0	0	0	0	0	0
10	5001 to 6000	2	13.33	0	0	0	0
Total		15	100	15	100	15	100

86.66 % of the cases after surgery were subjected to radiation whose post therapy samples were collected three weeks of completion of radiotherapy. 6.66 % of the cases were given chemotherapy and the post-therapy samples were collected after completion of three weeks of chemotherapy. 6.66 % of the cases did not turn up for chemo and radiotherapy whose post-therapy samples were collected twelve weeks after surgery.

73% cases were taking mixed diet while 27% cases were relying on Vegetarian diet. Literacy rate was 53%. Maximum cases belonged to labour class. 46% of the cases showed systemic involvement in the form of hypertension, tuberculosis, peptic ulcer and post laparotomy.

Maximum number of cases presented with stage III of TNM classification followed by stage II. There was a single case each of stage I and stage IV. Lymph node positivity was encountered in 60% of the cases. All the cases were of squamous cell carcinoma with 93% well differentiated type and 7% moderately differentiated histopathologically.

Statistical analysis

In our present study estimation of CA-125 levels in serum showed a sensitivity of 93.33 % and a specificity of 73.33 % whereas estimation of CA-125 levels in saliva showed a sensitivity of 60% and a specificity of 73.33 %.

For calculating 't' values of CA-125 in serum and saliva of controls and patients in pre, mid and post-therapy phase, only 14 patients and controls were selected and

one patient with unduly high values due to some probable technical cause was excluded.

Table 5: Average serum & salivary CA 125 values of control, pre therapy, mid therapy and post therapy groups.

(a) Average CA 125 values of controls and pre therapy patients & obtained ‘t’ value						
Average CA 125 values in	Groups	N	M	$\sum X^2$	Obtained ‘t’ value	Level of significance
Serum	Controls	14	1.92	26.369	3.997	P<0.01 d f =26
	Pre therapy	14	6.377	200.270		
Saliva	Controls	14	392.42	1542483.132	1.820	P<0.05 d f =26
	Pre therapy	14	1232.85	37261109.913		
(b) Average CA 125 values of pre therapy and mid therapy patients & obtained ‘t’ value						
Average CA 125 values	Groups	N	M	$\sum X^2$	Obtained ‘t’ value	Level of significance
Serum	Pre therapy	14	6.377	200.270	1.690	NS d f =26
	Mid therapy	14	4.14	118.429		
Saliva	Pre therapy	14	1232.85	37261109.913	1.646	NS d f =26
	Mid therapy	14	436.47	5309093.696		
(c) Average CA 125 values of pre therapy and post therapy patients & obtained ‘t’ value						
Average CA 125 values	Groups	N	M	$\sum X^2$	Obtained ‘t’ value	Level of significance
Serum	Pre therapy	14	6.377	200.270	3.968	P<0.01 d f =26
	Post therapy	14	1.849	36.960		
Saliva	Pre therapy	14	1232.85	37261109.913	2.216	P<0.05 d f =26
	Post therapy	14	201.20	2306883.688		

A mean value of 15 healthy controls of salivary CA-125 was 439.23 U/ml. Average serum CA-125 value in controls and pre therapy patients were 1.92 and 6.377 respectively. Obtained 't' value was 3.997 with level of significance at 0.01. Average salivary CA-125 value in controls and pre therapy patients were 392.42 and 1232.85 respectively. Obtained 't' value was 1.820 with level of significance at 0.05 (Table 5a).

Average serum CA-125 value of patients in pre-therapy and mid-therapy was 6.377 and 4.14 respectively.

Obtained 't' value of 1.690 was not significant. Average salivary CA-125 value of patients in pre-therapy and mid A mean value of 15 healthy controls of salivary CA-125 was 439.23 U/ml. Average serum CA-125 value in controls and pre therapy patients were 1.92 and 6.377 respectively. Obtained 't' value was 3.997 with level of significance at 0.01. Average salivary CA-125 value in controls and pre therapy patients were 392.42 and 1232.85 respectively. Obtained 't' value was 1.820 with level of significance at 0.05 (Table 5a).

Average serum CA-125 value of patients in pre-therapy and mid-therapy was 6.377 and 4.14 respectively.

Obtained 't' value of 1.690 was not significant. Average salivary CA-125 value of patients in pre-therapy and mid therapy was 1232.85 and 436.67 respectively. Obtained t value of 1.646 was not significant (Table 5b).

Average serum CA-125 value of patients in pre-therapy and post therapy was 6.377 and 1.849 respectively. Obtained 't' value was 3.968 with level of significance at 0.01. Average salivary CA-125 value of patients in pre-therapy and post therapy was 1232.85 and 201.20 respectively. Obtained 't' value was 2.216 with level of Significance at 0.05 (Table 5c).

All the obtained correlation coefficients are negative except in the case of pre- therapy levels ($r = +0.1233$) where the correlation coefficient is positive (Table 6). Controls ($r = -0.0294$), mid therapy ($r = -0.2959$) and post therapy ($r = -0.3086$) has negative correlation coefficients.

Table 6: Results of correlation coefficient

Correlation Group	Obtained Correlation Coefficient
Controls	$r = -0.0294$
Pre therapy patients	$r = +0.1233$
Mid therapy patients	$r = -0.2959$
Post therapy patients	$r = -0.3086$

Discussion

Salivary levels of CA-125 have been observed to increase in patients with oral squamous cell carcinoma, possibly due to the enhanced shedding or discharge of malignant epithelial cells into the oral cavity. It is more practical to use saliva because it is easier to collect and guarantees consistent and trustworthy findings. A further advantage is patient compliance, which can be used for mass screening.³

In the present study, maximum numbers of cases were found in 5th & 7th decade. The average age of the diagnosis was 56 years. The youngest patient belonged to

33 years of age and the oldest patient belonged to 65 years of age. According to Silverman et al the average age of diagnosis of oral cancer is 60 years and 95% cases are above the age of 40 years.⁴

The present study showed that the carcinoma of oral cavity dominates in male, which co-incides with the study done by Silverman et al.⁴ Overall male: female ratio in this study was 3:2. Males are twice suffers as compared to females.

In the present study, Buccal mucosa was the commonest site involved followed by tongue, alveolus, gingivo-Buccal sulcus, lip and angle of mouth. A study done by Araft Ahmad et al revealed that the most frequent sites of occurrence were the Buccal mucosa, the tongue, followed by the labial mucosa, the alveolar, palate and the lips.⁵

In present study about 80% of cases were addicted to tobacco chewing or smoking which was associated with development of oral cancer in the later stages. Risk of malignancy was directly related to duration of exposure. All the cases were of squamous cell carcinoma with 93% well differentiated type and 7% moderately differentiated his to-pathologically.

Sensitivity of CA-125 estimation in serum and saliva

In our present study estimation of serum CA-125 levels showed a sensitivity of 93.33 % and a specificity of 73.33% whereas estimation of salivary CA-125 levels showed a sensitivity of 60% and a specificity of 73.33%. Mohammad R et al found Sensitivity of 48% and specificity of 78%. These findings suggested a moderate discriminatory capacity of salivary CA-125 in detecting OSCC.⁶

Relation of CA 125 in pre therapy patients

Average serum CA-125 values of control and pre therapy patients was 1.92 and 6.377 respectively. Obtained 't' value for this difference ($t=3.997$) is significant at 0.01 level of significance for 26 degrees of freedom in one-

tailed test. It can be concluded that the difference between the controls and patients in pre-therapy is genuine in regard to their serum CA-25 value. CA-125 values are considerably higher in patients in comparison to controls and hence can be considered as a sensitive estimate for screening procedure of OSCC patients.

Similarly, sensitivity of CA-125 level was checked in saliva of OSCC patient. Here the average of salivary CA-125 values of patients in pre-therapy ($M = 1232.85$) is quit higher than that of controls ($M = 392.42$) (Table 5a). The obtained value for this difference ($t = 1.82$) is significant at 0.05 level of significance and thus providing empirical ground to believe that CA-125 values of patients with OSCC is genuinely higher than that of normal. Hence, salivary CA-125 estimate can be considered a sensitive estimate for screening of OSCC.

Relationship between serum CA-125 and salivary CA-125

To fulfill the objective of the study, to determine the relationship between serum and salivary CA-125 levels four product-moment correlation coefficients were computed separately for controls and patients at the pre, mid, and post therapy phases. The analysis revealed that all correlation coefficients were negative, except in the pre-therapy phase where the correlation coefficient was positive ($r = +0.1233$) (Table 6).

This positive correlation in the pre-therapy phase suggests that salivary CA-125 could serve as a potential non-invasive biomarker for screening prior to treatment. However, the negative correlations observed during the mid- and post-therapy phases indicate that surgery and chemo-radiotherapy exert differing effects on serum and salivary CA-125 levels. Specifically, when serum CA-125 values decrease considerably following therapy, salivary CA-125 values do not show a corresponding reduction, and in some cases, may vary in the opposite

direction. This divergence highlights that while salivary CA-125 may be useful for pre-therapy screening, it may not reliably mirror serum CA-125 changes during or after treatment.

Correlation of Pre-therapy, Mid-therapy and Post-therapy CA-125 levels

In the present study, serum CA-125 levels were found to decrease in the post-surgery phase, measured three weeks after surgery. All cases, except one, underwent post-operative radiotherapy. One patient did not receive chemo-radiotherapy.

During the mid-therapy phase, serum CA-125 levels showed a reduction of approximately 20–60% compared to their pre-therapy values. Notably, one patient demonstrated a value of 0 U/ml, while four other patients showed values of <1 U/ml in the post-therapy phase. This indicates a greater than 95% reduction in serum CA-125 levels following completion of chemo-radiotherapy.

A Combined criteria of CA-125 levels of < 65 U/ml 4 weeks after the second course of chemotherapy or at least 50% decreasing serum CA-125 levels as compared to pre-therapy levels may indicate favorable prognosis in advanced disease and residual tumor after cytoreduction.⁷

In the present study, serum and salivary CA-125 values were compared across pre-therapy, mid-therapy, and post-therapy phases. Table 5b shows that the average serum CA-125 level at pre-therapy ($M = 6.377$) was higher than at mid-therapy ($M = 4.14$). The obtained t-value ($t = 1.690$) for this difference, with 26 degrees of freedom, was not statistically significant at any conventional level of significance.

This finding provides strong statistical evidence to conclude that serum CA-125 levels do not decrease considerably following surgical intervention alone.

A similar finding was observed for salivary CA-125 levels. Table 5b shows that the average salivary CA-125

level at pre-therapy ($M = 1232.85$) was higher than at mid-therapy, i.e., after surgery ($M = 436.67$). The obtained t-value ($t = 1.640$), with 26 degrees of freedom, was not statistically significant at any conventional level of significance. This result indicates that salivary CA-125 levels before and after surgery do not differ considerably, thereby supporting the conclusion that surgical intervention alone does not produce a significant reduction in salivary CA-125.

Considering both findings the differences in CA-125 levels in serum and saliva between the pre-therapy and mid-therapy phases, it is evident that surgery alone does not produce a genuine or statistically significant reduction in CA-125 levels.

It is clear from Table 5c that the average serum CA-125 level of patients at post-therapy ($M = 1.849$) is substantially lower than the pre-therapy level ($M = 6.377$). The obtained t-value ($t = 3.968$), with 26 degrees of freedom, is statistically significant at the 0.01 level. This provides strong statistical evidence to conclude that chemo-radiotherapy, following surgical intervention in cases of OSCC, genuinely reduces serum CA-125 levels. A similar trend was observed in salivary CA-125 levels. Table 5c shows that the average salivary CA-125 level at post-therapy ($M = 201.2$) was substantially lower than at the pre-therapy phase ($M = 1232.85$). The obtained t-value ($t = 2.216$), with 26 degrees of freedom, was statistically significant at the 0.05 level. This finding provides clear statistical evidence that salivary CA-125 levels decrease significantly following completion of post-therapy interventions, thereby supporting the conclusion that chemo-radiotherapy after surgery genuinely reduces salivary CA-125 levels.

Looking at all the above findings, it is evident that surgical intervention alone is not sufficient to produce a meaningful reduction in CA-125 levels in cases of oral

squamous cell carcinoma (OSCC). In contrast, a significant and genuine decrease in CA-125 levels is observed following post-surgical chemo-radiotherapy. This strongly suggests that patients with OSCC should undergo chemo-radiotherapy after surgery to achieve better prognosis and improved treatment outcomes.

CA-125 and stage of the disease

In the present study, CA-125 levels were found to vary according to the stage and histopathological grade of oral squamous cell carcinoma. All cases were diagnosed as squamous cell carcinoma, with 93% classified as well-differentiated (G1) and 7% as moderately differentiated (G2). According to Mohammad R et al Significantly higher CA-125 levels were observed in poorly differentiated OSCC (G3) compared with both well-differentiated tumors (G1, $p = 0.011$) and moderately differentiated tumors (G2, $p = 0.026$). However, no significant difference was noted between G1 and G2 ($p = 1.000$).⁶

Taking into consideration the above discussion, the rate of fall of serum and salivary CA-125 depends upon the histological typing, TNM staging. Postoperative modality of treatment and other non-specific factors like tobacco, alcohol and type of diet.

Summary

In all the 15 cases estimation of CA-125 was done in serum as well as in saliva in pre-therapy, mid-therapy and post-therapy cases. In the Controls estimation of serum and salivary CA-125 was done once.

The most common age of occurrence of oral carcinoma was fifth and seventh decade of life. There was a male predominance. Overall male to female ratio in this study was 3:2. The cases presented commonly with ulceration of duration varying from 6 to 12 months. The most common site involved was Buccal mucosa followed by tongue and alveolus.

Amongst all of the diagnosed cases in the study, 80% of the cases were addicted to tobacco with or without gutkha, pan or alcohol consumption. 20% of the cases developed oral cancer with no history of any sort of addiction. 73% cases were taking mixed diet while 27% cases were relying on vegetarian diet. Literacy rate was 53%. Maximum cases belonged to labour class. 46% of the cases showed systemic involvement in the form of hypertension, tuberculosis, peptic ulcer and post laparotomy.

Maximum number of cases presented with stage III of TNM classification followed by stage II. There was a single case each of stage I and stage IV. Lymph node positivity was encountered in 60% of the cases. All the cases were of squamous cell carcinoma with 93% well differentiated type and 7% moderately differentiated histopathologically.

Serum & salivary CA-125 levels coincided with the stage of the disease. All the cases were posted for primary tumor excision with or without neck dissection. 86.66% of the cases were subjected to post-operative radiation, 6.66% of the cases received post-operative chemotherapy while 6.66% of the cases received neither radiation nor chemotherapy post-operatively.

Statistical analysis to study the 't' value was done in a group of 14 number of patients and controls as there was extremely high levels of CA-125 in one of the patients. This patient was excluded to avoid technical fault in calculation. Serum & salivary CA-125 level in pre, mid and post-therapy phases were estimated in all the cases and showed a significant fall in their levels. The rate of fall of salivary CA-125 in patients with no history of addiction and taking pure vegetarian diet was very slow as compared to the patients with history of addiction and taking non-veg diet.

Based on the above observations, a conclusion can be drawn that CA- 125 levels in serum as well as saliva is a significant prognostic factor for remission of disease, survival or disease free interval in patient with oral squamous cell carcinoma. Solo surgical intervention is not sufficient in reducing CA-125 levels in case of OSCC. However, level of CA-125 genuinely decreases after post-surgical chemo-radiotherapy session.

Presently it seems that estimation of serum and salivary CA-125 can be used as a screening procedure for various reasons except that it is not being cost effective. Estimation of CA-125 both in serum is more sensitive and less specific Whereas estimation of CA-125 in saliva is more specific and less sensitive in cases of oral malignancy

Conclusion

On the basis of the observations and analyses in this study, several important conclusions can be drawn. Estimation of CA-125 in serum was found to be more sensitive but less specific, whereas estimation in saliva was more specific but less sensitive in cases of oral malignancy. CA-125 levels in both serum and saliva at the time of diagnosis coincided with the stage and duration of the disease, highlighting their potential role as diagnostic indicators. Serial measurements of CA-125 in serum and saliva can serve as a prognostic factor for assessing disease outcome.

Estimation of CA-125 levels during mid-therapy may help in modifying subsequent treatment modalities, thereby improving individualized patient care.

Taken together, these findings suggest that surgical intervention alone is insufficient to produce a genuine reduction in CA-125 levels. In contrast, chemo-radiotherapy following surgery significantly lowers both serum and salivary CA-125 levels, underscoring its

importance in achieving better prognosis in oral cancer patients.

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