ORIGINAL RESEARCH

A case control study to evaluate salivary biomarkers in patients with Oral squamous cell carcinoma

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Received: 15 September, 2017 Accepted: 25 October, 2017

ABSTRACT

Background: The sixth most common cancer globally is oral cancer. It is one of the three most frequent kinds of cancer in the Indian subcontinent. **Materials & Methods:** 82 patients with SCC patients of both genders were put in group I and healthy control in group II. 5 ml of unstimulated saliva was collected and the saliva sample was centrifuged at 3000 rpm for 15 min to remove squamous cells and debris. Assessment of IL1b, IL8, SAT1, OAZ1 was done with PCR and LDH with standard kit method. **Results:** Out of 82 SCC patients, 50 were males and 32 were females. OAZ1 was 24.7 in group I and 14.2 in group II, LDH level was 412.5 in group I and 121.8 in group II, IL 1 b level was 104.2 in group I and 27.5 in group II, IL 8 was 224. 8 in group I and 29.6 in group II, SAT 1 was 26.6 in group I and 23.4 in group II. The difference was significant (P< 0.05). **Conclusion:** Higher concentrations of all salivary biomarkers in SCC patients' saliva than in those of healthy individuals. Saliva can therefore be used as a diagnostic tool.

Key words: Salivary biomarkers, squamous cells carcinoma

INTRODUCTION

The sixth most common cancer globally is oral cancer. It is one of the three most frequent kinds of cancer in the Indian subcontinent. Squamous cell carcinoma (SCC) is the primary cause of about 90% of oral cavity cancer cases. According to the history of oral cancer, over 70% of patients had a known premalignant lesion (PML) prior to the disease, and treatment at this time may cause the lesion to regress.[1,2]

It has long been believed that saliva is a valuable source of biologic data for the identification of human illnesses. Studies have shown a synergistic association between the expression of molecular markers in saliva and systemic or distant site disorders, in addition to the evident relationship with the oral mucosa surface.[3] Saliva from ill people has been found to contain metabolites, proteins, coding and noncoding RNAs, and DNA, all of which are valuable tools for diagnosing diseases. Several indicators found in saliva aid in the identification of SCC.[4,5] The present study was conducted to assess salivary biomarkers in patients with squamous cell carcinoma.

MATERIALS & METHODS

The present study was conducted on 82 patients with SCC patients of both genders. Equal number of controls was also included. All gave their consent to participate in the study.

Data such as age, gender etc. was recorded in performa. Group I comprised of 94 SCC patients and group II had 94 controls. 5 ml of unstimulated saliva was collected and the saliva sample was centrifuged at 3000 rpm for 15 min to remove squamous cells and debris. The resulting supernatant was used for further biochemical analysis. Assessment of IL1b, IL8, SAT1, OAZ1 was done with PCR and LDH with standard kit method. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 82		
Gender	**Males**	**Females**
Number	50	32

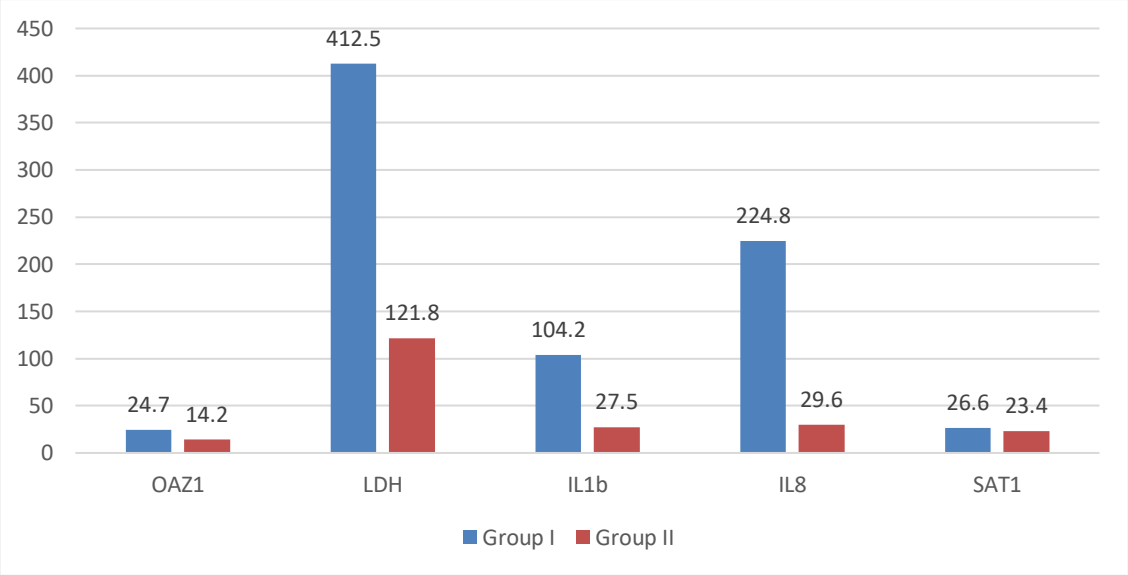
Table I shows that out of 82 SCC patients, 5 o were males and 32 were females.

Table II Assessment of salivary biomarkers

Salivary biomarkers	Group I	Group II	P value
OAZ1	24.7	14.2	0.05
LDH	412.5	121.8	0.01
IL1b	104.2	27.5	0.03
IL8	224.8	29.6	0.01
SAT1	26.6	23.4	0.98

Table II, graph I shows that OAZ1 was 24.7 in group I and 14.2 in group II, LDH level was 412.5 in group I and 121.8 in group II, IL 1 b level was 104.2 in group I and 27.5 in group II, IL 8 was 224. 8 in group I and 29.6 in group II, SAT 1 was 26.6 in group I and 23.4 in group II. The difference was significant (P< 0.05).

Graph I Assessment of salivary biomarkers



DISCUSSION

The most frequent type of cancer in the head and neck region is called oral squamous cell carcinoma (OSCC). This condition is linked to high rates of morbidity and death, yet throughout time, there hasn't been much of an increase in the 5-year survival rate for individuals with OSCC. Advanced disease is a major prognostic factor for people with OSCC.[6] In light of this, reducing morbidity and death rates from oral cancer requires early diagnosis. Saliva is a multi-component oral fluid that can reflect health issues in the systemic and oral domains.[7,8] It has been demonstrated that salivary analysis is a helpful diagnostic technique for other distant cancers, such as pancreatic, lung, breast, and Sjogren syndrome cancers. Biomarkers found in saliva can be utilized as disease indicators.[9] A characteristic that is objectively measured and assessed as a sign of a pathogenic process, a typical biological activity, or a pharmacological reaction to therapeutic intervention is called a biomarker, according to the National Institutes of Health (NIH). Before a biomarker can be applied to health risk assessment or employed in a clinical assay, it needs to be confirmed and validated.[10] The present study was conducted to assess salivary biomarkers in patients with squamous cell carcinoma.

We found that out of 82 SCC patients, 50 were males and 32 were females. Franzmann et al[11] reported elevated levels of CD 44 in saliva (oral rinse) of oral squamous cell carcinoma patients (n = 102) compared to controls (n = 69). St John et al[12] detected higher concentrations of IL-8 in saliva and higher concentrations of IL-6 in serum of patients with OSCC and concluded that IL-8 in saliva and IL-6 in serum are the informative biomarkers for OSCC.

We observed that OAZ1 was 24.7 in group I and 14.2 in group II, LDH level was 412.5 in group I and 121.8 in group II, IL 1 b level was 104.2 in group I and 27.5 in group II, IL 8 was 224. 8 in group I and 29.6 in group II, SAT 1 was 26.6 in group I and 23.4 in group II. According to Li et al[13]., the study included 180 samples in total: 60 OSCC patients, 60 controls, and 60 PMOD patients. Two proteomic indicators (IL8

and IL1b) were assessed by ELISA, while seven transcriptome markers (IL8, IL1b, SAT1, OAZ1, DUSP1, S100P, and H3F3A) were analyzed by qPCR. The transcript level of DUSP1, one of seven transcriptome indicators, was considerably reduced in OSCC patients compared to controls and PMOD patients. In comparison to controls and dysplasia patients, OSCC patients had significantly increased protein concentrations of IL8 and IL1b among the proteomic indicators. Salivary IL8 protein (IL8p) shows the highest AUC value between OSCC patients and controls (0.74) and between OSCC and PMOD patients (0.72), according to univariate fractional polynomial (FP) models. Using a two-marker FP model, salivary IL8p in combination with IL1b and H3F3AmRNA provided the greatest AUC value for differentiating between patients with OSCC and controls, as well as between patients with PMOD and OSCC. To differentiate between OSCC and PMOL (AUC ¼ 0.80), OSCC and controls (AUC ¼ 0.87), and PMOD and controls (AUC ¼ 0.78), the best combinatory variables were formed by multivariate models analysis integrating salivary analytes and risk factor exposure related to oral carcinogenesis.

CONCLUSION

Authors found higher concentrations of all salivary biomarkers in SCC patients' saliva than in those of healthy individuals. Saliva can therefore be used as a diagnostic tool.

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