Review article:

Rising incidence of Squamous cell carcinoma of oral cavity and surrounding areas due to tobacco use with its histophathological grading - Two years study of 241 cases

Dr. Ankur Singh Kshatriya[1], Dr. Divyesh Kothari[1], Dr. Pravina M. Santwani[2], Dr. Dharmishtha Kapadia[1], Dr. Alpesh Chavda[3]

[1]Resident Doctor, [2]Professor and Head, [3]Tutor
Department of Pathology, M.P. Shah Govt. Medical College, Jamnagar (Gujarat)
Corresponding author: Dr. Ankur Singh Kshatriya
Date of submission: 05 May 2014; Date of Publication: 15 September 2014

ABSTRACT

Squamous cell carcinoma (SCC) is a common malignancy of oral cavity and surrounding areas. In recent years, there is constant increase in cases of SCC of oral cavity regions contributed by increased use of tobacco chewing agents and cigarette smoking. This study compares the no. of cases of SCC in patients attending ENT OPD (out patient department) in 2 years. Patients attending ENT OPD for oral cavity and related lesions from 1st July, 2010 to 30th June, 2012 were included in this study. From these patients, those who were suspected for malignancy were undergone biopsy procedure and histopathological examination was done in pathology department of M. P. Shah Govt. Medical College, Jamnagar. We divided cases in to two groups according to time of presentation, group A (01/07/2010 to 30/06/2011) and group B (01/07/2011 to 30/06/2012). This study showed increase in no. of SCC cases of oral cavity region which implies increased requirement of awareness regarding demerits of tobacco chewing and cigarette smoking and setup addiction rehabilitation centers for people who have chronic habit of substance abuse.

Key words: Squamous cell carcinoma, Oral cavity, Tobacco, Cigarette.

Introduction

Squamous cell carcinoma is a form of cancer that may occur in many different organs, including the skin, lips, mouth, oesophagus, urinary bladder, prostate, lungs, vagina and cervix. It is a malignant tumor of squamous epithelium.[1] Squamous cell carcinoma of oral cavity and surrounding areas ranks as one of the top ten cancers worldwide, with broad differences in geographic distribution. Worldwide over 5,00,000 cases occur annually with a higher percentages in certain world locations, particularly asian countries where there are reports that oral cancers represents 50% of all recorded cancers.[2]

Squamous cell carcinoma of oral cavity and surrounding areas usually affects older age group with peak incidence being at 45 to 55 years. It mainly presents as non healing ulcer or mass in oral cavity, hoarseness of voice, difficulty in swallowing, neck swelling, etc. Its main predisposing factors are tobacco abuse (mainly chewing) and alcohol consumption. Others are actinic radiation, Gutkha and betel nut chewing. [2]

www.ijbamr.com P ISSN: 2250-284X , E ISSN : 2250-2858

Material and Method

This study was conducted at Pathology department, M. P. Shah Govt. Medical College, Jamnagar in retrospective as well as prospective manner for 2 years (from 1st July, 2010 to 30th June, 2012). Cases included in the study were those referred by ENT department, Guru-Govind Singh Government Hospital, Jamnagar in the form of biopsy material and diagnosis was established in histopathology section of pathology department.

Patient details were taken in form of name, indoor / outdoor No., Age, Sex, address, occupation, clinical presentation of the lesion and history of Tobacco use in any form eg. Smoking, Chewing, Snuffing, Betel nut or Gutkha chewing etc. and Alcohol intake, Diet (Vegetarian / Non-vegetarian) & Family history.This study has included the patients attending ENT OPD with lesions mainly in oral cavity proper, oropharynx, nasopharynx, laryngopharynx and larynx. Total 615 cases were studied throughout the duration of this study out of which 241 were showed histopathology of Squamous cell carcinoma. Total cases of study are divided into two groups chronologically according to time of presentation, group A (01/07/2010 to 30/06/2011) and group B (01/07/2011 to 30/06/2012).

Histopathological Interpretation

A proliferation of sheets, nests, cords, and neoplastic islands of squamous epithelium that penetrate into the supporting connective tissue and submucosa characterize squamous cell carcinoma. The neoplasm is usually identified histologically as being well differentiated, moderately differentiated, poorly differentiated or undifferentiated (nonkeratinizing).[3] **Well-differentiate SCC** show large cells with vesicular to oval nuclei and eosinphilic cytoplasm, minimal nuclear hyperchromasia and bizzare mitotic activity. Prominent keratin pearl formation, individual cell keratinization and plasmalymphocytic infiltrate in submucosa near invasion by neoplastic islands.[3] (**fig.1a**) **Moderately differentiated** SCC show appearance towards squamous epithelium is decreased with increased nuclear hyperchomasia and atypical mitotic activity with loss of attachment of cells, Frequency of individual cell keratinization and keratin pearl formation is decreased.[3] (**fig.1b**) **Poorly differentiated** SCC show very little evidence that the tumor is of squamous origin, Individual cell keratinization is lacking, Nuclear : Cytoplasmic ratio is markedly altered, Significant pleomorphism and atypical mitoses and tumor giant cells may also be prominent.[3] (**fig.1c**)

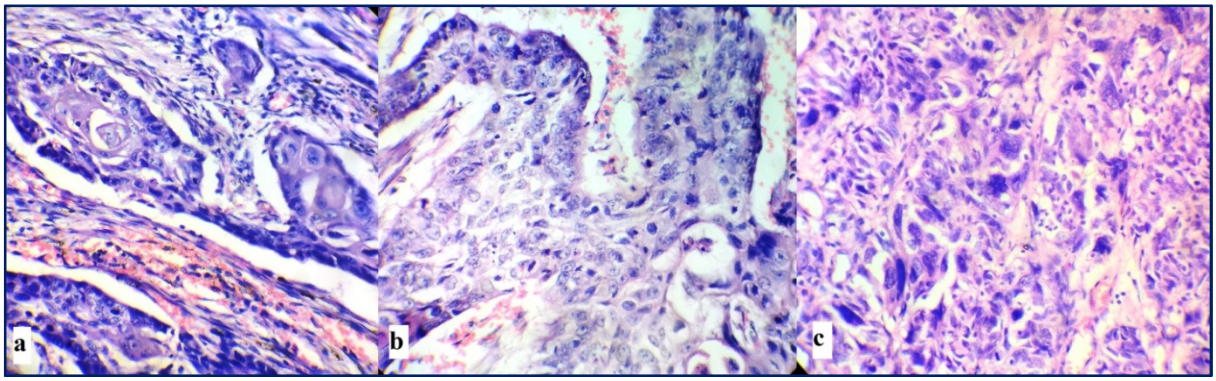

Figure no.1 a. well differentiated squamous cell carcinoma b. moderately differentiated squamous cell carcinoma c. poorly differentiated squamous cell carcinoma

www.ijbamr.com P ISSN: 2250-284X , E ISSN : 2250-2858

Results:

Out of the 615 patients of oral cavity lesions, 241 patients were of SCC, 95 in group A and 146 in group B. Results showed that there was increase incidence progressively from group A (31.99%) to group B (45.91%).(Table 1) Most of the patients presented in the age group of 51 to 60 years and increasing incidence of SCC in all groups.(fig. 2) Among total SCC cases (group A & group B) 184 (76.35%) were male and 57 (23.65%) were female.(Table 2) The youngest patient was 18 years and the eldest 75 years. The most common site affected with SCC was oropharyngeal (34.50%) followed by oral cavity (31.90%), larynx (17.40%), hypo pharynx (11.30%) and naso pharynx (4.90%).(fig. 3) The most common presenting symptom was non healing ulcer in the oral cavity (45%) followed by mass (25%), hoarseness of voice (13%), dysphasia (8%), unusual bleeding from mouth (6%), white/red patches (2%) and neck swelling (1%).(fig. 4) The most commonly identifiable risk factor was tobacco use (84.23%).(fig. 5) Total (group A & group B) 138 patients had a well differentiated and 70 patients had moderately differentiated carcinoma, whereas, 33 patients had poorly differentiated carcinoma on histopathological evaluation.(Table 3) A significant correlation ($p< 0.05$) between the site (i.e. oral cavity or oropharynx) and tobacco habit was found on using Fisher Exact test.

Table no.1 Number of patients of oral cavity lesions and SCC cases and their proportion in two years.

Group	Patients attending OPD from	Total Oral Cavity Lesions	SCC cases	% of SCC cases
A	01/07/2010 to 30/06/2011	297	95	31.99%
B	01/07/2011 to 30/06/2012	318	146	45.91%

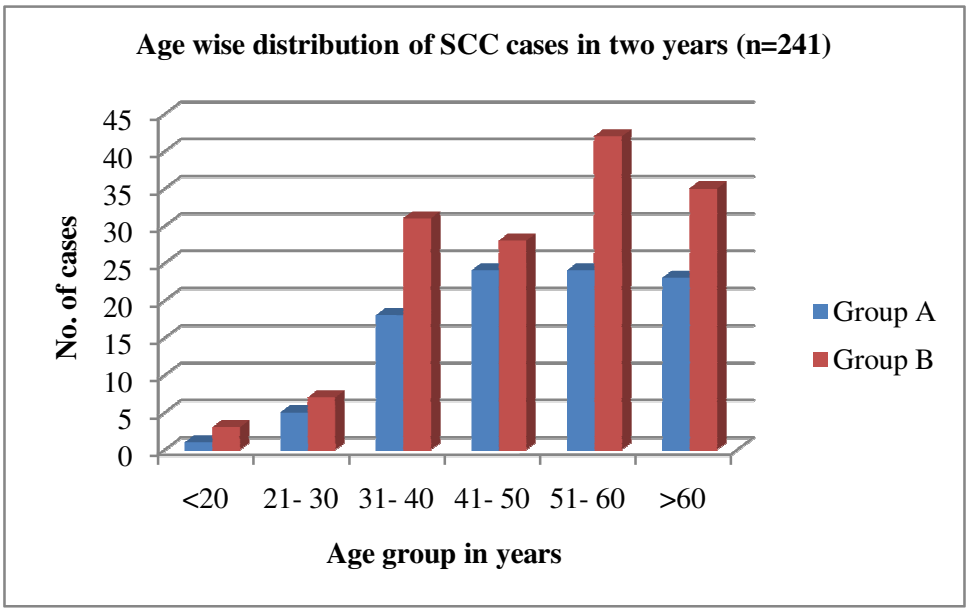

Figure no. 2 Showing age distribution of patients with oral and oropharyngeal cancer in two years.

www.ijbamr.com P ISSN: 2250-284X , E ISSN : 2250-2858

Table no. 2 Number of male and female patients of oral and oropharyngeal SCC in two years.

Groups	Male	Female	Total
A	70	25	95
B	114	32	146
TOTAL	**184**	**57**	**241**

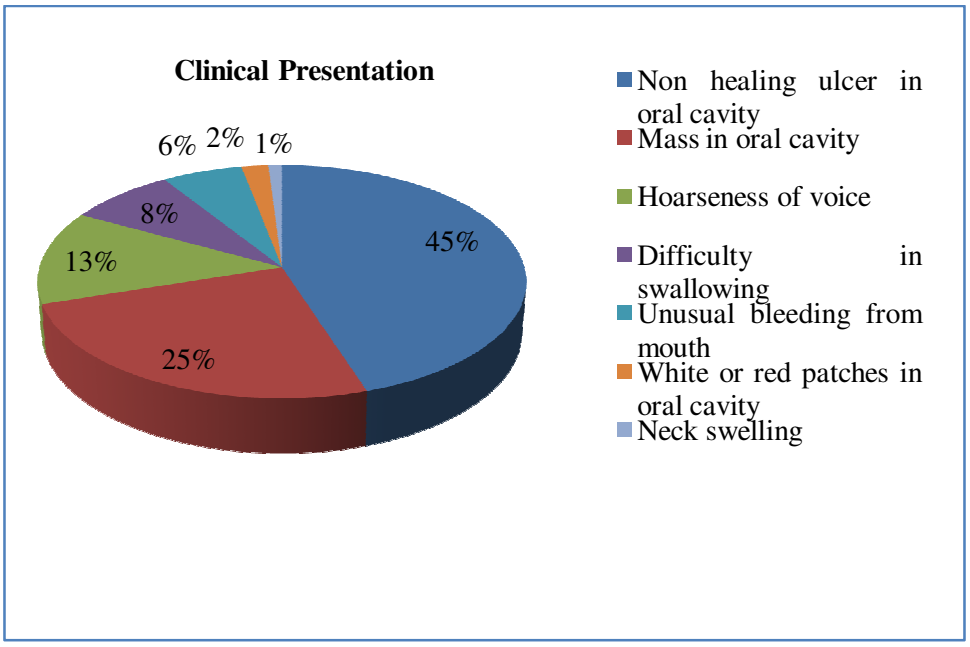

Figure no. 3 Showing clinical presentation of oral and oropharyngeal SCC patients in two years.

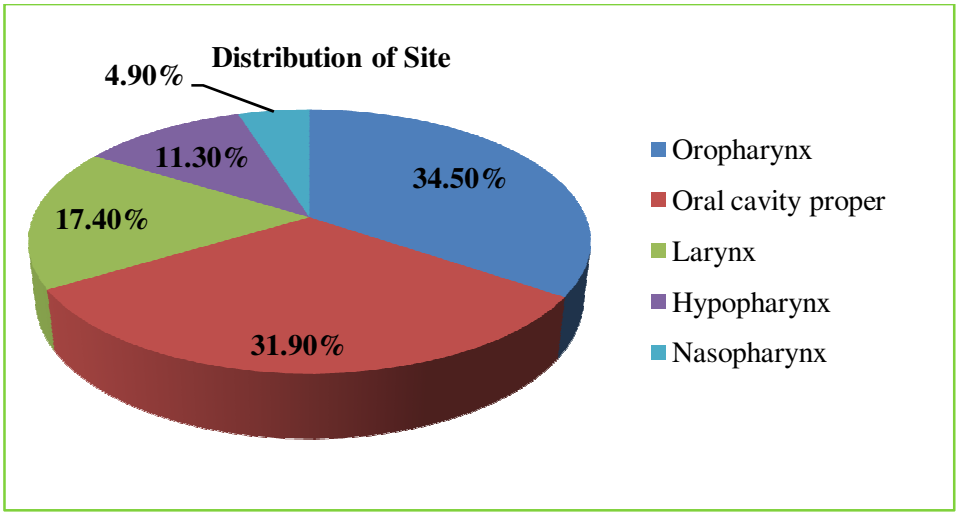

Figure no. 4 Distribution of the sites of SCC in two years.

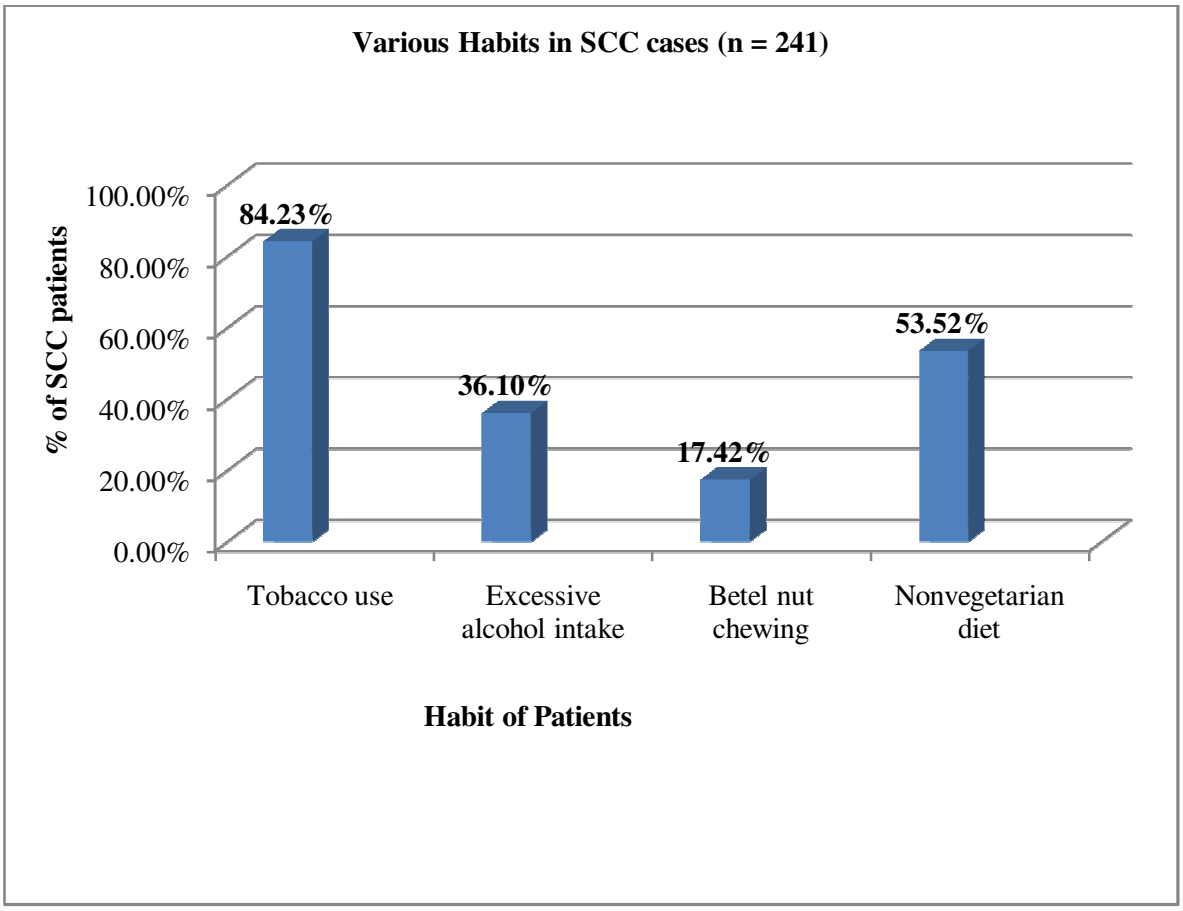

Figure no. 5 Proportion of oral and oropharyngeal SCC patients with various risk factors (Habit) in two years.

Table no. 3 Showing histological differentiation of tumors of oral and oropharyngeal SCC in two years.

Group	Well Differentiated SCC	Moderately Differentiated SCC	Poorly Differentiated SCC	Total
A	55	26	14	**95**
B	83	44	19	**146**
Total	**138**	**70**	**33**	**241**

Discussion

Squamous cell carcinoma of the oral cavity is the most frequently observed form of head and neck cancer in Southeast Asia and is the sixth most common cancer worldwide. [4] India is a high-risk region for oral and oropharyngeal cancer due to a high prevalence of tobacco use, particularly chewing (in both sexes), *bidi* smoking and alcohol drinking in male population.[5] Apart from alcohol and tobacco, low level of education, gender, dietary habits and poor oro-dental hygiene have also been found to be associated with a high risk of oral and oropharyngeal

www.ijbamr.com P ISSN: 2250-284X , E ISSN : 2250-2858

cancer.[6] The present study is aimed at identifying incidence of SCC and pathological characteristics and culprit factors of oral and oropharyngeal carcinomas in patients in our population.Our study comprised 241 patients of oral and oropharyngeal SCC, out of which, 76.35% were male and 23.65% were female. This gender distribution was similar to a few of the studies in the past,[7] whereas, some studies report a much higher incidence of females suffering from these cancers.[6] A few of the studies have reported an increasing incidence of these cancers in the females. [8]

The patients in our study had oropharyngeal cancer as the commonest site (34.50%) which is similar to some other studies reported in western literature. [9]The most commonly identifiable risk factors for both oral as well as oropharyngeal cancer in our study were tobacco chewing, smoking and alcohol intake. Chewing tobacco results in local exposure of oral mucosa to at least 16 carcinogens, including tobacco-specific nitrosamines and polycyclic aromatic hydrocarbons. [10] Tobacco has been identified as the leading preventable cause of premature death worldwide. It is estimated that 4.9 million people died of tobacco-related illness in 2000, and it is thought that this figure will increase to 10 million deaths per year by 2020, of which 70% will be in developing countries. [11] Tobacco is consumed in various ways: cigarettes, cigars, *hookah, bidi*, reverse smoking and as smokeless tobacco such as loose dry oral snuff or moist snuff packed in small pouches. The other risk factors in our study include betal nut chewing, low socio-economic status, gender and dietary habits are similar to other studies. [6]

Total 138 patients had a well differentiated and 70 patients had moderately differentiated carcinoma, whereas, 33 patients had poorly differentiated carcinoma on histopathological evaluation in our study. These results were similar to a few of the studies in the past. [9, 12, 13] The degree of differentiation is considered as one of the important prognostic factor in oral and oropharyngeal cancers with poorly differentiated cancers having the worst prognosis. [4] Clear dose–response relationships between quid use and the risk of oral cancer or potentially malignant oral disorders have been demonstrated in many epidemiological studies and it has been suggested that nicotine replacement products have assisting role in achieving smoking cessation. [14]

Conclusion

We conclude that Incidence of squamous cell carcinoma of oral cavity and surrounding regions is rising significantly, which is alarming because of progressively increasing tobacco chewing habits. Though incidence has risen significantly, proportional incidence of well differentiated squamous cell carcinoma, which is having good prognosis, is also increasing which may be attributable to increasing public awareness and their access to health care and diagnostic facilities. Doctors have preventable role by increasing public awareness through explaining that how common the problem is? What are the contributing or etiological factors? How the lesion presents at an earlier stages? Differences in prognosis of lesions detected at an earlier stage than those detected at later stages. Regular screening of workers at work places, institutes, factories, etc. also required.

www.ijbamr.com P ISSN: 2250-284X , E ISSN : 2250-2858

References

1. NCI Factsheet on head and neck cancer. History: William Joseph Campbell, Resident Physician, Department of Surgery, University of Florida, 2008.
2. Shwe M, Chiguchi G, Yuamada S, et al. P53 and MIDM2 coexpression in tobacco and betel chewing - associated oral squamous cell carcinoma. J Med Dent Sci 2001; 48(4); 113-119.
3. Broders AC. Carcinomas of the mouth: ripe and degrees of malignancy. AJR 1927; 17: 90-93.
4. Al-Swiahb, J. N.; Chen, C. H.; Chuang, H. C.; Fang, F. M.; Tasi, H. T. & Chien, C. Y. Clinical, pathological and molecular determinants in squamous cell carcinoma of the oral cavity. Future Oncol., 6(5):837-50, 2010.
5. Yeole, B. B.; Ramanakumar, A. V. & Sankaranarayanan, R. Survival from oral cancer in Mumbai (Bombay), India. Cancer Causes Control, 14(10):945-52, 2003.
6. Güneri, P.; Cankaya, H.; Yavuzer, A.; Güneri, E. A.; Eris¸en, L.; Ozkul, D.; El, S. N.; Karakaya, S.; Arican, A. & Boyaciog˘lu, H. Primary oral cancer in a Turkish population sample: association with sociodemographic features, smoking, alcohol, diet and dentition. Oral Oncol., 41(10):1005-12, 2005.
7. Mehrotra, R.; Singh, M.; Gupta, R. K.; Singh, M. & Kapoor, A. K. Trends of prevalence and pathological spectrum of head and neck cancers in North India. Indian J. Cancer, 42(2):89-93, 2005.
8. Gaitán-Cepeda, L. A.; Peniche-Becerra, A. G. & Quezada- Rivera, D. Trends in frequency and prevalence of oral cancer and oral squamous cell carcinoma in Mexicans. A 20 years retrospective study. Med. Oral Patol. Oral Cir. Bucal, 16(1):e1-5, 2011.
9. Rivera, H.; Nikitakis, N. G.; Correnti, M.; Maissi, S. & Ponce, J. G. Oral and oropharyngeal cancer in a Venezuelan population. Acta Odontol. Latinoam., 21(2):175-80, 2008.
10. Petti S. Lifestyle risk factors for oral cancer. Oral Oncol 2009: 45: 340–350.
11. Warnakulasuriya S, Sutherland G, Scully C. Tobacco, oral cancer, and treatment of dependence. Oral Oncol 2005: 41: 244–260
12. Jerjes, W.; Upile, T.; Petrie, A.; Riskalla, A.; Hamdoon, Z.; Vourvachis, M.; Karavidas, K.; Jay, A.; Sandison, A.; Thomas, G. J.; Kalavrezos, N. & Hopper, C. Clinicopathological parameters, recurrence, locoregional and distant metastasis in 115 T1-T2 oral squamous cell carcinoma patients. Head Neck Oncol., 2:9, 2010.
13. Andisheh-Tadbir, A.; Mehrabani, D. & Heydari, S. T. Epidemiology of squamous cell carcinoma of the oral cavity in Iran. J. Craniofac. Surg., 19(6):1699-702, 2008.
14. Gartner C, Hall W. The potential role of snus in tobacco harm reduction. Addiction 2009: 104: 1586–1587.