



Burden of Oral Squamous Cell Carcinoma in Greater Gwalior Region- A Hospital Based Study

KEYWORDS

Oral Squamous Cell Carcinoma, Educational Intervention.

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ABSTRACT Oral cancer (OC) is defined as a neoplasm involving the oral cavity, which begins at the lips and ends at the anterior pillars of the fauces. Globally, OC is reported to be the eighth most commonly diagnosed cancer with an annual incidence of >300,000 cases. Incidence and mortality of OC are higher in developing countries when compared with developed countries. The World Health Organization (WHO) reported an Oral Cancer mortality rate of approximately 2 per 100,000 in the Middle East, which is lower than that reported in India and the United States. Oral cancer ranks in the top three of all cancers in India, which accounts for over thirty per cent of all cancers reported in the country and oral cancer control is quickly becoming a global health priority. The aim of this study is to find out the prevalence of oral squamous cell carcinoma in greater Gwalior region with respect to age and gender. Records of data from June 2014- May 2016 were retrieved, compiled and analyzed statistically. The prevalence of oral squamous cell carcinoma in our study was 2.7% and mean age of patients in the present study was 46.57 ± 12.04 SD. From the present study it can be concluded future research and educational interventions among the general population should be aimed at improving for early detection and prevention of oral cancer.

Introduction-

Oral cancer is a major problem in the Indian subcontinent where it ranks among the top three types of cancer in the country [1]. Age-adjusted rates of oral cancer in India is high, that is, 20 per 100,000 population and accounts for over 30% of all cancers in the country [2]. The variation in incidence and pattern of the disease can be attributed to the combined effect of ageing of the population, as well as regional differences in the prevalence of disease-specific risk factors [3].

Oral cancer is of significant public health importance to India. Firstly, it is diagnosed at later stages which result in low treatment outcomes and considerable costs to the patients whom typically cannot afford this type of treatment [4]. [1]

In oral squamous cell carcinoma (OSCC), regional metastasis is prevalent in at least 30% of cases [5]. It develops mainly between the sixth and the seventh decades of life and occurrence in younger people (<40 years old) is rare [6,7]. Oral squamous cell carcinoma accounts for 4% of all malignancies in male and 2% in female [8]. Higher proportions of Oral Squamous Cell Carcinoma, in addition to an alarming rise in incidence among young people are being documented worldwide [9]. The most frequently affected sites of Oral Cancer in Western countries are ventro-lateral aspects of the tongue and floor of the mouth, accounting for more than 50% of cases [8]. Conversely, in the south-eastern part of the Asian continent, Oral Carcinoma is significantly higher in buccal and commissural mucosa. This was attributed directly to the use of unrefined topical tobacco, being chewed or kept in the mouth for long periods [10].

As a result, delay has also been largely associated with advanced stages of oral cancer [11]. Earlier detection of oral cancer offers the best chance for long term survival and has the potential to improve treatment outcomes and make healthcare affordable [12]. Thirdly, oral cancer affects those from the lower socioeconomic groups, that is, people from the lower socioeconomic strata of society due to a higher exposure to risk factors such as the use of tobacco [13]. Even though clinical diagnosis occurs via examination of the oral cavity and tongue which is accessible by current diagnostic tools, the majority of cases present to a healthcare facility at later stages of cancer subtypes, thereby reducing chances of survival due to delays in diagnosis [14].

Human papillomaviruses (HPVs) have been considered as etiologic agents, particularly in Oral Carcinoma with no tobacco or alcohol association [15]. Potentially malignant disorders often precedes OSCC, and those showing features of moderate or severe epithelial dysplasia carry the highest risk for malignant transformation [16].

Oral precancerous lesions and conditions such as oral leukoplakia and oral submucous fibrosis (OSF) have been shown to have a high rate of transformation to oral cancer. [17,18] The prevalence of OSF in India varies between 0.03 and 3.2% according to various studies [19,20,21]. Also, a higher occurrence of leukoplakia and cancer is observed in OSF patients, and tobacco is considered to be an important risk factor for oral cancer among youths [22,23]. The belt of India comprising Uttar Pradesh, Bihar, and Jharkhand witness a very high incidence of oral precancerous and cancerous lesions [24]. At the same time, the frequency of chewing tobacco/*pan masala* or other simi-

lar products is higher in comparison to other parts of the country [25].

Aims and objectives

The aim of our study is to find out the prevalence of oral squamous cell carcinoma, the most common site of its presentation, associated relevant clinical history and its age-wise distributions in greater Gwalior region.

Materials and methods

The records of data from June 2014- May 2016 (02years) of patients, who were diagnosed as cases of oral squamous cell carcinoma were retrieved, compiled and summarized using frequency distribution and percentage proportion. Chi square test was applied to find out the statistical significance.

Results

A total number of 6243 specimens were submitted for histopathological examination in Department of Pathology G.R Medical College, Gwalior in the study period. Out of 6243 cases, 167 were reported oral squamous cell carcinoma. The overall prevalence of oral squamous cell carcinoma was 2.7% ($p=0.004$), statistically significant. The mean age of patients in the present study was 46.57 ± 12.04 SD. The youngest patient was 18 years of age and eldest was 77 years. Table no1, 2, 3, 4, 5 shows the age group wise distribution, associated history of the patient, site and type of lesion diagnosed at our centre.

Discussion

In the present study, 178 cases involving oral lesions including buccal mucosa, border of tongue, lip and tonsil were submitted for histopathological examination. Among 178 cases 11 were inadequate for any definitive diagnosis and 167 were reported squamous cell carcinoma. The overall prevalence of oral squamous cell carcinoma in 6243 total specimens submitted for histopathological examination at our centre was 2.7% ($p=0.004$), statistically significant. The mean age of patients in the present study was 46.57 ± 12.04 SD. The youngest patient was 18 years of age and eldest was 77 years. Studies were conducted in the following countries: Saudi Arabia, Jordan, Sudan, Libya, Yemen, UAE, Syria, Arab population living in Israel, Egypt, and Iraq.[26-28] They were cross-sectional studies and sample size ranged from 71 to 1787 patients.[26,27] All of these studies except one study from Saudi Arabia had used histological verification.[28] The incidence of Oral Carcinoma varied greatly from 0.5/100,000 in Syria[26] to 10/100,000 in the Southern parts in Saudi Arabia,[28] with great regional variations among Saudi population in the same study. Two studies from Saudi Arabia [28] and Yemen [29] found a higher prevalence of Oral Carcinoma among females. Conversely, all other studies [30,26] reported higher ratio of males compared with females. In present study prevalence of disease among males (67.7%) was more than females (32.3%).

Uniquely, the gingiva and alveolus were the most commonly affected sites among patients from Southwestern region of Saudi Arabia (namely, Jizan and Najran) [31]. Furthermore, in Sudan, a high presentation of overlapping lesions that exceeded one anatomical area to invade the adjacent one was observed [32]. Oropharynx was associated with the highest distribution of lesions among Arabs population residing in Israel [33]. The clinical features of Oral Cancer were documented by some studies; swelling and/or ulceration were the most common clinical symptoms among Oral Cancer patients [34, 28]. White mucosal patches and lumps were less frequently encountered. [28,35]. The most common site affected in our study was

buccal mucosa (64.1%).

Public health efforts should strive to address these habits in their local communities as an attempt to reduce Oral Carcinoma incidence. Anti-tobacco efforts should highlight the increased risk of Oral Carcinoma and advise long-term tobacco users of seeking annual oral screening from oral health professionals.

Previous research had implicated human papilloma virus (HPV) as a risk factor for Oral Carcinoma [15]. None of the reviewed studies had explored the prevalence of HPV among patients diagnosed with Oral Carcinoma.

Also in present study most commonly reported was well differentiated keratinizing squamous cell carcinoma (55.1%) followed by moderately differentiated (28.7%) and poorly differentiated non-keratinizing (16.2%) squamous cell carcinoma. The most common age group involved in the present study was 31-40 years followed by 41-50, >60, 51-60, 21-30 and lastly ≤ 20 years.

According to the Centre for Disease Control and Prevention (CDC), chewing tobacco 78 times a day may be equivalent to smoking 30-40 cigarettes per day. An increased incidence of squamous cell (oral cancer) and verrucous carcinomas of the oral cavity and pharynx has been found in patients who are used to chewing tobacco [36,37]. Sawyer *et al.*(1992) also reported an increased risk with increase in the frequency and duration of the habit [38]. Though the nicotine content of chewing tobacco is lower than that in the smoking form, it is said to have an increased carcinogenic potential because it remains in contact with the oral mucosa for longer periods of time [38]. Tobacco-specific N-nitrosamines, present in higher concentrations in smokeless tobacco, are readily extracted by saliva; the absorption is further enhanced in alkaline environments [39]. These factors are known to influence the formation and yields/levels of toxic chemicals in tobacco chewers and smokers [40]. In the present study most common cause of oral cancer was tobacco chewing.

Conclusion

Oral malignancies continue to burden the clinical and economic dimensions of health care around the world. The Indian subcontinent accounts for one-third of the world burden. Use of tobacco use and alcohol are known risk factors for cancers of the oral cavity. In India, 57% of all men and 11% of women between 15 and 49 years of age use some form of tobacco. Oral SCC arises from within a field of pre-cancerized epithelium either from a pre-existing potentially malignant lesion, or de novo. The use of tobacco and betel quid, heavy drinking of alcoholic beverages and a diet low in fresh fruits and vegetables are the major risk factors for oral SCC. The 5-year survival rate is poor at about 50%, mainly because about two-thirds of persons with oral SCC already have large lesions at the time of diagnosis. Also, future research and educational interventions among the general population should be aimed at improving for early detection and prevention of oral cancer.

Tables and Figures

Table no.1 Age Group Wise Distribution of Oral Squamous Cell Carcinoma

S.No	Age Group	Total No. Of Cases	Percentage
1.	≤ 20	02	1.2
2.	21-30	07	4.2
3.	31-40	48	28.7

4.	41-50	46	27.6
5.	51-60	35	20.9
6.	>60	29	17.4

Table no. 2 Site of Lesion

S.No	Site	Total No. Of Cases	Percentage
1.	Buccal Mucosa	107	64.1
2.	Tongue	57	34.1
3.	Tonsil	02	1.2
4.	Lip	01	0.6

Table No. 3 Number of Cases with Relevant Clinical History

S.No	History Of The Patient	Total No. Of Cases	Percentage
1.	Tobacco chewing	76	45.5
2.	Smoking	62	37.1
3.	Alcoholism	21	12.6
3.	No relevant history	08	4.8

Table no.4 Male Vs Female Preponderance

S.No	Gender	Total No. Of Cases	Percentage
1.	Male	113	67.7
2.	Female	54	32.3

Table no.5 Spectrum of Diagnosis

S.No	Type Of Lesion	Total No Of Cases	Percentage
1.	Well Differentiated Keratinizing Squamous Cell Carcinoma	92	55.1
2.	Moderately Differentiated Keratinizing Squamous Cell Carcinoma	48	28.7
3.	Poorly Differentiated Non-Keratinizing Squamous Cell Carcinoma	27	16.2

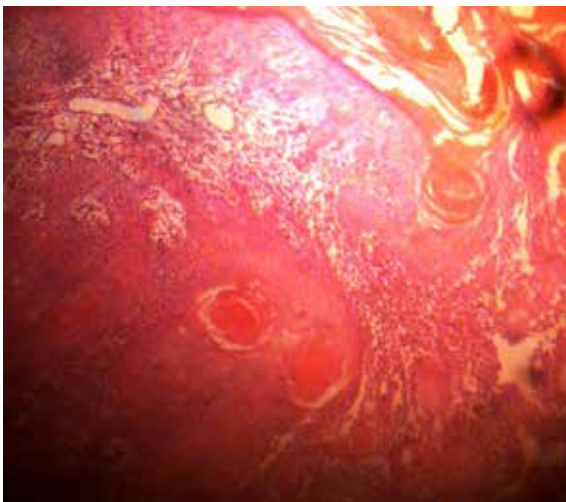


Fig. no. 1. Oral Keratinizing Squamous Cell Carcinoma H & E Stain 10x

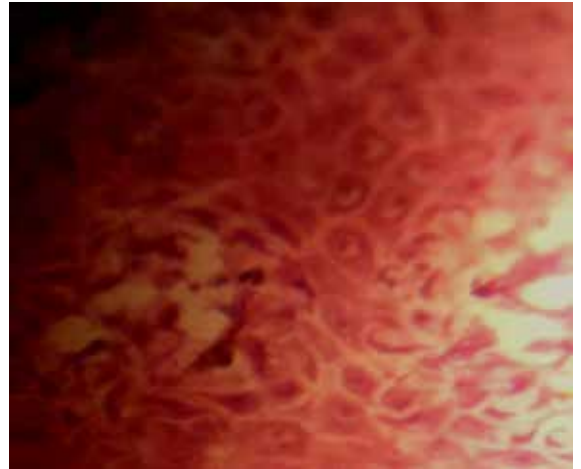


Fig. no. 2. Oral Keratinizing Squamous Cell Carcinoma H & E Stain 40x

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