ORIGINAL ARTICLE

RISK FACTORS OF ORAL SQUAMOUS CELL CARCINOMA IN OLD VERSUS YOUNG PATIENTS

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ABSTRACT

Approximately 94% of all oral malignancies are squamous cell carcinoma and numerous risk factors have been determined for its pathogenesis e.g. smoking, betel nut chewing and alcoholism. Traditionally oral squamous cell carcinoma is thought to be disease of males in their 6th or 7th decade of life but in younger people increased incidence has been noticed in recent years. The current study is a contribution to literature to compare risk factors of oral squamous cell carcinoma in younger and older patients.

The patients meeting inclusion criteria from Out Patient Departments of Oral and Maxillofacial Surgery Units of de'Montmorency College of Dentistry Lahore and Nishtar Institute of Dentistry Multan were selected. A structured questionnaire was used to record patient's demographic data and risk factors. Patients were selected after being confirmed for disease clinically and histopathologically. Of the total 232 patients, smoking was positive in 54.3% patients while drinking alcohol and betel nut chewing was in 10.3% and 87.9% respectively. No statistical significance was present in risk factors on comparison of old and young patients. On comparison of risk factors between male and female, difference was significant for betel nut chewing and smoking but not for alcoholism. Smoking was more prevalent in male patients while betel nut chewing was more common in female patients.

Key Words: *Squamous cell carcinoma, Old patients, Young patients, Risk factors, Smoking, Betel nut, Alcoholism.*

INTRODUCTION

Oral cancer represents 5-10% of all human malignancies and 94% of all oral malignancies is squamous cell carcinoma (OSCC).[1,2] It is one of the top ten most frequent cancers present around the globe with an incidence of 10-15/100,000 with male to female ratio of 2.5:1. OSCC involves cervical lymph nodes that drain areas of oral cavity directly or indirectly.[2,3,4] Most common risk factors include smoked and smokeless tobacco e.g. cigarette smoking, snuff dipping, betel nut chewing and alcoholism.[3-5]

About 65 to 75% of OSCC patients are linked to smoking, 30% with alcoholism and 26% with betel nut chewing.[6-8] Association between genetic factors, poor nutritional status, chronic viral and fungal infections, pre-existing oral disease and bad oral hygiene is also observed in other studies.[9-11] Clinically lesion may be ulcerative, exophytic or verrucous.[12] Site of involvement is typical for particular risk factor and area exposed to risk factor.[13]

Traditionally OSCC is a disease of males in their 6th or 7th decade of life. A number of OSCC cases are noticed in patients of 40 years or younger in recent years.[14,15] No local studies are available regarding risk factors of OSCC in young patients. In young patients its incidence and risk factors should be evaluated in Pakistan where a large number of patients remain undocumented. This study will be a contribution to literature to know the risk factors of OSCC and their comparison in old and young patients and consequently it will be helpful in raising the campaigns for awareness in young and older population.

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METHODOLOGY

This descriptive cross sectional study was conducted at the Department of Oral and Maxillofacial Surgery, de'Montmorency College of Dentistry Lahore and Nishtar Institute of Dentistry Multan from March 2017 to February 2018. Ethical approval was taken from ethical committees of the institutions. Patients of both genders, age range from 15 to 75 years with ulcerative lesion in oral cavity with or without cervical lymphadenopathy were taken from Out Patient Departments of Oral and maxillofacial Surgery Units of these institutions. The assessment of patients was done by detailed relevant history, clinical and radiographic examination. The status of ulcerated lesion was assessed by intra-oral and extra oral clinical evaluation and panoramic or occipitomental radiograph. A written informed consent from every patient was taken and every lesion was further confirmed by biopsy report for including the patients in the study. The patients where biopsy report was not conclusive for OSCC were excluded from the study. A structured questionnaire was used to record all the data e.g. patient's demographics like patient's name, age and gender, risk factors (smoking, alcohol, betal nut) occupation, educational and medical status. Clinical characteristics of lesion were also analyzed, including size, site and duration of lesion.

A total of 232 subjects were recruited randomly from OPD and divided into two groups on the basis of age after stratification. Group-I (old patients) consisted of individuals with age above 40 years while Group-II (young patients) consisted of individual $\leq$ 40years of age. All records of patients were kept confidential and entered in SPSS version 17 to analyze and find out distribution of different variables in terms of proportions and percentages. The variables were presented in graphs and tables. Mean and standard deviation (mean±SD) were calculated for age of OSCC patients. Frequency and percentages were calculated for gender, monthly family income, educational status and risk factors (smoking, alcohol and betel nut). Chi-square test was applied to compare responsible factors in old and young age group as well as in male and female patients. P value $\leq$ 0.05 was considered significant.

RESULTS

The current study comprised of a total of 232 patients of oral squamous cell carcinoma. The age range was from 15 to 75 years. Most of the patients were from fifth and sixth decade of life with mean (±SD) age of 46.83± 6.93years. There was a male predilection in current study including 168 (72.4%) male and 64 (27.6%) female patients. Frequencies and percentages of stratified age of patients with OSCC are given in Figure 1.

Paan chewing (88%) was the most common risk factor among all patients followed by smoking (54.3%) and alcohol consumption (10.3%). Frequencies and percentages of age, gender and risk factors of smoking, drinking alcohol and betel nut chewing in old versus young patients are given in Table 1.

Male to female ratio was 2.8:1 in old patients of OSCC and 2.12:1 in young patients. Similarly, comparison was done between frequency of smoking, alcohol drinking and betel nut chewing in old and young patients of OSCC and difference was not statistically significant for all three risk factors (p=0.24, 0.76, 0.99 respectively).

Mean (± SD) age of female patients (47.03±7.16years) was almost comparable to male patients (46.75±6.93years) and it was not statistically significant (p=0.84). Smoking was more prevalent in male as compare to female patients and no statistical significance was shown by chi-square test statistics due to less than 5 samples of female smokers in OSCC patient (p=0.00) (Table 2).

Similarly, comparison was done between frequency of alcohol drinking in male and female patients and difference was not statistically significant (p=0.11). On comparison, frequency of paan chewing was high in female patients as compared to male patients and difference was statistically significant (p=0.01).

DISCUSSION

Symptoms associated with oral squamous cell carcinoma are common complaints of patients which compel them to present to oral and maxillofacial surgeons for treatment. Oral and Maxillofacial Surgery Departments of de'Montmorency College of Dentistry Lahore and Nishtar Institute of Dentistry Multan are very well renowned Oral and Maxillofacial units in Pakistan and cater the patients from all over the Punjab and adjacent areas of Sindh, Baluchistan and KPK provinces. Being tertiary care centres, most of the patients operated are referred from remote areas and are usually presented with massive disease as well as different educational, social, cultural and financial status.

In recent years, increasing number of OSCC cases in younger individuals have been documented ranging from 6% to 11.7%.[16,17,18,19] In current study, mean (± SD) age of OSCC patients was 46.83 ± 6.93years. These results indicate that OSCC patients of current study presented in late 5th decade or in early 6th decade of life. These results were in accordance with other Asian studies.[20,21] These results were not in accordance with North American and American populations. In North American populations OSCC patients presented in 7th or 8th decade of life while USA oral cancer statistics

TABLE 1: COMPARISON OF RISK FACTORS OSCC IN OLD VERSUS YOUNG PATIENTS

Risk factor	Old patients (41-75years)	Young patients (15-40years)	p-value
Number of patients N, (%)	182 (78.88%)	50(21.12%)	
Age (Mean ±SD)	49.81±3.88	35.96±4.37	
Male/female, n (ratio)	134/48 (2.8: 1)	34/16 (2.12: 1)	
Smoking (yes/no)	104/78	22/28	0.24
Drinking alcohol (yes/no)	18/164	6/44	0.76
Betal nut chewing (yes/no)	160/22	44/6	0.99

N=total numbers of subjects, SD=standard deviation, $p \leq 0.05$= statistically significant

TABLE 2: GENDER BASED COMPARISON OF RISK FACTORS IN OSCC PATIENTS

Risk factor	Male patients	female patients	p-value
Number of patients N, (%)	168 (72.4%)	64 (27.6%)	
Age (mean±SD)	46.75±6.93	47.03±7.16	0.84
Smoking (Yes/no)	124/44	2/62	0.00*
Drinking alcohol (yes/no)	22/146	2/62	0.11
Betal nut chewing (yes/no)	140/28	64/0	0.01*

N=total number of subjects, SD=standard deviation,*$p \leq 0.05$= statistically significant

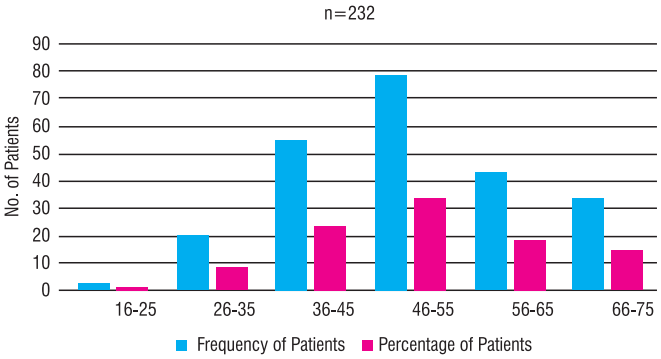

Fig. 1: Age Distribution in Oral Squamous Cell Carcinoma

found that median age of OSCC patients was 62years.[22] Most probable reason for contradictory result is early exposure of chewing habits to individuals in Asian populations.

In current study, 54.3% of OSCC patients were smoker that was in agreement with results found by Iype *et al* where they found that 56.4% patients associated with smoking of tobacco.[23] Rodriquez *et al* found 77 % and Khalili J 90 % association of smoking with OSCC that was not in accordance with current study.[24,25] These differences might be due to social trends of Asian subcontinent.

In present study, alcohol drinking was positive in 10.3% OSCC patient that was not in accordance with study of Rodriquez *et al* who found 52% association between alcohol drinking and OSCC.[24] Social disparity and trends might be reason of this difference. In current study, 87.9% of OSCC patients chewed areca nuts. Results of current study were in accordance with study of Akhtar *et al* who found similar association between paan chewing and OSCC in south Asian populations.[9] There was a slight difference between results of current study and study conducted on Thai population where areca nut chewing was in 50.2% of individuals.[26]

In this study, it was revealed that paan chewing (87.9%) is highly associated with OSCC as compared to smoking (54.3%) and alcohol drinking (10.3%). On comparison with other studies of subcontinent, it was in accordance with results of Iype *et al* and Akhtar *et al*.[9,23] While results compiled by Iamaroon *et al* was not in agreement with current study.[26] Contradiction in results might be due to ethnic back ground and socioeconomic status of study population.

Current study determined that percentage of older OSCC patients (78.88%) was higher as compared to younger people (21.12%). These results were not in agreement with study of Iamaroon *et al* who determined incidence up to 12.4% in Thai individuals and incidence was 10.7% in Brazilian OSCC patients.[16,26] In current study, higher occurrence of OSCC in younger patients seems to be due to longer and earlier exposure to smoking and paan chewing. In current study, mean (±SD) age was 49.81±3.88 years in old patients and 35.96±4.37 in young patients. These results are in accordance with Iamaroon *et al* where median age of young patients was 39 years. In present study, male to female ratio was almost equal in both groups (2.8:1 in old patients and 2.12:1 in young patients). These results were also

comparable to Iamaroon *et al* who found it as 2.3:1.[26]

In current study, risk factors were also compared between old and young patients. Smoking was positive factor in 57% of old patients and 44% young patients. Similarly, percentages of paan chewing and alcohol consumption in both groups did not show statistical significance (Table 1). In Pakistan, tobacco is used in both smoked as well as in smokeless form. Smoking cigarette is common throughout the country. Pan a type of smokeless tobacco is popular in Karachi and some cities of Punjab. Snuff (Niswar) is powdered tobacco mixed with ash or lime and some flavoring or chemical agents. It is place between gums and upper or lower lip. This type of smokeless tobacco is popular in Baluchistan and Khyber Pakhtunkhwa.[27,28]

Results of current study are in accordance with the study of Hirota *et al.*[29] According to current study, OSCC was more prevalent in male gender (72.4%) as compared to females (27.6%) and male to female ratio was 2.63:1. Results of current study were in agreement with previous studies of subcontinent where Iype *et al* reported male to female ratio of 2.3:1.[9,23] These slight differences might be due to Islamic and social trends in Pakistan or different ethnic groups.

Risk factors were also compared between both genders in current study. Smoking was almost exclusively present in male patients (p=0.00) and drinking alcohol was also more prevalent in male patients but there was not any statistical difference. Difference between both genders was statistically significant for paan chewing habit (p=0.01) and it was more common in female patients (Table 2). Results of current study are similar to study of Iamaaroon *et al* and Llewellyn *et al* but contradict with study of Hirota *et al.*[26,29,30] This difference might be due to social trend of Indo-Pak subcontinent and Europe.

CONCLUSION AND RECOMMENDATIONS

In present study, there was no difference of risk factors of oral squamous cell carcinoma in old and young patients. Smoking was more prevalent in male patients while betel nut chewing was more common in female patients. Continuous campaigns regarding different risk factors and their consequences should be arranged to create awareness in general public. Heavy taxes should be imposed on snuff and paan manufacturing making these products more expensive thereby decreasing their use. Moreover, import of cigarettes and alcohol should be banned in Pakistan. The issue should also be raised at mass level to sort out the reasons for more consumption of tobacco by males and betel nut by female population and strict legislation should be implemented to check these risk factors so as to decrease overall incidence of OSCC in general population.

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