SNUFF SIPPING AS A RISK FACTOR FOR SQUAMOUS CELL CARCINOMA OF THE ORAL CAVITY

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ABSTRACT

Objective: To determine the association of snuff dipping with SCC of the oral cavity.

Methodology: This case control study was conducted at department of dentistry of Ayub Teaching Hospital (ATH), Abbottabad over a period of six months. A total of 31 cases of oral SCC, fulfilling inclusion and exclusion criteria were selected. Tissue biopsies were submitted to the histopathology departments of Ayub Medical College, Abbottabad and Armed Forces Institute of Pathology, Rawalpindi. Same number of controls with similar age and gender were selected and history regarding snuff dipping was taken.

Results: Out of 31 patients of SCC, 24 were having history of chronic snuff dipping. Most of the patients were above the age of 45 years with the mean age of 53.90 (SD$\pm$13.73) while male to female ratio was 3.1: 2. Oral SCC developed at the site of placement of snuff in 75.5% of the patients and the most common site of SCC was lower left buccal sulcus. Among 31 controls, only six (19.35%) people were snuff users. Oral SCC was found to be associated with the snuff dipping having an Odds ratio of 14.28 and a P value of 0.00.

Conclusion: The snuff dippers are at a high risk of developing oral SCC as compared to non-dippers, both in males and females. People should be educated about the serious side effect of this social habit, snuff dipping.

Key words: Snuff dipping, squamous cell carcinoma, oral cavity, buccal sulcus, tobacco, naswar.

INTRODUCTION

Squamous cell carcinoma (SCC) is the most common epithelial malignant neoplasm of the oral cavity[1] constituting 96.5% of all oral malignancies[2] and synonymously using the term oral SCC and oral cancer.[3] Although different aetiological factors have been documented, any single clearly recognizable cause is yet to be established. Snuff dipping, a commonly used smokeless tobacco, is a common habit in Khyber Pakhtun Khwa (KPK) province and is locally known as naswar. More than three hundred carcinogenic agents have been analyzed in snuff. The most potent amongst these are tobacco specific nitrosamines (TSNA),[4,5] prolonium–210, alkaloids and benzopyrene.[5] The snuff used in KPK is usually locally made, comprising of tobacco, ash, lime and water. Development of oral cancer is a multistep process, ranging from development as a white or red patch, unusual pain and swelling, dysphagia and dysphonia. Diagnosis is confirmed on tissue biopsy and tumor is staged according to TNM staging system. Various treatment modalities available for oral SCC are surgery, radiotherapy and chemotherapy. Five year survival rate depend upon the stage of diagnosis. The habit of snuff dipping is very common in Hazara Division and so is oral SCC. The purported significance of this study is to find an association of snuff dipping with SCC, thus helping in educating local population about the life threatening effect of snuff, oral SCC.

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METHODOLOGY

This case control study was carried out in the Oral and Maxillofacial Surgical Unit of Dentistry Department of Abbotabad Teaching Hospital, Abbottabad, which is a tertiary care hospital over a period of six months i.e. from 7th of August, 2006 till 7th February 2007. A total of 31 cases of oral SCC were selected through convenience sampling. The same number of age and gender matched controls were selected. All cases of oral SCC were biopsy proven on histopathology, irrespective of their age and gender. Controls were not having SCC and were selected on the basis of similar age and gender. Site, duration (in term of decades), quantity of snuff (one sachet weighing 35 grams), alcoholism, betal-nut chewing, pan or cigarette smoking were also inquired from both cases and controls. Cases with simultaneous intake of pan, cigarette smoking, betal-nut chewing or alcoholism with snuff dipping were excluded from the study.

RESULT

Out of total 31 patients, 19 (61.29%) were males and 12 (38.70%) were females with male to female ratio of 3.1:2. Age of patients ranged from 18 to 85 years with the mean of 53.9+13.793. Distribution of patients with reference to age and gender is shown in figure 1. Snuff

dipping was the most common risk factor accounting for 77.4% of patients followed by smoking 12.9%, while 9.67% of patients were not having any of such habits. Sixty six per cent of patients, having habit of snuff dipping, were males, while 43% were males among those not having the habit of snuff dipping.

Seventy five per cent of the patients were having lesions at the same site of placement of snuff. Most common site was buccal sulcus followed by tongue as shown in Table 1.

In the present study among snuff dipper patients,

Table 1: Site of SCC

Site	Number of cases	Percentage
Buccal sulcus	17	54.83 %
Lip/Labial sulcus	2	6.45 %
Tongue	7	22.58 %
Floor of mouth	1	3.22 %
Palate	1	3.22 %
other sites	3	9.67 %
Total	31	100 %

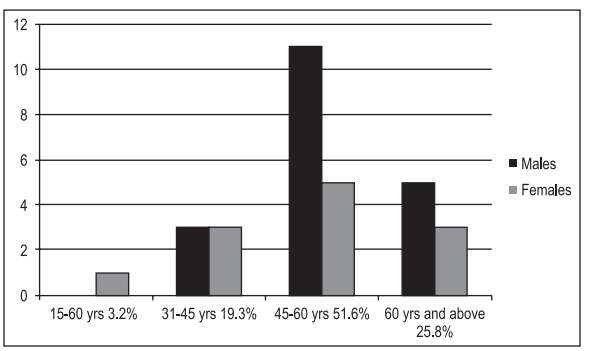

Figure 1: Distribution of SCC patients with reference to age and gender (n=31)

87.5% were using one sachet (average weight 35 grams) of snuff per day while 12.5% were using two sachets of snuff. The mean amount of snuff used was 39.375gm (SD+11.824) with a frequency of five to seven times per day, and the bolus was kept in mouth for three to five minutes. The mean quantity of snuff consumed by patients was 39.3gm (SD+11.824). Most of the patients (91.66%) were having history of snuff using for more than 20 year. Among patients 77.4% were snuff dippers, while among controls, only 19.3% were having habit of snuff dipping.

In the present study, odds ratio is 14.28 while chi square value $(\chi)^2$ is 20.93 and P value is 0.00, which shows that snuff dipping is strongly associated with oral SCC.

DISSCUSION

Snuff dipping is a commonly used form of tobacco in Peshawar and neighbouring areas of Afganistan.[6,7] Snuff dipping is commonly practiced in Hazara Division of KPK on account of cultural and religious reasons. It is preferred because it is a socially discrete habit and less expensive than cigarettes. Alcohol is prohibited both socially and culturally, therefore, either patients in our study were not alcoholics or didn't give history of alcoholism. Social trends over here also discourage smoking. According to Subramian et al, probability of chewing tobacco and smoking is inversely related to high level of education and standard of living.[8] The low level of education and standard of living in Hazara Division is another likely cause of high frequency of snuff dipping. Snuff dipping is not only common in Hazara but a common habit in all parts of KPK and in the adjacent parts of Afghanistan as the cultural and social values are same in both, geographically adjacent regions.

In present study 90% of patients of oral SCC were having the habit of snuff dipping and smoking which is quite similar to the study conducted in Kerala District of India by Iype et al. According to them almost all the patients included in their study i.e. 98% (n=42) used either tobacco or alcohol with tobacco chewing being the most common.[9] Study of Winn et al shows that chronic use of snuff is high risk factor for oral SCC and the risk approaches 50 fold to cancer of gums and buccal mucosa as there is direct contact of snuff with gums and buccal mucosa.[10] Similarly, Khan & Khitab also recorded that snuff is a risk factor for SCC of the oral cavity.[11] Contrary to the results of present study, Lewin et-al showed that tobacco smoking and alcohol consumption had strong interaction in respect of causing oral SCC, however they further added that Swedish snuff had no significance in causing SCC of the oral cavity.[12] This could probably be explained by the study of Brunnemann et al, which proved that saliva of toombak (homemade oral snuff use in Sudan), contains TSNA content at least ten times higher than that of saliva of the snuff dippers using commercial snuff from Sweden and United States of America, making it ten times more carcinogenic than the commercially used snuff in Sweden and USA.[13]

In the present study, snuff dipper in Hazara district were found to have different habit of snuff dipping from South Africa. Ayo Yusuf et al[14] reported that in South Africa average smokeless tobacco users dip about four times a day for a duration of 30 minutes each time, compared with a frequency of five to seven times per day for a duration of three to five minutes. The mean amount of snuff used by the people of Hazara was five times greater than the mean amount of snuff used in South Africa, probably another factor in addition to composition of snuff, owing to less frequency of oral SCC in South Africa.

In the present study, commonest site of SCC was

left lower buccal sulcus followed by tongue, right lower buccal sulcus, lower labial sulcus and left retromolar area, in order of frequency. The left lower buccal sulcus is most easy and accesssible site for snuff dipping, making it more prone to SCC.

In the present study, 70.83% (n=17) of the snuff dippers used to put the snuff in left lower buccal sulcus and majority of them that is 76.47% (n=13) of the patients developed lesions at the same site. Similar results were found by Wahid et al[15], Bhurgri et al[16], and Issac et al[17], however Barasch et al[18], Dantas et al[19] and Gervasio et al[20] reported that the most common site of oral SCC was tongue. Similar pattern was seen in non-snuff dippers in the present study, with tongue being the commonest site.

Oral SCC has long been considered to be a tumour of elderly and has been seen only sporadically before third decade of life. In the present study, the mean age was 53.90 yrs which was almost similar to national,[15,17] regional[21] and international studies[18,20]. slightly less than the age (58.6 yrs) reported by Gervasio et al.[20] Similarly, Barasch et al also reported that patients of oral SCC present in 6th and 7th decade of life.[18] Contrarily, the study of Bhurgri had showed quite different results and said that majority of the patients in their study were below 40 years.[16]

Almost all the patients (n=22) were having history of snuff dipping for more than 20 years or above while two patients (8.33%) had used snuff less than 20 years with the mean of 29.125 yrs (SD+8.232). Snuff is commonly known as naswar and has an alkaline pH, which over prolonged use is carcinogenic, as demonstrated by Shah and Khan.[22] A significant case control study by Winn et al documented an increased risk of oral SCC in white women older than 60 years, especially at the site of placement of smokeless tobacco.[23]

The study carried out by Bhurgri in Karachi showed that oral SCC is equally common in both of the genders.[16] Wahid et al and Mehrotra et al[21] showed distribution of oral SCC similar to present study. Contrarily, Isaac et al showed high prevalence of oral SCC for females as compare to males.[17] Similar changing trend with increasing prevalence of oral SCC in females from 9.8:1 in 1935 to 2.6:1 in the 1985, were observed in United States of America.[18] This can be explained by the increase exposure of carcinogenic substances as a result of increasing habit of using tobacco and alcohol in women. The increased use of snuff among females in Hazara District can be attributable to increased use in case of toothaches, to relieve physical and mental stress (encountered by females more than males) and to being cheaper and relatively more socially acceptable than cigarettes.

CONCLUSION

Snuff dipping is common habit in Hazara district and other areas of KPK. Snuff dippers are at high risk of developing oral SCC at the site of placement of snuff as compared to non-snuff dippers, irrespective of gender. Oral SCC commonly develops at the site of snuff dipping and is related to the time period naswar is used. Awareness programs and campaigns through social media must be started, particularly in KPK, to educate people regarding the detrimental effects of apparently pleasant and an economical habit, the snuff dipping.

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