

Epidemiology of Oral Cancer in Southern Punjab, Pakistan

MUHAMMAD SAFDAR BAIG¹, RIAZ AHMED BHUTTO², SHER MUHAMMAD³, MUHAMMAD ISMAIL SIDDIQUI⁴

ABSTRACT

Aim: To develop preventive oral healthcare approach for early detection of oral cancer for prevention and better control among general population with practices like risk factors for oral cancers the use of tobacco and alcohol consumption.

Methods: This is retrospective hospital based study carried out on the oral cancer patient data available at Bahawalpur Institute of Nuclear Medicine and Oncology (BINO) and the Multan Institute of Nuclear Medicine and Radiotherapy (MINAR) for last five years from 2010 to 2015.

Results: The prevalence of the squamous cell carcinoma was 95% out total 398 patients of oral cancers while non-squamous cell carcinoma was among 5% of patients.

Conclusion: A community base preventive oral healthcare approach for early detection of oral cancer for better control and prognosis is the best strategy for squamous cell carcinoma prevention at population level for a country with scarce resources with respect to manpower and finances.

Key words: Epidemiology, Oral cancer, Tobacco use, Alcohol consumption

INTRODUCTION

Pakistan is facing double burden of the diseases like other developing countries of this region, there are un-controlled infectious diseases with increasing graph of chronic disease like oral cancer as well. It is a major public health problem with respect to its morbidity and mortality as being the fifth most common malignancy all over the world.¹ The most prevalent form of the oral cancer in South East Asia is squamous cell carcinoma because of cultural use of betel-quid and different forms of tobacco as the major risk factors for oral mucosa.² In Southern Punjab there are two centers Bahawalpur Institute of Nuclear Medicine and Oncology (BINO) and Multan Institute of Nuclear Medicine and Radiotherapy (MINAR) concerned with their hospital based data cancer registration and treatment of all types of the cancer for diagnosis, and research purpose.³ From literature, it is evident that from majority of the head and neck cancers the oral cancers constitute about 5% out of all the human malignancies. Its annual incidence from community base study from district south Karachi is 4.1 per 100000 among males and 4 per 100000 among females.⁴ The most common form of oral cancer about 95% is the squamous cell carcinoma, while the other forms are the adenocarcinoma of the salivary glands, odontogenic neoplasm and the malignant melanomas and the

adenoid cystic carcinomas. They usually arise from potentially precancerous lesion of oral cavity and spreads by locally invasion to the adjoining soft and hard tissues by metastasis to the regional lymph nodes⁵.

The oral cancer mostly included in head and neck cancers registry is associated with selection and reporting bias due to different hospital standard protocols as per their variation for documentation of patient's profile.⁶ From the results of the study published in Asian Pacific Journal of Cancer Prevention the prevalence of oral cancer registry from southern Punjab included Bahawalpur, Multan and some referral reported cases from Lahore cancer hospitals. Out of these head & neck cancers treated from 2005 to 2006, the highest frequency has been reported from the rural Sindh 22.6% followed by the Punjab province 13.4% then Islamabad 13.1%, Baluchistan 11.4% and KPK 8.6%.⁷

PATIENTS AND METHODS

This prospective study was comprised 398 patients and carried out at Bahawalpur Institute of Nuclear Medicine and Oncology (BINO) and the Multan Institute of Nuclear Medicine and Radiotherapy (MINAR) over a period of five years retrospective patient hospital record data collection from August 2010 to November 2015. The data consist of information retrieved from head and neck cancer regarding squamous cell carcinoma and non squamous cell carcinoma about the variables like age, gender, site in the oral cavity and the possible risk factors as mentioned in the patient history of illness like use of betel quids, use of tobacco in any form and alcohol use. History of use of paan, naswar,

¹Assistant Professor & Head Department of Oral & Dental Surgery Quaid-e-Azam Medical College and Bahawal Victoria Hospital Bahawalpur, ²Assistant Professor Community Medicine Altibri Medical College, Isra University Karachi, ³Assistant Prof. Oral Biology, Nishtar Institute of Dentistry Multan, ⁴Senior Dental Surgeon

Correspondence to Dr. Muhammad Safdar Baig
Email: safdarbeg@gmail.com

challia, sipari etc was tried to record, but there was in complete information available from patients history profile as insufficient information was available from hospital record because the patients information was recorded for the purpose of the treatment. The data was analyzed in SPSS-20.

RESULTS

The prevalence of the squamous cell carcinoma was detected 95% out of the total 398 cases and the most

common site in the oral cavity came out to be alveolous 37.9% and the 2nd most common site is the tongue 31.2% and oral mucosa 13.4% which includes buccal mucosa and the gums gingave. The less common site for oral cancer came out to be palate, lips and floor of the mouth about 2%. The non-squamous cell carcinomas were the adenocarcinoma, adenoid carcinoma, adenoid cystic carcinomas, millignant melanomas etc (Table 1).

Table 1: Site distribution of squamous cell carcinoma in oral cavity from both centers

Site of oral cavity	Squamous cell carcinoma (n = 379)		Non-squamous cell carcinoma (n = 19)		Total (n=398)	
	No.	%	No.	%	No.	%
Alveolous	147	38.7	4	21.0	151	37.9
Tongue	122	32.2	2	10.6	124	31.2
Oral mucosa	52	13.8	1	5.2	53	13.4
Lips	32	8.4	4	21.0	36	9.0
Palate	8	2.2	2	10.6	10	2.5
Retromolar area gums	11	2.9	5	26.3	16	4.0
Floor of mouth	7	1.8	1	5.3	8	2.0

DISCUSSION

The oral cancers are the most aggressive form of the malignant lesions as they have great potential for metastasis to the local regional lymph nodes and adjoining perioral tissues due local invasive characteristic. The disease pattern and even the treatment protocols consequently cause disfigurement and effects quality of life of the individual very adversely. Its survival rate is low and recurrence is very high along with its mortality and there is associated high cost of the treatment⁸.

There are differences in the occurrence of oral cancer in the Asian countries but the risk factors responsible are more or less the same like use of tobacco in many forms as quid chewing, smoking and smokeless as naswar, badi, use in paan and the alcohol consumption⁹. There are also differences in prevalence of these habits and still some unknown and unexplained etiological factors other than the socioeconomic and cultural in different parts in the Asian countries¹⁰. The cultural habit of quid chewing like all regions of the Asian countries is also more prevalent in Southern Punjab, Pakistan¹¹. Its most recent and freely available form is sachet like gutkha, paan masala, sipari with challia etc equally popular among adults and children, males and females in most parts of the country which is main reason for poor oral hygiene as well^{12,13}.

The reason for oral cancer increase incidence is due to tobacco chewing along with alcohol consumption at the same time.¹⁴ Among the other risk factors are low socioeconomic status less use of

fruits and vegetables and a diet with less nutritional values, poor oral hygienic practices and the viral infection like human papilloma virus¹⁵. The other unexplained factor is genetic predisposition with respect to known family history for oral cancer¹⁶. There are greater chances of initially the appearance of precancerous oral lesion which later on transform to true squamous cell carcinoma with the passage of time¹⁷.

The oral cancer is thought to be a disease of old age group about 50 to 70 years but there are few published articles as per their results it can occur in quite younger age without the absence of any known risk factors.¹⁸ Oral cancer has linear trend with the advancing age and mean age is between 51-55 years as per global data from divergent socio-demographic back grounds. Now with the passage of time and advancement in new technologies and diagnostic and screening facilities some parts of the world about 17% are cases are blew 40 years of age. So for age and gender is concerned, males are more affected by oral cancers as compared to females. If we compare male to female ratio it is 1.45 in Japan, while 1.5 in Pakistan, as males are exposed to more risk factors of the oral cancers in our settings as compared to females¹⁹.

The most common form of the oral cancer is the oral epithelial, oral mucosal malignant form called oral squamous cell carcinoma which is about 90% of all the malignancies of the oral cavity²⁰. It is very amazing that the soceio-demographic and cultural factors responsible for the development of oral cancers are most prevalent in resource poor region of

the world – South East Asia previously called the 3rd world countries²¹. Oral cancer prevention strategies as advocated from WHO platform are capacity building; inter country exchange of information about health education and oral health promotion approaches²². There is need to establish country level surveillance for oral cancer with national level integrated interventional programs, focusing oral cancer as an integral part of national level cancer prevention program through involvement of oral healthcare delivery persons with appropriate training for early oral cancer detection and its diagnosis and treatment planning²³. Oral cancer early detection just need to have comprehensive command about the signs and symptoms of early lesions, by examining oral cavity for any precancerous condition, proper system of referral in place and patient management who are at increased risk with respect to their lifestyle^{24,25}.

At the primary healthcare level there is dire need for ongoing training support, methods for soft tissue examination for early diagnosis and oral mucosal biopsies techniques for cancer detection its referral and record keeping and liaison with concerned specialist and oncologist through established health management information system at all healthcare delivery level centers²⁶.

CONCLUSION

Through such community based preventive oral health education and promotion approach it is possible to combat the issue of oral malignancy by effective and well managed oral healthcare delivery system from primary care level to secondary and tertiary care level as an integrated manner.

REFERENCES

1. Subapriya R, Thangavelu A, Mathavan B, Ramachandran CR, Nagini S. Assessment of risk factors for oral squamous cell carcinoma in Chidambaram, Southern India: a case-control study. *Eur J Cancer Prev* 2007; 16: 251-6.
2. Addala L, Pentap ati CK, Reddy Thavanati PK, Anjaneyulu V, Sadhnani MD. Risk factor profiles of head, neck cancer patients of Andhra Pradesh, India. *Indian J Cancer* 2012; 49: 215-9.
3. Hanif M, Zaidi P, Kamal S, Hameed A. Institution-based cancer incidence in a local population in Pakistan: nine year data analysis. *Asian Pacific J Cancer Prev* 2009; 10: 227-30.
4. Bhurgri Y, Rahim A, Bhutto K, Bhurgri A, Pinjani PK, Usman A, et al. Incidence of carcinoma of oral cavity in Karachi: District South. *J Pak Med Assoc* 1998; 48: 321.
5. Bhurgri Y. Cancer of the oral cavity - trends in Karachi south (1995-2002). *Asian Pac J Cancer Prev* 2005; 6: 22-6.
6. Bhurgri Y, Hasan S, Pervez S, Kayani N, Hussain AS, Muzaffar S, et al. Large-scale pathology-based cancer data a reflection of population-based cancer data. *Pathol Oncol Res* 2002; 8: 62-7.
7. Chaudhary S, Khan AA, Mirza KM, Iqbal HA, Masood Y, Khan NR, Izhar F. Estimating burden of head and neck cancer in the public sector of Pakistan. *Asian Pac J Cancer Prev* 2008; 9, 529-32.
8. Rao SVK, Mejia G, Roberts-Thomson K, Logan R. Epidemiology of oral cancer in Asia in the past decade: an update (2000-2012). *Asian Pacific J Cancer Prev* 2013; 14: 5567-77.
9. Lee CC, Chien SH, Hung SK, Yang WZ, Su YC. Effect of individual, neighborhood socioeconomic status on oral cancer survival. *Oral Oncol* 2012; 48: 253-61.
10. Ariyawardana A, Sitheequ MA, Ranasinghe AW, et al. Prevalence of oral cancer, pre-cancer, associated risk factors among tea estate workers in the central Sri Lanka. *J Oral Pathol Med* 2007; 36, 581-7.
11. Bhurgri Y, Bhurgri A, Hussain AS, Usman A, Faridi N, Malik J, et al. Cancer of the oral cavity, pharynx in Karachi: identification of potential risk factors. *Asian Pac J Cancer Prev* 2003; 4: 125-30.
12. Balam P, Sridhar H, Rajkumar T, Vaccarella S, Herrero R, Nandakumar A, et al. Oral cancer in southern India: the influence of smoking, drinking, paanchewing, oral hygiene. *Int J Cancer* 2002; 98: 440-5.
13. Madani AH, Jahromi AS, Dikshit M. Risk assessment of tobacco types, oral cancer. *Am J Pharmacol Toxicol* 2010; 5: 9-13.
14. Jayalekshmi PA, Gangadharan P, Akiba S, Koriyama C, Nair RR. Oral cavity cancer risk in relation to tobacco chewing, bidi smoking among men in Karunagappally, Kerala, India: Karunagappally cohort study. *Cancer Sci* 2011; 102: 460-7.
15. Madani AH, Dikshit M, Bhaduri D. Risk for oral cancer associated to smoking, smokeless, oral dip products. *Indian J Public Health* 2012; 56, 57-60.
16. Nagpal JK, Patnaik S, Das BR. Prevalence of high-risk human papilloma virus types, its association with P53 codon 72 polymorphism in tobacco addicted oral squamous cell carcinoma (OSCC) patients of Eastern India. *Int J Cancer* 2002; 97: 649-53.
17. Rajkumar T, Sridhar H, Balam P, Vaccarella S, Gajalakshmi V, Nandakumar A, et al. Oral cancer in Southern India: the influence of body size, diet, infections, sexual practices. *Eur J Cancer Prev* 2003; 12: 135-43.
18. Khan MH, Naushad QN. Oral squamous cell carcinoma in a 10 year old boy. *Mymensingh Med J* 2011; 20: 145-50.
19. Sherin N, Simi T, Shameena PM, Sudha S. Changing trends in oral cancer. *India J Cancer* 2008; 45: 93-6.
20. Helen-Ng LC, Razak IA, Ghani WM, Marhazlinda J, Norain AT, Raja Jallaludin RL, et al. Dietary pattern, oral cancer risk - a factor analysis study. *Community Dent Oral Epidemiol* 2012; 40: 560-6.
21. Cancela Mde C, Ramadas K, Fayette JM, Thomas G, Muwonge R, Chapuis F, et al. Alcohol intake, oral cavity cancer risk among men in a prospective study in Kerala, India. *Community Dent Oral Epidemiol* 2009; 37: 342-9.
22. DiMatteo AM. Cancer: your responsibility. *Dentistry* 2007; 3(1):47-61.
23. Gomez I, Warnakulasuriya S, Varela-Centelles PI, Lopez-Jornet P, Suarez-Cunqueiro M, Diz-Dios P, Seoane J. Is early diagnosis of oral cancer a feasible objective? Who is to blame for diagnostic delay? *Oral Diseases* 2010; 16: 333-42.
24. Keralala CJ, Campbell A. Provision and quality assurance for head and neck cancer care. *Br J Oral Maxillofac Surg* 2000; 38(5): 543-5.
25. Speight PM, Downer MC, Zakrzewska J. Screening for oral cancer and precancer: a report of the UK Working Group on Screening for Oral Cancer and Precancer. *Community Dental Health* 1993; 10 (supplement 1): 1-89.
26. Lim K, Moles DR, Downer MC, Speight PM. Opportunistic screening for oral cancer and precancer in general dental practice: results of a demonstration study. *Brit Dent J* 2003; 194: 497-502.

