

ORIGINAL RESEARCH

Clinicopathological study of oral & oropharyngeal tumors including AgNOR study in squamous neoplasms

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ABSTRACT

Background: Cancer has emerged as a major killer disease in India. The present study was conducted to assess the incidence of oral and Oropharyngeal tumors with reference to the total tumors. **Materials & Methods:** The material for the present study was the biopsies and surgical specimens from patients admitted to one of several teaching hospitals attached to Bangalore Medical College viz. Victoria Hospital/ Vanivilas Hospital/ Sri venkateshwara Institute of ENT, Bowring and Lady Curzon Hospital and Government Dental College. The period of prospective study was from July 1994 to December 1996 and retrospective study was from July 1993 to July 1994. The pertinent history and clinical data of each case were obtained by personal interview with patient, from clinical case sheet and from hospital records. The specimens which were received at the Department of pathology consisted of wedge biopsies and some excision biopsies. **Results:** During the study period of three and a half years (July 1993 to December 1996) a total of 10,522 specimens were received in the department of pathology Bangalore Medical College. Out of this oral and Oro Pharyngeal tumour biopsies were 115. Neoplasms accounted for 3271 biopsies. There were 2162 benign neoplasms and 1109 malignant neoplasms. Of the total 115 Oral and Oro Pharyngeal tumors 34 were benign tumors and 81 Malignant tumours. Of 115 Oral and oropharyngeal tumors 80 were from the oral cavity and 35 from the Oropharynx accounting for 69.6% and 30.4% of total Oral and Oro pharyngeal tumors respectively. **Conclusion:** Oral and Oropharyngeal neoplasms (115 cases) comprised 3.5% of overall neoplasms recorded during the study period. Benign tumors of oral cavity and Oropharynx (34 cases) accounted for 1.6% of overall benign tumors and 29.6% of tumors in the oral cavity and oropharynx. Malignant Oral & Oropharyngeal tumors (81 cases) comprised 7.24% of overall malignant tumors and 70.4% of all tumors in the Oral cavity and Oropharynx.

Key words: Cancer, AgNOR, malignant tumors

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INTRODUCTION

Cancer has emerged as a major killer disease in India. The risk of developing cancer or dying from cancer varies widely in different parts of the world and in different population groups.¹ Reasons for these variations are not fully understood but may include habitat social customer diet. Occupational exposure, climate, geography, and differences in race and other genetic factors.²

The most of the Asian Countries have got much higher incidence of oral cancer than other countries in the world except, perhaps, Japan and Singapore.³ It has often been suggested that oral Cancer is of multifactorial Origin Viz. Smoking, Spirit, Spices, Syphilis, and sepsis. Among Indians, the high incidence is due to the habit of tobacco usage in one

form or the other. Oral tumors are in their precancerous and early stages accessible to direct inspection.⁴ The early diagnosis and the treatment of cancer are based on the concept that Carcinomata develop over a long period of time, going through intermediate stages of different biological significance and that treatment at this early or pre-invasive stage offers the best prognosis and even the chance of a cure.⁵ Unfortunately, despite increasing awareness nearly 50% of patients will present in late stages. Bone involvement takes place early and is seen in nearly two-thirds of cases.⁶ The present study was conducted to assess the incidence of oral and Oropharyngeal tumors with reference to the total tumors.

MATERIALS & METHODS

The material for the present study was the biopsies and surgical specimens from patients admitted to one of several teaching hospitals attached to Bangalore Medical College viz. Victoria Hospital/ Vanivilas Hospital/ Sri Venkateshwara Institute of ENT Bowring and Lady Curzon Hospital and Government Dental College.

After recording the gross morphology, the tissue was oriented and sectioned and representative sections were fixed in 10% neutral formalin for 24 hours before processing the specimen. The sections of 5 microns thick were cut using rotary microtome and sections were studied after routine hematoxylin and eosin staining. The selection of the cases was based on the WHO classification of oral and oropharyngeal tumors. In the squamous cell carcinomas of Oral cavity and Oropharynx, histologic grading of the tumor was carried out based on cellular Keratinization, presence or absence of intercellular bridges, epithelial pearls, dyskeratosis, number of mitotic figures, tumor giant cells and cellular and nuclear pleomorphism. AgNOR counts were done in Formalin fixed paraffin embedded tissue sections comprising of 13 squamous papillomas and 40 squamous cell carcinomas of the oral cavity and Oropharynx. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

The AgNORs appeared within the nuclei as dark brown to black dots of varying sizes against a pale

yellow background of the nuclei. 100 cells were examined from representative field of the lesion from each slide using a x 10G oil immersion lens. NOR's were identified and counted. As in Figure 1, the mean number of AGNORs were then calculated per cell, and compared with mean AgNORs in different groups. In normal epithelium(a) the mean AgNOR count was 1.6 / cell and the AgNOR count ranged from 1.5 to 1.81 / cell. In squamous papillomas(b) , the AgNOR count ranged from 1.78 to 2.4 / cell with a mean of 2.1 / cell. In squamous cell carcinoma (c) the AgNOR count ranged from 2.9 to 5.4 / cell with a mean AgNOR count of 4.4 / cell. The difference between(a) &(b), (b) &(c), (a) &(c) was found to be statistically highly significant [P<0.001]. The silver colloid technique of staining NORs seems to be a promising diagnostic aid, though time consuming in differentiating oral epithelial tumours. The interpretation of AgNOR counts in highly structured cell populations with a rapid cell turnover in health such as Oral epithelium may be a more complex process compared to tissues with stable cell populations. Though NORs are easily stained and visualized under light microscope there is still considerable debate over the standard counting protocol. It would be worthwhile to investigate the discriminating powers of other NOR related parameters like measurement of area of AgNORs and analysis of their distribution pattern. Automated image analysis should help to reduce inter and intra examiner variability encountered and will allow both enumeration and quantification of AgNOR size and type.

Figure 1: Mean AgNOR count in Squamous epithelial Neoplasms

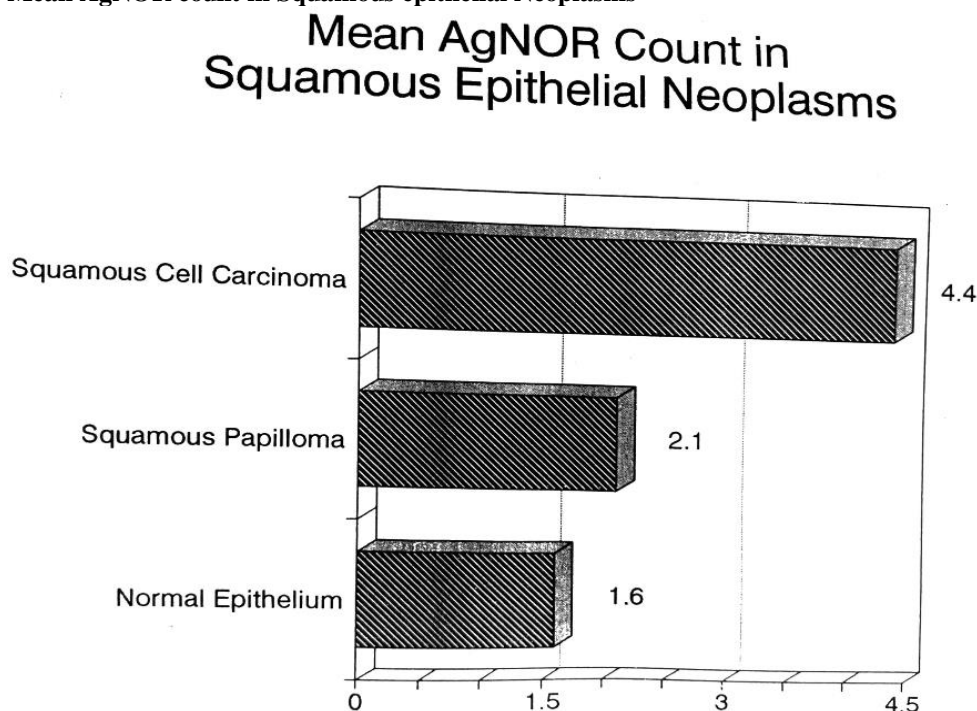


Table No. 1: Percentage Of Oral & Oropharyngeal Tumors

Total Number of biopsy specimens received from July 1993 to Dec. 1996.	10,522
Total Number of Tumors	3,271
Total Number of Oral & Oropharyngeal Tumors	115
Percentage incidence of Oral & Oropharyngeal Tumors	3.5%

Table 1 shows that total number of biopsy specimens received from July 1993 to Dec. 1996 was 10,522. Total number of tumors was 3,271, total number of oral & oropharyngeal tumors was 115 and percentage incidence of oral & oropharyngeal tumors was 3.5%. There were 2162, benign neoplasms and 1109

malignant neoplasms. Of the total 115 Oral and Oro Pharyngeal tumors 34, were benign tumors and 81 Malignant tumours. Of 115 Oral and oro pharyngeal tumors 80 were from the oral cavity and 35 from Oro pharynx accounting for 69.6% and 30.4% of total Oral and Oro pharyngeal tumors respectively.

Table no. 2: Spectrum of Tumours of oral Cavity and Oropharynx.

Types of Tumours	%
Squamous cell carcinomas	67.82
Squamous papilloma	11.3
Haemangioma	7.8
Fibroma	6.08
Pleomorphic adenoma	3.49
Lymphangioma	0.86
Adenoid cystic carcinoma	0.86
Muco eipdermoid carcinoma	0.86
Fibro sarcoma	0.86

Table 3 Age incidence

Age In Years	Oral Benign	Cavity Malignant	Oropharynx		Total	
			Benign	Malignant	No.	%
0-10	1	-	1	*	2	1.7
11-20	7	-	2	-	9	7.8
21-30	5	3	3	2	13	11.3
31-40	5	5	5	3	18	15.6
41-50	3	18	-	4	25	21.7
51-60	1	20	1	8	30	26.0
61-70	-	8	-	3	11	9.8
71-80	-	4	-	2	6	5.3
81-90	—	-	-	1	1	0.8
Total	22	58	12	23	115	100.00

Large number of benign tumours were seen to occur between the ages of 10 and 40 years. The average age of occurrence for benign tumours was 26.3 years.

Table 4 Habits

Habits	Benign		Tumors		Malignant	Tumors	%	
	Male	Female	Total					
			No.	%	Male	Female		Total
Tobacco Chewing	1	3	4	11.8	13	23	36	44
Smoking	2	-	2	5.9	17	-	17	21
Drinking	8	-	8	23.6	4	—	4	41
Tobacco chewing & smoking	1	—	1	2.9	13	—	13	16
No habit	6	13	19	55.8	2	9	11	13
Total	18	16	34	100.0	49	32	81	100

Maximum patients of benign tumors had habit of drinking and in malignant tumours had habit of tobacco usage.

Table 5 Symptoms

Symptoms	Benign		Malignant	
	No.	%	No.	%
Growth/ulcer	34	100	74	91.4

Pain	-	-	33	40.7	
Excessive salivation	—	—	18	22.2	
Difficulty for chewing and deglutition	2	5.8	22	27.1	
Foreign body sensation		10	29.4	4	4.9
Trismus	—	8	9.8		
Mass in the neck	—	—	14	17.3	

Table 6 Staging

Malignant Tumours of Oral Cavity & Oropharynx	No	%
Stage I	18	36.73
Stage II	17	34.69
Stage III	12	24.48
Stage IV	2	4.10

Stage I was seen in 18, stage II in 17, stage III in 12 and stage IV in 2 cases.

Common symptoms was growth/ulcer, pain, excessive salivation, difficulty for chewing and deglutition, foreign body sensation, trismus and mass in the neck. As shown in figure 2,3.

Figure 2: Squamous cell carcinoma Grade III.

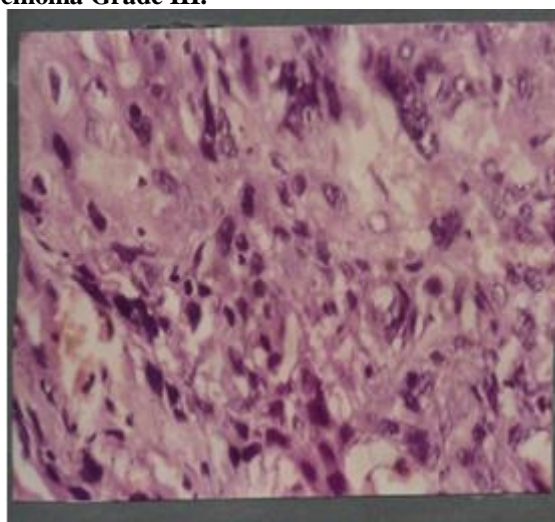
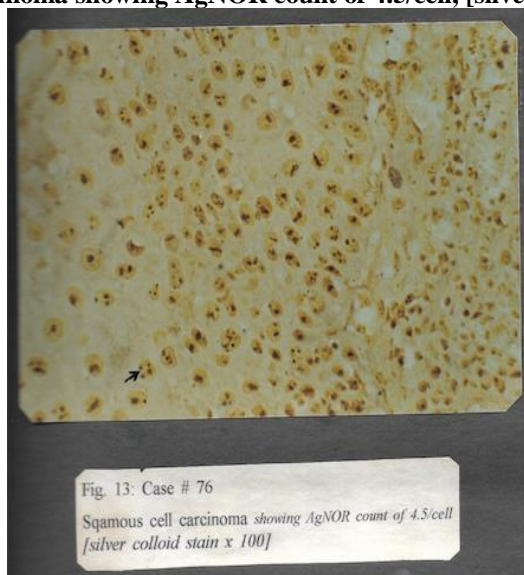


Figure 3: Squamous cell carcinoma showing AgNOR count of 4.5/cell, [silver colloid stain x-100]



DISCUSSION

Oral squamous cell carcinoma (OSCC) ranks among the top three cancers in India and is the eighth most

common cancer worldwide. OSCC primarily occurs in males in their 5th–8th decades of life.⁷ However, based on recent studies in Europe and the rest of the

world, an increase in the incidence has been observed in younger adults including females with no history of tobacco or alcohol consumption.⁸ In India, OSCC remains a major public health concern where the consumption of tobacco in various forms is the cause of high prevalence. The use/consumption of tobacco in India varies in different geographical locations with chewing of betel-quid with or without tobacco being the most common form.⁹ In the south coastal region of India, chewing pan, use of commercial tobacco products, beedi (local type of cigarette), cigarette-smoking, alcohol-drinking and use of snuff are some of the common habits. Among these, chewing pan is a fairly common social habit, particularly in the female population, as men smoke more often than chew tobacco. The consumption of tobacco is also disproportionate and is higher among lower socioeconomic strata of society.^{10,11} The present study was conducted to assess the incidence of oral and Oropharyngeal tumors with reference to the total tumors.

We found that total number of biopsy specimens received from July 1993 to Dec. 1996 was 10,522. Total number of tumors was 3,271, the total number of oral & oropharyngeal tumors was 115 and the percentage incidence of oral & oropharyngeal tumors was 3.5%. Abdulla et al¹² analyzed the clinical and histopathological characteristics of OSCC in patients less than 45 years of age. A total of 420 patients were treated for OSCC in the 17-year period (1996-2012), of which 86 (20.5 %) patients were under 45 years of age. The most common site of involvement among the young was tongue (29.07%) and buccal mucosa (27.9%) respectively. A total of 47 (54.65%) patients were either habitual chewers, smokers, or alcoholics. Pathological grading of cases classified tumors into well differentiated (34.88%), moderately differentiated (46.51%) and poorly differentiated (4.65%).

We found that a large number of benign tumors were seen to occur between the ages of 10 and 40 years. The average age of occurrence for benign tumors was 26.3 years. Maximum patients of benign tumors had a habit of drinking and those with malignant tumors had a habit of tobacco usage. We found that Common symptoms were growth/ulcer, pain, excessive salivation, difficulty for chewing and deglutition, foreign body sensation, trismus, and mass in the neck. We found that Stage I was seen in 18, stage II in 17, stage III in 12, and stage IV in 2 cases. Mulla et al¹³ assessed clinicopathological profile of OSCC in younger (<45 years age group of) patients. All OSCC patients (1517) who were admitted. Overall consumption rate of tobacco was 91.4% and quid was 62.9%. Habit of chewing quid was more frequently observed in young 297 (71.4%) than old patients 548 (59.1%). In young patients, buccal mucosa was the most common site for OSCC (226, 48.4%) followed by tongue (158, 33.8%). While in old patients, most common site was gingivo buccal

sulcus (138, 40.4%) followed by tongue (72, 21.1%). Overall stage IVA (270, 45.0%) was most commonly observed pathological stage followed by stage III (125, 20.8%).

CONCLUSION

Oral and Oropharyngeal neoplasms (115 cases) comprised 3.5% of overall neoplasms recorded during the study period. Benign tumors of oral cavity and Oropharynx (34 cases) accounted for 1.6% of overall benign tumors and 29.6% of tumors in the oral cavity and oropharynx. Malignant Oral & Oropharyngeal tumors (81 cases) comprised 7.24% of overall malignant tumors and 70.4% of all tumors in the Oral cavity and Oropharynx.

REFERENCES

- Sharma S, Satyanarayana L, Asthana S, Shivalingesh KK, Goutham BS, Ramachandra S. Oral cancer statistics in India on the basis of first report of 29 population-based cancer registries. *J Oral Maxillofac Pathol.* 2018;22(1):18-26
- Shah S, Dave B, Shah R, Mehta TR, Dave R. Socioeconomic and cultural impact of tobacco in India. *J Family Med Prim Care.* 2018;7(6):1173-76.
- Fu JY, Wu CX, Zhang CP, Gao J, Luo JF, Shen SK, et al. Oral cancer incidence in Shanghai a temporal trend analysis from 2003 to 2012. *BMC Cancer.* 2018;18(1):686.
- Furman D, Campisi J, Verdin E, Carrera-Bastos P, Targ S, Franceschi C, et al. Chronic inflammation in the etiology of disease across the life span. *Nat Med.* 2019;25(12):1822-32.
- Vivek B, Konwar Aditya N, Pronamika B. Oral cancer diagnosis and perspectives in India. *Sensors International.* 2020;1:100046.
- Ghose S, Sardar A, Shiva S, Mullan BE, Datta SS. Perception of tobacco use in young adults in urban India: A qualitative exploration with relevant health policy analysis. *e-cancer.* 2019;13:915.
- Hussein AA, Helder MN, de Visscher JG, Leemans CR, Braakhuis BJ, de Vet HCW, et al. Global incidence of oral and oropharynx cancer in patients younger than 45 years versus older patients: A systematic review. *Eur J Cancer.* 2017;82:115-27.
- Chitapanarux I, Lorvidhaya V, Sittitrai P, Pattarasakulchai T, Tharavichitkul E, Sriuthaisiriwong P, et al. Oral cavity cancers at a young age: Analysis of patient, tumour and treatment characteristics in Chiang Mai University Hospital. *Oral Oncol.* 2006;42(1):83-88.
- Llewellyn CD, Johnson NW, Warnakulasuriya KA. Risk factors for squamous cell carcinoma of the oral cavity in young people-A comprehensive literature review. *Oral Oncol.* 2001;37(5):401-18.
- Singh MP, Misra S, Rathanaswamy SP, Gupta S, Tewari BN, Bhatt ML, et al. Clinical profile and epidemiological factors of oral cancer patients from North India. *Natl J Maxillofac Surg.* 2015;6(1):21-24.
- Friedlander PL, Schantz SP, Shaha AR, Yu G, Shah JP. Squamous cell carcinoma of the tongue in young patients: A matched-pair analysis. *Head Neck.* 1998;20(5):363-68.
- Abdulla R, Adyanthaya S, Kini P, Mohanty V, D'Souza N, Subbannayya Y. Clinicopathological

analysis of oral squamous cell carcinoma among the younger age group in coastal Karnataka, India: A retrospective study. *Journal of oral and maxillofacial pathology: JOMFP*. 2018 May;22(2):180.

13. Mulla FI, Patel JJ, Sagathiya KJ. Clinicopathological Analysis of Oral Squamous Cell Carcinoma among the Younger Age Group Admitted to Tertiary Care Hospital, Karamsad, Gujarat, India. *National Journal of Laboratory Medicine*. 2021;10(4): 13-15.