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CLINICO-EPIDEMIOLOGICAL PROFILE OF ORAL CANCER: A HOSPITAL BASED STUDY

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ABSTRACT

Background:. Among these modern epidemics cancer is among the ten commonest cause of mortality in developing countries including India. Oral cancer is a major problem in India and accounts for 50-70% of all the cancers diagnosed. Ninety percent (90%) of oral cancers in South East Asia including India are linked to tobacco chewing and tobacco smoking. Research question: What is the profile of Oral cancer (Oral cavity) cases reported in the hospital?Objective: To study the clinico-epidemiological profile associated with Oral cancer cases.Methods: Study Design: Hospital based, Cross -sectional study. Settings: RAJAH MUTHIAH MEDICAL COLLEGE AND RESEARCH INSTITUTE, Chidambaram, Tamil nadu. Participants and Sample size: As it is a time bound study sample size comprised of 50 cases of the confirmed cases of oral cancer reported in the hospital during the study period. The study was carried out from June 2013 to September 2015. Study variables included demographic factors, socioeconomic factors, enquiries regarding modifiable risk factors such as tobacco usage, alcohol consumption, site involved (within oral cavity), staging, histopathological examination, treatment modality used. Data entry and statistical analysis was done using Microsoft excel. Data presented in form of percentages and proportions.Results: Out of the total 50 cases, majority of the subjects were above 40 years age. 4 (12.1%) of subjects were young adults (below 40 years age). 35 (70%) subjects were male. Most of the subjects belonged to upper lower and lower middle socio-economic scale according to modified Kuppuswamy classification. It was observed that 44 (87.6%) cases consumed tobacco in all forms. Only ten (10) female subjects chewed tobacco. No female subjects smoked. The most common site for oral cancer was cheek. Histopathologically 22 (44.3%) cases were well differentiated squamous cell carcinoma, 17 (35%) cases were moderately differentiated squamous cell carcinoma and 7 (16.5%) cases as poorly differentiated squamous cell carcinoma.). 2(2.1%) cases were Mucoepidermoid carcinoma, one (1.4%) case was Adenoid cystic carcinoma and 1 case was Adeno carcinoma.Conclusions: The most common site for oral cancer was cheek and histopathologically majority of the cases were well differentiated squamous cell carcinoma presented in advanced stages of disease. We observed higher proportion of oral cancers among patients (40-50 years).

Keywords: Clinico-epidemiological, Oral cancer

1.INTRODUCTION

Worldwide carcinoma is diagnosed annually in 10 million people. Oral Cavity Carcinoma accounts for about 5,00,000 newly diagnosed Carcinoma in World annually, and three quarter of these are from the developing countries

Oral cavity is the 6th most common carcinoma in the world. Lung,

Stomach and prostate (In males), Breast, Cervix and colorectum (In Females) are the top three carcinomas in the world.

In well developed countries the incidence rate of oral cavity is less when compared to developing countries.

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In south central Asia (India) oral cavity is the commonest in male and cervix is the commonest in Female.
According to National Cancer Registry Programme–in comparison of leading sites of cancer Chennai rank 3rd for oral cavity Carcinoma in male in India.

Comparison to world, developed, developing and central Asia there is a wide difference in the incidence of oral cancer. High incidence is probably due to socio economic factors habits, ignorance, late detection and lack of awareness.

Even though oral cancers are easily accessible for physical examination and Biopsy, majority reported for treatment only at the later stages. Cure rate is high if patients are treated in the early stages.

Knowing the magnitude of the problem a study is undertaken to know about the incidence in rural agro based districts from which patients attend our hospital A Prospective epidemiological analysis of oral cavity cancer and their outcomes for the period from NOVEMBER 2013 to OCTOBER 2015 are discussed.

2.SUBJECTS AND METHODS:

The present Hospital based, study was carried out in the department of General Surgery at Rajah Muthiah Medical College and Hospital, Chidambaram, Tamilnadu. The study was carried out for the period of two years from NOVEMBER 2013 to OCTOBER 2015. The sample for the present study comprised of 50 patients suffering from oral cancer reported in the hospital during the study period. Pre-tested and pre-structured questionnaire was administered to these 50 confirmed cases of Oral (Oral cavity) cancer to understand their clinico-epidemiological profile. The information comprised of demographic factors, socioeconomic factors, enquiries regarding modifiable risk factors such as tobacco usage, alcohol consumption, site involved (within oral cavity), staging, histopathological examination, treatment modality used. All records entered were checked, cross-checked and randomly double checked for correctness.
INCLUSION CRITERIA - Patients with oral malignancies proved by histopathological examination.

3.RESULTS

The total sample size comprised of 50 subjects (n=50) of which 35 (70%) were males and 15 (30%) were females with male:female ratio of 2.3: 1, indicating male predilection. The most common site for oral cancer was Cheek (52%), followed by Tongue (24%), Lips(8%), Alveolar (6%) and Floor of Mouth (4%),Hard palate(4%),Retromolar trigone(2%)Table 1. As depicted in Table 2, majority of the subjects were between 40-50 years age, most of them belonged to lower socio economic class Table 3. The minimum age of the patient was 38 years; maximum age of the patient was 75 years. It is worth mentioning that 6 (12.8%) cases were below 40 years age of which 4(12.1%) cases were male and 2 (14.6%) were female. Tobacco and alcohol consumption habits of study subjects are shown in Table 4. It was observed that out of total 50 study subjects, 44 (87.6%) cases consumed tobacco in chewable form. It is noteworthy that none of the female patient smoked or consumed alcohol. 16 subjects displayed dual habit of tobacco consumption in all forms and alcohol consumption as well.

Table 1 INCIDENCE OF ORAL CANCER ACCORDING TO ANATOMICAL AREA

S. No	Cancer Site	Total No of Cases	%
1	Cheek	26	52
2	Tongue	12	24
3	Lips	4	8
4	Alveolar Ridge	3	6
5	Floor of Mouth	2	4
6	Hard Palate	2	4
7	Retromolar Trigone	1	2
	Total	**50**	

Table.2 AGE AND GENDER PREPONDERANCE

Age (Year)	Male		Female		Total	
	No.	%	No.	%	No.	%
31-40	4	11.4%	2	13.3%	6	12%
41-50	15	42.8%	5	33.3%	20	40%
51-60	10	28.8%	4	26.7%	14	28%
61-70	3	8.5%	3	20%	6	12%
>71	3	8.5%	1	6.7%	4	8%
Total	35		15		50	

Table.3 OCCUPATION WISE INCIDENCE OF ORAL CANCER

Groups	Socio-economic status	Number of Patients	%
I	Low	46	92%
II	Moderate	4	8%
III	High	-	-
	Total	**50**	

Table.4 PREDISPOSING FACTORS FOR ORAL CANCER

S. No.	Factors	Total No.	%
1	Chewing Betel nut + Tobacco	44	88%
2	Chewing Tobacco Smoking	28	56%
3	Alcoholism	16	32%
4	Dental Caries & Dental lesions	5	10.0%
5	Nutritional deficiency	1	2%
6	None	4	8%

Table.5 MODES OF PRESENTATION OF ORAL CAVITY CANCER

Clinical Features	Cheek Carcinoma	Tongue Carcinoma	Lip Carcinoma	Alveolar Carcinoma	Hard Plate Carcinoma	Floor of mouth Carcinoma	Total
Ulcer	25	12	4	3	2	2	48
Swelling	10	3	3	2	1	1	20
Lump in neck	5	4	1	1	1	1	13
Pain	5	3	4	1	1	1	15
Trismus	6	-	-	-	-	-	6
Retromolar extension	2	-	-	-	-	-	2
Other Symptoms							0
Excessive Salivation	11	4	1	-	-	-	26
Difficulty in Chewing	5	-	-	-	-	-	5
Dysphagia	-	2	-	-	-	-	2
Dysphonia	-	2	1	-	-	-	2
Ankyloglossia	-	2	-	-	-	-	3

Table.6 PREMALIGNANT LESIONS FOUND IN ORAL CAVITY CANCER

SI.No	Factors	Total No.	%
1	Leukoplakia	18	36%
2	Submucosal Fibrosis	8	16%
3	Erythroplakia	6	12%
4	Leukoplakia+ Erythroplakia	3	6%
5	Candidiasis	2	4%
6	Not associated with any lesion	13	26%
	Total	50	

Table.7 DISTRIBUTION OF PATIENTS ACCORDING TO HISTOLOGICAL TYPES

SI.No	Factors	Total No.	%
1	Squamous Cell Carcinoma		
	Well Differentiated	22	44%
	Moderately Differentiated	17	34% 92%
	Poorly Differentiated	7	14%
2	Mucoepidermoid Carcinoma	2	4%
3	Adenoid Cystic Carcinoma	1	2%
4	Adeno Carcinoma	1	2%
	Total	**50**	

Table.8 DISTRIBUTION OF PATIENTS ACCORDING TO TNM STAGING

SI.NO.	No. of Patients	Percentage
I	3	6.4%
II	15	29.3%
III	22	44.3%
IV	10	20.0%
Total	**50**	

Table.9 TREATMENT OUTCOMES IN ORAL CAVITY CANCER

Staying	Primary Surgery	Primary Surgery + and ibulectomy	Primary Surgery + Neck dissection	Primary surgery + Neck dissection + Mandibulectomy	Primary Radio therapy
Stage I	3				1
Stage II	7		1		7
Stage III		3		2	16
Stage IV		1		1	8
Total	**10**	**4**	**1**	**3**	**32**

Table.10 COMPLICATIONS ENCOUNTERED IN POST-OPERATIVE PERIOD

Sl. No.	Complications	No. of cases	%
1.	Wound Infection	3	16.7
2.	Fistula Formation	3	16.7
3.	Flap Necrosis	2	11.1
4.	No Specific Complaints	10	55.5

4.DISCUSSION:

EPIDEMIOLOGICAL ANALYSIS

According to the National Cancer Registry Programme (NCRP) -ICMR Survey shows that Oral Cavity cancer occupies the most common carcinoma in male (19.4%), is followed by hypopharynx and esophagus. In females Cervix Uterus is followed by Breast and oral cancer (38.7%).The reference in Indian Medical Literature regarding the preponderance of oral cancer in India suggests its strong association with habit of chewing betel nut, tobacco, slacked lime and smoking habit (Nilbock *et al*.).Cancer institute (WIA) Chennai – Statistics shows that leading cancer site in male is oral cavity 15.3% followed by stomach (9.2) lung (8.9) in females – leading cancer site is cancer cervix (25.5%) followed by breast (14.4) & oral cavity (5.2%). In JIPMER-oral cavity forms the most common cancer in male (16.6%) and Cervix Uterus (55.1%) forms the most common cancer in female among the top ten cancers.

In our study the peak incidence of oral cavity cancer is between 40 and 50 Years.According to the National Cancer Institute SEER Programme - USA, the mean age of diagnosis is 62 years and more than 30% occurs above the age of 60 Years.The disparity in age incidence is mainly due to the early tobacco and betel leaf chewing habit in Indian patients reported by Shantha *et al*.Our study reveals that chewing tobacco and betel nut present in 88%.Young age chewing habit and the number of years of usage are the reasons for oral cancer at earlier ages.It has been found out that increased incidence of oral cavity cancers detected at earlier ages probably due to the habit of chewing and smoking among the students evidenced by oral Cavity Cancer under the age of 35 Years (IJEY. E.M. *et al*., 2002).According to the centers for disease control and prevention, U.S.A. - Tobacco usage was increased among middle and high school students.

MALE - FEMALE RATIO:Male - female ratio in this study is 2.3 : 1.,National Cancer Registry, National Cancer Registry, Canada - 2 : 1,Aringnar Anna Cancer Institute, Kanchipuram - 2 : 1. It is believed that preferential sex incidence is due to the greater use of tobacco, betel nut and alcohol by men than women.Female cases were reported higher in Greece (Zavras A.I., *et al*. 2003).Snuff dripping and increased incidence of oral cancer among women in Southern United States (Win. D.M., *et al)*

SOCIO-ECONOMIC STATUS: In our study majority of patients with oral cancers(92%) are from low socio-economic status.The reasons may be due to multiple factors like Poor Nutritional Status,Bad oral hygiene,Social customs,addiction to tobacco, Betel leaf and alcohol,Lack of health awareness

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ETIOLOGICAL FACTORS:Major etiological factor is chewing tobacco in more than a decade either continuously (or) intermittently.Tobaccos which is smoked as beedi, cigarette (or) pipe has been found in 56% of patients.In our study alcohol usage is found in 32%. Alcohol has been incriminated as one of the causes for oral cancer.Alcohol has indirect role. Almost all heavy drinkers are also heavy smokers. Alcohol in turn increases the absorption of tobacco and increases nutritional deficiency. These factors make squamous cells more susceptible for conversion into cancer cells.Alcohol is the primary risk factor as suggested by "Mash berg *et al*. -USA.Dental lesions such as sharp tooth and artificial denture produce constant trauma in 10.0% of the individuals has been associated with Carcinoma of Buccal mucosa.Role of poor Nutrition in oral cancer has

been thought as a significant factor. B-Complex deficiency and sideropenia have been observed in Oral Cancer patients. In our study signs of Chronic Nutritional deficiency like angular chelitis, atrophic tongue and glossitis are observed in 2%.

ANATOMICAL LOCATION:In our study Buccal mucosa(Cheek) – constitutes 52% of oral cavity cancer.Increased incidence of buccal mucosa carcinoma is also found in Aringar Anna Cancer Institute, Kancheepuram.Tongue is the most common site (24%), next to buccal mucosa,.Disparity in this involvement is mainly due to the habitual tobacco and betal chewers to keep the Quid in bucco gingival sulcus.Reverse smoking (Chutta inside the mouth) is associated with cancer of the palate found in Andhra Pradesh.Next to tongue, Lip occupies about 8% in our study. Lower Lip exposure to radiation is more when compared to upper lip is the reason for higher incidence of Lower lip cancer than upper lip.

CLINICAL FEATURES: Out of 50 patients majority of them reported with ulcer or ulcero proliferative growth in the mouth. Tumors of the oral cavity often ulcerate; this is probably due to friction of the mucous membrane during eating and partly due to Infection. Initially the lesions are painless, but once disease advances patients reported with pain. Other symptoms such as excessive salivation, difficulty in chewing, dysphonia, dysphagia and ankyloglossia are present. Trismus is a bad sign as it signifies extensive infiltration by an endophytic lesion. Patients with advanced lesions reported with fungating growth, orocutaneous fistula and with extensive Jaw destruction.

PREMALIGNANT LESIONS: Premalignant lesions account for 95% of oral cancers. In our study majority of the patients had Leukoplakia (36%) followed by Submucosal fibrosis (16.0%), Erythroplakia(12%), Combined Erythro Leukoplakia(6%) and Candidiasis(4%).Oral submucosal fibrosis is due to a component of areca-catcha in Betelnet which affects the collagen synthesis. It has been predominantly found in East India, Srilanka and South East Asia.Pindborg and Colleagues suggested approximately 6% of all Leukoplakias become malignant.

"Sugar and Baconcyz" suggested that 31 % of the lesions will disappear 30% - Improved 25% - Experienced no change.Exfoliative cytology of oral lesions has not proved to be helpful as majority are mostly Hyperkeratotic.

HISTOPATHOLOGICAL VARIETY: In our study, Squamous cell (92%) carcinoma is the most common histological variety followed by Muco epidemoid, Adenoid cystic & Adeno carcinoma. National Cancer Data Base USA reveals

Squamous -86.3%,Adeno-5.9%,Verrucous -2.0%,Kaposis - 1.5%Out of the squamous cell carcinoma reported in our study 44% are well differentiated, 34% are moderately differentiated, and 14% are poorly differentiated.

In a study by Khanna et al shows that 58% are well differentiated, 32% are moderately differentiated and 10% are poorly differentiated.

STAGING:In our study about 33.4% presented with N_0 neck (Stage I & II); 66.6% presented to us with N_1, N_2, N_3 Neck (Stage III & IV) Compared to the study of M.D. Anderson Cancer Centre.72% Patients presented with No neck;28% Patients presented with N1, N_2, N_3 Neck.National Cancer Data Base USA-55% Patients presented with No neck and 35% Patients presented with N1, N_2, N_3 Neck. Even though oral cancers are easily accessible for physical examination and biopsy, majority presented to us in later stages.

The reasons derived from this study are,

- Majority of them are initially reviewed by general practioners and dentists and diagnosed as apthous ulcer and fungal infections, treated with antibiotics, antifungal agents and mouth washes and referred to higher centers at later stages.
- Oral Cancer ulcers are painless to start with, by the time patient presented with pain the stage of the disease advances.
- Some people are elderly and frail so there is delay in effort to visit the dentist (or) doctor.
- Distant metastasis is observed in 7.5% oral cancers by merino et al.

Majority presented with submental, sub mandibular and upper deep cervical nodes (I, II).Glandular metastasis is present probably due to active lymphatic system (pack and Ariel *et. al*). This system undergoes atrophy and degeneration with age.Majority of patients with Nodal metastasis are between 45 and 55 Yrs. of age.

MANAGEMENT OF ORAL CAVITY CANCER-Out of 50 patients-18 patients underwent surgery,remaining 32 had Radiotherapy.The main reasons for this low percentage of patients who underwent surgery are.1)Majority of our patients at the time of presentation were clinically inoperable (Late presentation).2)Some patients were not willing to accept the option of major surgical procedure.3)Poor Nutritional status / Advanced disease of the patients preclude surgical option.4)Some patients had co-morbid conditions and anaesthetically not fit for major surgical procedure and reconstruction,5)In advanced lesions treated with surgery alone has got higher recurrence rate, poor outcome, hence surgery not advised.

RADIOTHERAPY-Radiotherapy is given in 2 forms either primary radiotherapy (or) Adjuvant radiotherapy.In our study, majority of the patients in stage III & Stage IV were given RT at Adyar Cancer Institute,Where external beam radiotherapy is given to the primary tumor area and to the neck in 6000 cGy for 6 weeks with 200 cGy per day for 5 days in a week. **COMPLICATIONS**-Out of 8 patients, 3 patients had wound infection, 2 developed orocutaneous fistula and 1 patients had flap necrosis. 12 patients had no specific complaints. Wound infection treated with higher antibiotics. Necrosed area excised and skin graft applied.

FOLLOW UP-Follow up was advised at monthly intervals for 1st year and once in 3 months for the 2nd year.

During the follow up period local recurrence, Nodal recurrence and specific complaints were recorded. Out of 32 patients subjected to primary RT, 1 patients developed

Nodal recurrence of was they were treated with Neck dissection.

5.CONCLUSION:

Oral Cancer remains a challenge as majority of the patients reported are in advanced stage.Moh's micrographic excision and alternative forms of therapy such as Cryo, Electro, Chemo & Photo dynamic therapy for smaller lesions and wide excision along with advanced reconstructive procedure such as Free Flap – Microvascular surgery has made surgery as the anchor role in management.With the invent of Radio sensitisers and Radio protectors, the radiotherapy as a modality of treatment has to be considered as deleterious effects are low.Role of adjuvant chemo and concomitant role of chemo & radiotherapy are analysed by various trials.Role of immunological agents such as Gefitinib and erlotinib and cetuximab are under trial.Effective multimodality management has come into vogue with Radiotherapy and surgery have definitive role along with doubtful role of chemotherapy has reduced the morbidity of oral cancers.

Future developments in nanotechnology and directed therapies will alter the diagnosis and treatment of oral cancers relative to contemporary treatment modalities. The best way to cure is by prevention. Screening of high risk group (ie) those who are in the Habit of betel nut & tobacco chewing in general population, should be done.

Dental surgeons and general practioners have a vital role with early detection of oral lesions and referral to higher centers for proper management.Health education through mass media and posters in Health centers and dispensaries on the ill effects of Tobacco / Alcohol / Betel nut in a large scale by Government and Non-Government organizations will create awareness and help in prevention.Younger population is to be educated by mass media with a ban on advertisement of Tobacco, Alcohol and screening camps will also be useful.

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