IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 9 Ver. 1 (September. 2018), PP 72-75
www.iosrjournals.org

Epidemiological Pattern of Oral Squamous Cell Carcinoma Seen At the Tygerberg Academic Complex

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Abstract:
Background*Recent epidemiological reports established that there is an increase in the incidence of oral squamous cell carcinoma (OSCC) in young patients. Some report this to be in the absence of contributing habits such as smoking and alcohol use. Few reports of such a nature have reported a similar trend in South Africa. This study was conducted to describe epidemiological pattern of oral squamous cell carcinoma seen at the Tygerberg academic complex in South Africa in the period from 1996 to 2013.*
Materials and Methods: *Histopathological biopsy reports of patients diagnosed by the oral pathology department of Tygerberg hospital from 1996 to 2013 were electronically retrieved and included. Patients were grouped by age into two groups, one included patients 40 years and younger, the other included patients older than 40 years. Descriptive analysis was performed for age, sex, smoking and alcohol habits and oral site of tumor. Chi-square or Fisher's exact tests were used as appropriate. Probabilities of less than 0.05 were regarded as significant.*
Results*: The total number of OSCC patients over the 18-year period was 2220. The mean age was 57.6 years. The male to female ratio was 2.9:1 for all age groups and 2.2:1 for young patients. The majority of patients (96%) were above 40 years old. Smoking and alcohol were commonly reported for all age groups (91.3%) and (83.8%) for young patients. OSCC patients who were younger than 40 years of age represented 4% of the whole study sample.*
Conclusion *The study confirmed that OSCC is still an affliction of people older than 40 years and males are predominantly affected. Smoking and alcohol are strong risk factors for OSCC irrespective of patient's age. OSCC among people older than 40 years may have no great difference from the same disease affecting younger ones in terms of sex, oral habits and tumor site.*
Keywords:*Epidemiology, Oral, Squamous cell carcinoma, Tygerberg, Cape Town*

Date of Submission: 25-08-2018 Date Of Acceptance: 06-09-2018

I. Introduction

Oral cancer is mainly squamous cell carcinoma and represents the sixth most common cancer affecting the world population[1]. The disease has been known as an affliction of old males, but trends reported from recent studies indicated that the prevalence in young patients (arbitrary aged as younger than 40 years old) is increasing [2,3]. These reported cases are Oral squamous cell carcinoma (OSCC) with no history of smoking and alcohol exposure. The causative factors for this age group are still unknown [4,5,6].

This study aims to investigate whether such a trend exists in patients diagnosed with OSCC at a referral center in Cape Town, South Africa from 1996 to 2013. Histopathological biopsy reports of patients diagnosed over this period were reviewed. Evidence regarding the disease in terms of age, sex, risk factors and oral site of cancer diagnosed was sought, investigated and analyzed.

II. Materials And Methods

A retrospective descriptive cross-sectional hospital based study was carried out to describe the epidemiology of OSCC regarding patients' age, sex, risk factors and primary site of disease in young patients as compared to older ones. The sample size comprised 2220 registers, representing the total number of OSCC patients who have been diagnosed by the oral pathology department of Tygerberg hospital from 1996 to 2013. All data meeting the requirements of the objectives of the study including age, sex, risk factors and primary site

of disease were gathered, categorized, coded, and then entered into an Excel® spreadsheet. Results were presented as appropriate in tables and figures. Tables were constructed using Microsoft word ® 2010 and figures were constructed using Microsoft Excel ® 2010. Descriptive analysis was performed for age, sex, risk factors and primary site of tumor. Chi-square or Fisher's exact tests were used as appropriate. Probabilities of less than 0.05 were regarded as significant. The study was independently reviewed and approved by Senate Research Ethics Committee of the University of the Western Cape. It was performed in accordance with the ethical principles of the University of the Western Cape.

III. Results

A total of 2220 patients of OSCC were diagnosed between 1996 and 2013. These composed 1650 males and 570 females (Table 1). Patients were grouped by age into two groups, one that included patients of 40 years and younger, the other included patients who were older than 40 years. The selection of 40 years of age was proposed by similar studies in this field [3,4,6]. The mean age was 57.6 ±11.1 with a minimum age of 16 years and maximum age of 98 years. The male to female ratio was 2.9:1 for all age groups. There were 838 patients with information on tobacco and alcohol use. This represented 37.7% of the total number of patients. Of the 838 patient records accessed for oral habits, smoking and alcohol were commonly reported for all age groups (91.3%) and (83.8%) for young patients (Table 2). Regarding tumor site, patients were categorized into three groups including lip squamous cell carcinoma, oral cavity proper squamous cell carcinoma (including all mouth parts except lip and oropharynx) and oropharyngeal squamous cell carcinoma. The Oral cavity proper was the commonest site for all age groups with 1467 patients (66.1%) followed by oropharynx with 605 patients (27.3%) and the lip with 148 patients (6.7%) (Table 3).The number of OSCC patients who were younger than 40 years was 89, representing 4% of the whole study sample.

Table no 1 shows Distribution of OSCC patients by age and sex (n=2220)

	≤40 years		**>40 years**	
Sex	(n)	(%)	(n)	(%)
Male	61	68.5	1589	74.6
Female	28	31.5	542	25.4
Total	89	4	2131	96

Mean age (SD) = 57.6 ±11.1. Minimum and maximum age=16 and 98. (Chi-squared=1.3255, df = 1, p-value = 0.2496), (n): Frequency, %: Proportion

Figure no 1 shows Frequency of OSCC patients by decades of life (n=2220) (p-value<2.2e 16)

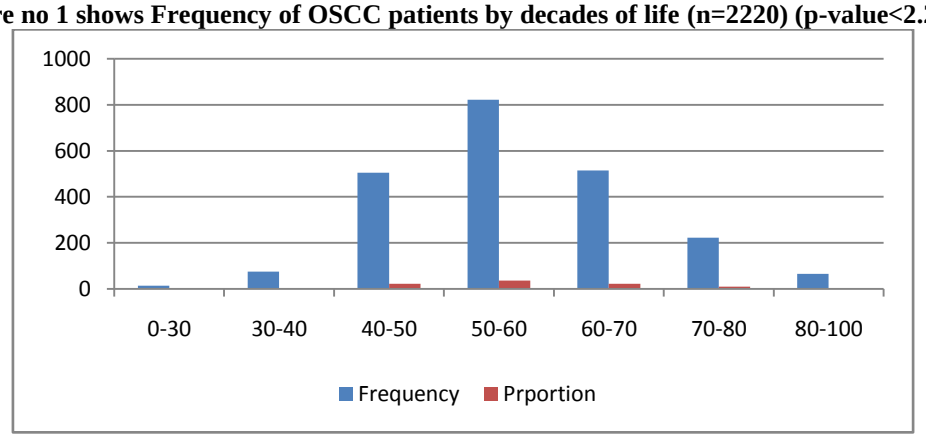

Table no 2 shows distribution of OSCC patients in regard to use of Smoking and Alcohol (n=838), (n): Frequency, %: Proportion

	≤40 years		**>40 years**	
Smoking and Alcohol	(n)	(%)	(n)	(%)
Users	31	83.8	734	91.6
Non users	6	16.2	67	8.4
Total	37	100	801	100

Table 3 shows distribution of OSCC subcategories, (n): Frequency, %: Proportion

Type of OSCC	(n)	%
Lip squamous cell carcinoma	148	6.7
Oral cavity proper squamous cell carcinoma	1467	66.1
Oropharyngeal squamous cell carcinoma	605	27.3
Total	2220	100

IV. Discussion

Oral squamous cell carcinoma (OSCC) is a major health hazard that represents a global burden. Analysis of available data revealed an increased incidence in patients younger than 40 years of age in the absence of smoking or alcohol use. In this report, the trend of OSCC was analyzed by patients' age, sex, smoking and alcohol use and primary site of tumor. The mean age of patients diagnosed with OSCC at Tygerberg hospital over this said period of time was 57.6 years. This was exactly the same as reported by Udeabor et al., [3] who conducted a similar study in Hannover, Germany between 1980 and 1999 with a sample size of 977 patients. Other studies reported a higher mean age and showed 62.5 and 63.7 respectively [4,8]. Male to female ratio was 2.9:1, in accordance with literature which indicated that OSCC has a peak incidence during sixth and seventh decades of life and males are predominantly affected [9,10,11].

Regarding the use of smoking and alcohol, 91.3% of OSCC patients reported to use smoking and alcohol. This was higher than other studies which reported 82% and 72.7% for sample sizes of 130 and 116 respectively [9,12]. Among young patients, 83.8 % of OSCC patients were using tobacco and alcohol, compared to 75% reported by Llewellyn et al, [13]. These results, however, indicate that smoking and Alcohol do still play a major role in the pathogenesis of OSCC and emphasize the need to raise the awareness about the risks of such life style.

The commonest location affected by OSCC is the lip followed by oral cavity proper and oropharynx [14,15,16]. In our study, The Oral cavity proper was the commonest site for all age groups with 1467 patients (30.8%) followed by oropharynx with 605 patients (27.3%) and the lip with 148 patients (6.7%). The number of OSCC affecting lips was unusually low and was attributed to the anatomical overlapping of the lip, which is considered by the National Cancer Registry of South Africa as a part of skin rather than the oral cavity [17]. As a consequence of this, a large number of lip cancers are usually included under the umbrella of skin malignancies.

The global range of OSCC among young patients is 4-6 % [18,19,20]. In this study which looked at data from 1996 to 2013 and recruited 2220 patients, young patients represented 4% of total patients included. This can confirm the rarity of OSCC among this age group.

V. Conclusion And Recommendations

OSCC is still an affliction of people older than 40 years and males are predominantly affected.Smoking and alcohol are strong risk factors for OSCC irrespective of patient's age.The current data show no difference in the sex distribution, smoking and alcohol use and site of disease among different age groups of persons afflicted by OSCC.

Future studies may expand this work by being multi-centred in the design to establish a National prevalence of OSCC. There is a need to introduce a major educative program about the risks of smoking and alcohol amongst the general public and young individuals. The laws may not be very effective in themselves. Educating people in this respect is probably more important. A consensus about the definition of young patients with OSCC is needed along with further accurate registration of data.

VI. Limitations

This study was hospital-based and did not give an exact prevalence rate in comparison to the total population (per 100.000) individuals. It was restricted by the retrospective design, which may be limited by variation in the completeness of records available. The extraction of information regarding oral habits was confronted with insufficiencies, as some clinicians were not committing to record the history of oral habits.

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Dr. Abdullahi AlhashimiHamid"Epidemiological Pattern of Oral Squamous Cell Carcinoma Seen At the Tygerberg Academic Complex."IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 9, 2018, pp 72-75.