Original Research

Oral squamous cell carcinoma: A 5 years institutional study

Vaidhehi Narayan Nayak1, Mandana Donoghue2, Selvamani M3

1Department of Oral Pathology, Rajarajeshwari Dental College and Hospital, Bengaluru, Karnataka, India, 2Consultant, Oral Pathologist OMFP Center, Belgaum, Karnataka, India, 3Department of Oral Pathology, Mahe Institute of Dental Sciences, Mahe, Puducherry, India

Abstract

Background: Oral squamous cell carcinoma (OSCC) is a major contributor to disability and death caused by malignant tumors. While of global relevance, variations in social, cultural, and geographic factors affect tumor behavior and response to treatment. In this study, we undertake a 5 years institutional review and analysis of OSCC cases in the south Indian setting.

Materials and Methods: A retrospective study of 145 histologically diagnosed cases of OSCC seen between the years 2001 and 2006 in Davangere Dental Colleges, Karnataka, India.

Results: The total number of the patients included 65 males (44.8%) and 80 females (55.2%) whose age ranged from 23 to 80 years (mean ± standard deviation; 52.86 ± 13.18 years). An incidence was highest in 40-45 and 60-65 age group. Buccal mucosa 44 (30.4%) was the most common site, followed by tongue 27 (18.6%). Most lesions (58%) were well differentiated. Patients with poorly differentiated lesions had a comparatively lower mean age than their counterparts with other histological varieties, and this was statistically significant (P < 0.05).

Conclusion: The pattern of OSCC differs from that of previous studies in relation to incidence and age correlation with the grade of carcinoma. Since the majority of the lesions were well differentiated, there is a need for intensive oral health awareness to encourage early presentation, to cancer center, as this will further enhance prognosis.

Keywords: Davangere, incidence, oral squamous cell carcinoma

Introduction

Squamous cell carcinoma (SCC) is the most common malignant neoplasm of the oral cavity and represents about 90% of all oral malignancies. It is insidious and potentially life threatening malignant epithelial neoplasm. The overall 5 years survival rate of patients is <50%. Studies has shown that the incidence of oral SCC (OSCC) varies significantly among various parts of the world. The global variation in the incidence of SCC has been linked to various sociocultural characteristics, major geographic differences in risk factors, differences in data collection, and the level of development of health services in various populations. Properly registered data is an essential indicator for the magnitude and pattern of the cancer problem in India. Such data is not easily available for regional small centers like Davangere, Karnataka, India.

The present study is a review of OSCC cases that were reported and treated in a major regional center in Karnataka over a 5 years period.

Materials and Methods

A retrospective study on OSCC was conducted on the basis of oral biopsy specimens retrieved from the archives of the Department of Oral and Maxillofacial Pathology, College of Dental Sciences, Davangere, Karnataka, India, available from the year January 2001 to January 2007.

The following data were collected and analyzed from clinical case sheets.

The age, sex, religion (Hindu, Muslim, and Christian), habits (beedi, gutkha, smoking, and paan), and anatomical site were considered as:

- Keratinized mucosa - (gingiva, palate)
- Non-keratinized mucosa - (floor of the mouth, buccal mucosa, labial mucosa, lateral tongue, retromolar area)
- Specialized mucosa-(dorsum of the tongue).

Histopathology slides stained with hematoxylin and eosin (H and E) were selected and re-evaluated according to the current concepts outlined by the WHO. Inclusion criteria
involved the histological confirmation of OSCC. Lesions with histological findings that were not compatible with OSCC were excluded from the study. Some records that were sent with the biopsy material were inadequate and were omitted.

Data were subjected to descriptive statistical analyses with the SPSS version 16.0 statistical software package (SPSS Inc., Chicago, USA).

Results

Age

SCC was seen from 3rd decade to 9th decade of life with mean age of 53 years with range of 23-80 years. The most affected age groups were between 40-49 and 60-69 years (Graph 1).

Sex

The study had 65 (44.8%) male and 80 (55.1%) female patients with male/female ratio of 0.72:1. It was observed that there were no female patients in the 3rd decade of life (Graph 2).

Habits

From the data collected, 93 (64.1%) cases gave history of gutkha chewing, smoking beedi, and cigarette.

Rest of the cases data was unavailable.

Religion

The study observed 130 (89.6%) people from Hindu religion. 15 (10.3%) cases were Muslims. There were no Christian patients in the study.

Anatomical site distribution

In our study, buccal mucosa recorded maximum number of cases. Gingiva was the least affected site (Graph 3).

Clinical presentation

The most common presentation of the lesion was an ulcer or ulceroproliferative growth (Figure 1). Two cases had previous history of oral submucous fibrosis and one case from leukoplakia. Common symptom was pain and burning sensation. Exact numbers is not mentioned due to error in data collection (patients were asked leading questions).

There were a total of 136 (93.7%) cases of OSCC occurring in non-keratinized mucosa (buccal mucosa, labial mucosa, floor of the mouth, lateral and ventral tongue). 9 (6.2%) cases occurring in keratinized mucosa (gingiva, hard palate). There were no cases reported in the specialized mucosa (dorsal tongue).

Histological types of OSCC

There were 84 (57.9%) cases of well differentiated SCC (Figure 2). 50 (34.4%) cases of moderately differentiated SCC. 11 (7.5%) cases of poorly differentiated SCC.

Discussion

OSCC is a major cause of morbidity and mortality globally accounting for approximately 2,75,000 new cases and >1,20,000 deaths per annum. It is the 8th most common cancer worldwide and is leading cancer among men in India. The male-female ratio is approximately 2.4:1 World Wide. This study a slight female predilection is seen with male:female ratio 0.72:1 which is similar to studies from Connecticut, Thailand, and Pakistan showing increasing trends in female population. On the contrary vast majority of studies show a male predilection. Increased incidence in females is linked to liberalization and habit association among conservative female population.

OSCC typically occurs in the 5th-8th decade of life. Peak incidence of OSCC in our study was in the age range was 40-49 years with minimum age being 23 years. This is in correlation with other Indian studies which have documented maximum cases in 5th decade. A second peak of incidence of oral squamous carcinoma was found in the age range 60-69 years in the present study. Another Indian study by Sharma et al. in

Graph 1: Age distribution of the patients with oral squamous cell carcinoma

Graph 2: Age distribution of the patients with oral squamous cell carcinoma among male and female

Graph 3: Site distribution of the patients with oral squamous cell carcinoma
India\textsuperscript{4,8-10} and Taiwan\textsuperscript{13} There has been strong correlation with tobacco usage in various forms.\textsuperscript{18-20}

Buccal mucosa belongs to the gingivobuccal complex of which lower gingivobuccal complex is known as Indian cancer. This is the typical site associated with tobacco chewing. It is known to have better prognosis than its upper counterpart even in advanced case.\textsuperscript{21} In Davangere, people use Gutkha which is placed in the buccal vestibule region. The toxins from the tobacco is absorbed after dilution with saliva and swallowed or spat. The areas coming in close proximity with the tobacco products probably become the site of maximum insult and thus are maximally affected.

Pain and burning was the common complaint the patients had in our study which was same as the study by Aree \textit{et al}.\textsuperscript{6} Their study had additional complaints like numbness, bleeding, dysphagia. 17.2\% of cases were asymptomatic which explains the delay in seeking treatment.

Ulceroproliferative growth was the common clinical presentation. There were 2 cases with history of oral submucous fibrosis and one case arising from leukoplakia. These findings were similar to the study by Aree \textit{et al}. in Thai patients.\textsuperscript{6}

**Histologic type**

In our study it is seen that most cases of OSCC occurred in non-keratinized mucosa (136 cases). This shows the susceptibility of nonkeratinized mucosa for tumorigenesis. There were only 9 cases affecting the keratinized mucosa.

Rautava \textit{et al}. in their study also had 57\% of their cases in non-keratinized mucosa and 42\% in keratinized mucosa.\textsuperscript{16} Probably the keratin layer on the surface of the keratinized mucosa acts as a barrier against the carcinogens.

Though, OSCC occur at site which is accessible for clinical examination, most cases report when the lesion is established. In the present study there is higher incidence of well differentiated carcinoma. Most studies have reported same incidence\textsuperscript{6,7,9,22} except for Nigerian study where poorly differentiated SCC was prevalent.\textsuperscript{14} The mean age of occurrence for poorly differentiated carcinoma was 48 years in our study which is tending to lower age group.

**Conclusion**

OSCC has been a topic of intense research; very few epidemiological studies have been conducted exclusively on OSCC. Considering the prevalence and magnitude of the problem a thorough background data is necessary to have a tailored preventive and treatment plans to be administered. This paper is one of the earliest attempts to gather baseline data in Davangere which is a small pocket of South India. The differences noted in this study in comparison to the data from other regions underline the importance of establishing data basis for different region to enable adequate screening, diagnosis, prevention, and treatment measures.
References
