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Original Research Article

Epidemiology and pathological trends in oral squamous cell carcinoma in a local tertiary care hospital

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ABSTRACT

Background: Cancer archives perform a dynamic role in observing the prevalence of these cancers. The present study was carried out to study the epidemiological and pathological trends of oral squamous cell carcinoma (OSCC) in a local tertiary care hospital.
Methods: Tissue samples were taken from the adult patients of both genders undergoing surgery for OSCC after an informed consent following the inclusion and exclusion criteria. Socio-demographic information was obtained along with relevant clinical, laboratory findings. Tissue samples were stained with H & E stains and were graded according to Anneroth's system of histological grading. Data were analysed using SPSS 20.0 and a p value ≤0.05 was taken as significant.
Results: The most common site for OSCC was tongue and the most common histological subtype was conventional squamous cell carcinoma, while well differentiated tumours form the largest number in the current study.
Conclusions: OSCC is a growing malignancy in Pakistan with significant morbidity and mortality and the findings of the present study will be a valuable addition in the local cancer archives.

Keywords: OSCC, Cancer archives, Oral malignancy

INTRODUCTION

Individuals diagnosed with cancer usually feel alone and scared. Anyhow, cancer is generally a preventable ailment. Many studies have revealed that over two-third of deaths caused by cancer may be avoidable through modification in lifestyle, timely diagnosis and yielding management. The structures and tissues of the oral cavity can be affected by oral cancers. These malignant neoplasms can be started as the primary lesion, a metastatic deposit from a distant site, or an extension of some neighboring tumorous process. Globally, oral cancer is the eighth most common cause of cancer-related deaths, inspite the fact most of the population is negligent of its existence.[1]

Cancer archives perform a dynamic role in observing the prevalence of these cancers. Hospital-based cancer archives indeed gather influenced information. In many developing countries, only those cases that present to hospital may come into consideration. As the follow-up is difficult in many developing countries, even for those who have been treated for OSCC so the data may be even more unpredictable. The data available for 2008, OSCC

from upper aero-digestive sites was the 8th most common malignancy in Western countries.[2] The mouth and pharynx cancer comprise the 6th most common sites among men and the 8th most common site among females for malignant disease in developing countries. Oral cancer typically occurs after the fifth decade of life in men. People from Asia, the average age of incidence is in the 5th and 6th decades. While in the population of North America, the 7th and 8th decade is the most susceptible period.[3,4] Statistical data for 2003-2007 in USA demonstrates that the median age at diagnosis for cancer of the upper aero-digestive tract was 62 years while a morphological study of OSCC carried out in Pakistan by Ayaz and his co-workers reported a mean age of 53 years.[5,6] This ethnic variation may be due to difference in social and cultural practices, and the effect of different dietary and genetic factors. Differences in access to health care also affect the epidemiological results.

OSCC manifests in various clinical forms. It may resemble leukoplakia, verrucous leukoplakia erythro-leukoplakia, or erythroplakia, either one may eventually develop into a necrotic ulcer with irregular raised edges indurated borders, or an exophytic mass of broad-base with a surface texture which can be warty gravel and relatively soft. When traumatised, OSCC bleeds easily. It is usually painless unless it gets secondarily infected. Larger lesions can interfere with normal speech, chewing or swallowing. OSCC can be subdivided into various histological subtypes. Most common histological subtypes of OSCC are conventional squamous cell carcinoma (CSCC), verrucous carcinoma (VC) and basaloid squamous cell carcinoma (BSCC).[7-9]

OSCC can be graded by different grading systems, but in this study Anneroth's histological grading system had been used to grade OSCC cases on Haemotoxilin and Eosin (H and E) staining. According to the classification, three parameters that reflect characteristics of tumour cells, including keratinization, polymorphism, and mitosis are evaluated in the entire thickness of the tumour and each is scored from 1 to 4. Mode of invasion and inflammatory infiltration representing the tumour-host relationship are classified as the most invasive margins and is scored from 1 to 4. Each parameter is assigned a score based on their grade points 1, 2, 3 and 4. Total points, scored by each patient, were calculated by adding the points for each parameter.[10]

For decades, no change in mortality rate has been observed. Even with advancements in surgery and radiotherapy, mortality still is very high with a 5-year survival rate of only 50%.[11] The prognosis in the initial stages (I and II) is relatively good with surgery and/or radiotherapy. While in the 3rd or 4th stage of OSCC, combined surgery and radiotherapy or chemotherapy is the treatment of choice. It is generally believed that the prognosis is better when OSCC is in initial stage, is well differentiated and without any distant metastases. Unfortunately, most number of OSCC cases are diagnosed in the later stages of the disease. The prognosis of OSCC fluctuates with plenty of aspects that are associated with the tumour, to the treatment, and to the patient.[12] The present study was carried out to study the epidemiological and pathological trends of OSCC in a local tertiary care hospital.

METHODS

This descriptive, cross sectional study was carried out in the College of Dentistry, Bakhtawar Amin Medical and Dental College, Multan, Pakistan, from November 2016 to September 2017. Tissue samples were taken from the adult patients of both gender undergoing surgery for OSCC after an informed consent following the inclusion and exclusion criteria. Patients of all ages and both genders were included. Patients having chronic co-morbid conditions, severe debilitating patients/patients with immune diseases, patients who had received radiotherapy, chemotherapy or any other treatment before surgery and patients with recurrence and follow up were excluded. Socio-demographic information was obtained along with relevant clinical, laboratory findings.

After the gross examination, a representative tissue section from intra-tumoural, marginal, para-tumoural and distant normal tissues where ever possible were taken. All tissues were subjected to automated histology tissue processor for dehydration, clearing, impregnation and embedding steps of tissue processing. Paraffin embedded tissue blocks were made. At least two tissue sections of 4-6 µm thickness were cut by rotary microtome from each block which were then stained with H and E to confirm the diagnosis of squamous cell carcinoma and its histological grading/subtyping following the Anneroth's system of histological grading.[10]

The data was entered and analysed using SPSS 20.0. Mean±S.D was given for quantitative variables like age, histological grade etc. Frequencies, percentages and graphs had been given for qualitative variables like gender, oral changes and morphology of tumour.

RESULTS

A total of n=40 cases of OSCC was collected in accordance with inclusion and exclusion criteria of the study. The overall mean age of the patients was 49.91±12.68 years. This data shows that age of incidence was similar in both genders. However, 87.5% of the patients belonged to an age range of 40 to 70 years of age (n=36).

In a total of n=40 cases, n=25 were males (62.5%) and n=15 were females (37.5%) with a male to female ratio of 1.6:1. Among 40 OSCC cases, n=17 (42.5%) were well differentiated OSCC, n=15 (37.5%) were moderately differentiated OSCC, and n=8 (20%) were poorly differentiated OSCC characterized on Anneroth's system of histological grading.

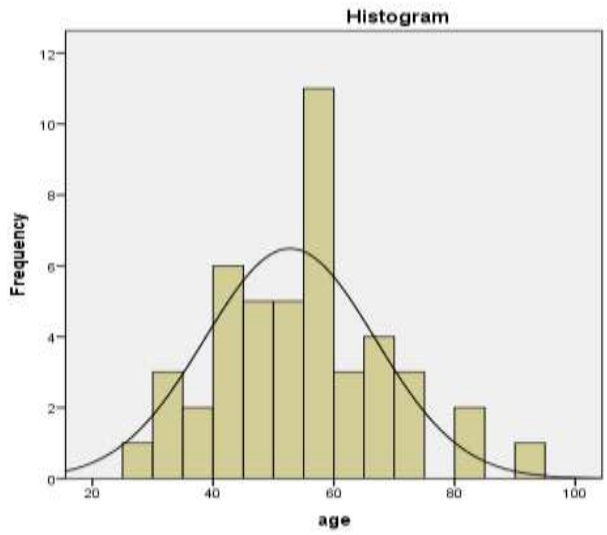

Figure 1: Age range of OSCC cases.

When Fisher's exact test was applied to observe the statistical relation between gender and histological grade of OSCC, it was found to be statistically insignificant (p=0.89).

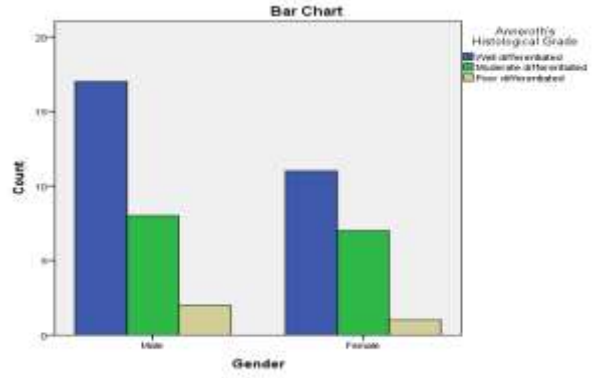

Figure 2: Comparison between gender and histological grade of OSCC.

Clinically, patients presented most commonly with ulcerating lesion noted in n=29 (72.5%) cases, followed by fungating mass in n=6 (15%) cases and plaque like lesion in n=5 (12.5%) cases.

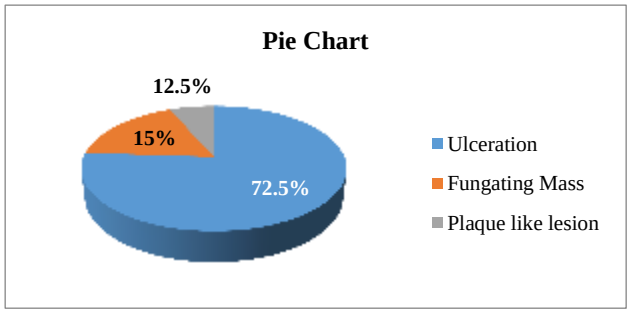

Figure 3: Frequency of common clinical complaints of patients of OSCC.

Regarding the site of involvement in the oral cavity, the occurrence of OSCC was found significantly higher on the tongue, where n=20 (50%) cases were present. There were n=11 (27.5%) cases that involved the buccal mucosa. Other sites involved were lip n=5 (12.2%), and the least common site was floor of the mouth with only n=4 (10%) case. The site of tumour was associated significantly (p=0.001) with the gender as the majority of the females had OSCC lesion on the tongue while the most common site in males was on the buccal mucosa.

Table 1: Site of involvement in the oral cavity.

Site involved in the oral cavity	n (%)
Tongue	20 (50)
Buccal mucosa	11 (27.5)
Lips	5 (12.2)
Floor of the mouth	4 (10)

In a total of n=40 cases, lympho-vascular invasion was found in n=27 (71.7%) while n=13 (28.3%) cases showed no lympho-vascular invasion. When t-test was applied to discern the statistical relation among lympho-vascular invasion and histological grade of the tumour, it was found statistically insignificant (Fisher's exact test, p=0.77).

DISCUSSION

It is a known fact, now that the likelihood of developing OSCC increases with the period of exposure to risk factors and increasing age further adds to the dimension of the mutagenic and epigenetic changes. This present study shows a clear male predominance. This is consistent with certain European studies which reported a male predominance in patients of OSCC.[13] The majority of local studies from Pakistan also exhibited the same male predominance.[14,15] A morphological study of OSCC carried out in Pakistan by Ayaz et al reported 1.5:1 male to female ratio with a mean age of incidence to be 53±15.16 years.[6] On the contrary to our gender related findings, is a study from Lahore which reported a female predominance with a male to female ratio of 1:1.5.[16] Another study carried out in India on 80 cases of OSCC reported a prevalence of 61.25% in males and Yazdi et al in their study in Iran of 48 cases of OSCC of tongue reported male prevalence of 60.4%.[17,18] The present study is also positively co-related to both of these studies. A high proportion of cases among men may be due to the risk factors like high prevalence of snuff consumption habits, combined with cigarette smoking.[19] In our society, females are less likely to be indulged in addictive habits like tobacco smoking etc which could be the main reason for this gender to be less involved.

The most frequent site in our study was tongue (50%). Tahir et al reported results on OSCC were not in line with the present study findings.[20] The most frequent location of the tumour in the formerly mentioned study was buccal mucosa (32.4%) followed by tongue (21.6%).

Many studies carried out in USA and Europe have also reported quite different findings. In western countries tongue involvement of OSCC was seen in 20% - 40% of cases and the floor of the mouth in 15%-20% of the cases, and together these sites represent approximately 50% of all cases of oral SCC. The gums, palate, retromolar area and the buccal and labial mucosa are least frequently affected sites in the oral cavity.[21,22]

Tumours can grow to a size that exceeds its blood supply, leading to tumour necrosis and ulceration.[23] In the present study the patients most frequently presented with an ulcerating lesion. This result is comparable to another study recently conducted in Pakistan wherein the most common clinical presentation of OSCC was as non-healing indurated ulcer (51.4%) which was significantly common on the buccal mucosa (p=0.001).[20] Another study reported from Canada by Mirbod et al also reported that ulceration was the most common finding in OSCC patients; these finding are consistent with the present study.[24]

In the current study out of n=40 cases, lympho-vascular invasion was found in n=27 (67.5%) while n=13 (32.5%) cases showed no lympho-vascular invasion. A study carried out in Japan by Nomura et al. reported 57.5% lympho-vascular invasion in cases of OSCC, which is slightly lower than the present study.[25]

CONCLUSION

OSCC is a growing malignancy in Pakistan with significant morbidity and mortality and the findings of the present study will be a valuable addition in the local cancer archives.

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