CHARACTERISTICS OF ORAL SQUAMOUS CELL CARCINOMA AT ORAL & MAXILLOFACIAL SURGERY DEPARTMENT OF HASAN SADIKIN HOSPITAL

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ABSTRACT Background: Oral cancer is a malignancy that arises on the lip or oral cavity. Because 90% of cancers in the oral cavity area are histologically originated in the squamous cells, they are traditionally defined as an oral squamous cell carcinoma (OSCC). OSCC is the 17th most common type of cancer worldwide based, on the International Agency for Research on Cancer (IARC). Purpose: This study was conducted to analyze the characteristic features of oral squamous cell carcinoma in patients who came to the Oral and Maxillofacial Surgery Department of Hasan Sadikin Hospital from 2016-to 2020. Methods: This research is a retrospective observational study by taking patients’ medical records at the Oral and Maxillofacial Surgery Department of Hasan Sadikin Hospital from 2016- to 2020 and data from histopathological examination results. Results: During the period 2016-2020, there were 124 patients with OSCC, with several male patients (50.8%) more than the female patient (49.2%) and more common in the age group of over 50 years. In addition, there was an increasing total of patients per year: 13 patients in 2016; 14 patients in 2017; 22 patients in 2018; 31 patients in 2019 and 44 patients in 2020. The tumours were located on the tongue (58.1%), buccal mucosa (33.1%), gingiva (7.3%), lip (0.8%) and palate (0.8%). Most histopathologic examinations were well-differentiated (53.8%), moderately differentiated (33.6%), and poorly differentiated (12.6%) squamous cell carcinoma. Conclusion: Over the last 5 years, the number of oral squamous cell carcinoma patients in the Oral and Maxillofacial Surgery Department of Dr. Hasan Sadikin hospital has increased and is more common in men, with an age range above 50 years, with the major histopathology result was well-differentiated squamous cell carcinoma, and most of them were located on the tongue

KEYWORDS Oral squamous cell carcinoma, histopathology examination, oral and maxillofacial surgery department

Introduction

Oral cancer refers to a malignant transformation of the oral tissue, which is generally preceded by process of dysplastic changes leading to the development of squamous carcinoma. 1 90% of malignancy in the oral cavity is squamous cell carcinoma. 2 The location of oral cancer varies depending on race and lifestyle. According to the Japanese Association of Oral and Maxillofacial Surgeons, oral cancer occurs mostly in the tongue (40%), mandibular gingiva (20.3%), maxillary gingiva (12.0%), buccal mucosa (10.3%), the floor of the mouth (9.2%), antrum and palate (figure 2). 3

Diagnosis of squamous cell carcinoma of the oral cavity is established by taking history, clinical examination, radiographic and histopathology. During anamnesis patient usually complains about an ulcer or mass in the mouth, choking, difficulty breathing, dysphagia, odynophagia, hoarseness, otalgia, ear congestion, nasal congestion, and hemoptysis, trismus, neck mass, and pain in the head/neck area. Other common symptoms and signs include weight loss, fatigue, anorexia, mood swings and changes in sleep patterns. 7
The clinical examination may reveal premalignant lesions in the form of leukoplakia, verrucous, erythroplakia, or erythroplakia that may develop into necrotic ulcers or become large exophytic masses with a surface texture that may be verrucous or relatively smooth with induration and fixation indicating the infiltration of cancer cells into deeper tissues. These lesions have the potential for local bone and nerve damage and invade and infiltrate further via the lymphatics and bloodstream. Complaints are usually accompanied by recently lost teeth, bleeding, or exophytic lesions. Squamous cell carcinoma of the oral cavity is usually painless unless infected.

Radiological examination is also performed to confirm the diagnosis of squamous cell carcinoma of the oral cavity. Chest X-ray is indicated because the lungs are the most frequent site of metastases. Axial CT scans can also determine the degree of tumor spread and see bone invasion and lymph node involvement. Other radiographic examinations, including MRI and CT scans of the head and neck, may also be used. Bone scanning is rarely used because the results are only positive when bone involvement is symptomatic. USG of the liver showed abnormal results in 6% of head and neck cancer patients, so it was not indicated for investigation. Endoscopy is also recommended. Positron Emission tomography (PET) CT is the best modality for staging, monitoring, and surveillance advanced-stage cancer. The utility of PET CT in staging depends on the size of the primary tumour, therefore, PET CT is not useful for very small tumours. PET CT is useful for identifying additional unexpected primary tumours and/or distant metastases.

Histological examination of a squamous cell carcinoma of the oral cavity shows the gradual progression of oral carcinoma from simple, moderate or severe dysplasia to carcinoma in situ and finally to an invasive tumor. From a histopathological point of view, there are many types of squamous cell carcinoma, ranging from indolent to very aggressive tumors, with a high potential of being invasive. Histologically, tumours are classified as in situ, well-differentiated, moderately differentiated, and poorly differentiated.

The grade or stage of the cancer at the time of diagnosis is a key factor in determining prognosis and is an important element in determining the appropriate treatment based on the experience and results of previous groups of patients with the same stage. In general, the risk of neck lymph node metastasis in T1 and T2 tumours was 10% and 30%, whereas T3 and T4 tumours were evidently higher. This is significant because the most important prognostic factor in oral squamous cell carcinoma is the presence of lymph node metastases, which results in a 50% reduction in overall patient survival.

In clinical practice, the treatment of oral squamous cell carcinoma is sometimes unsatisfying. Several studies have shown that even tumors at an early stage can cause poor results. New parameters such as the depth of invasion were included in the 8th edition of the American Joint Committee on Cancer (AJCC) Cancer Staging Manual to improve the predictive value and stratification of different stages and to describe patients previously thought to have an early-stage tumor but exudes poor outcomes. Pathological parameters including pathological stage, WHO histopathologic assessment, presence of vascular and perineural invasion, extracapsular spread, and surgical margins have been used as prognostic factors for oral squamous cell carcinoma. In this situation, histological grade can be an important prognostic factor for treatment outcome. The most commonly used staging system is the TNM system. The TNM system classifies cancer based on the size and extent of the primary tumor (T), lymph node involvement (N) and presence or absence of metastasis (M) as shown in Table 1.

The main purposes of cancer therapy are to kill cancer cells, prevent recurrence, and restore the shape and function of the affected area as much as possible. The specific choice of therapy is determined by the nature of the carcinoma and the general condition of the patient. The majority of oral squamous cell carcinoma is diagnosed at an advanced stage, stage III or IV, which significantly reduces the chances of survival and causes a significant reduction in the patient’s quality of life. The main treatment options for oral squamous cell carcinoma are surgery, radiation, and chemotherapy or combination.

Material and Methods
This study was conducted from November to December 2020 using a retrospective observational method by taking medical records of patients at Oral and Maxillofacial Surgery Department of Dr. Hasan Sadikin Hospital. This research has received approval from the Hasan Sadikin Hospital research Ethics Committee (Number : 45/UN6.KEP/EC/2021). The population in this study were all patients with oral squamous cell carcinoma who were treated in Oral and Maxillofacial Surgery Department of Dr. Hasan Sadikin Hospital during 2016-2020 and has been identified with oral squamous cell carcinoma and was confirmed by the results from histopathological examination. Inclusion criteria were patients with complete medical record data, including medical record number, age, gender, location of the lesion, histopathological features and therapy performed. Meanwhile, the exclusion criteria in this study were patients with incomplete medical records. Out of a total of 140 medical records, 124 were included because they had all the required variables. Ages are grouped into 0-17 years, 18-30 years, 31-50 years, and >50 years. Histopathological findings are classified based on the World Health Organization Classification of Tumors in 2005. The therapy performed is classified into diagnostic therapy (incisional biopsy for diagnosis), definitive therapy in surgery, radiotherapy, chemotherapy and combination.

Results
From the data collection results for the last 5 years (2016-2020) at the Oral and Maxillofacial Surgery Department of Hasan Sadikin
### Table 1: Classifications of TNM system<sup>9,11,13</sup>

| Primary Tumor (T) |   |
|-------------------|--|
| TX                | Primary tumor cannot be assessed |
| Tis               | Carcinoma in situ |
| T1                | Tumor diameter of ≤ 2 cm with invasion depth of ≤ 5 mm |
| T2                | Tumor diameter of ≤ 2 cm with invasion depth of > 5 mm but ≤ 10 mm or tumor diameter of > 2 cm but ≤ 4 cm with invasion depth of ≤ 10 mm |
| T3                | Tumor diameter of > 4 cm and invasion depth of > 10 mm |
| T4a               | Extends to surrounding local tissue |
| Lips              | The tumor invades through the cortical bone, inferior alveolar nerve, floor of the mouth, facial skin, nose or chin |
| Oral Cavity       | The tumor invades adjacent structures (such as the cortical bone of the maxilla or mandible, tongue muscles (genioglossus, hyoglossus, palatoglossus & styloglossus), maxillary sinus, facial skin |
| T4b               | Extends to further tissue (tumor invades masticatory space, pterygoid plates, skull base, internal carotid artery) |

| Regional Lymph Nodes (N), ENE – extranodal extension |   |
|------------------------------------------------------|--|
| NX                     | Regional lymph nodes could not be assessed |
| N0                     | No regional lymph node metastases |
| N1                     | Metastases in 1 ipsilateral lymph node, <3 cm, ENE (-) |
| N2a                    | Metastases in 1 ipsilateral lymph node, > 3 cm but <6 cm, ENE (-) |
| N2b                    | Multiple ipsilateral lymph node, <6 cm or, ENE (-) |
| N2c                    | Bilateral/contralateral lymph node, <6 cm, ENE (-) |
| N3a                    | Metastases in lymph nodes > 6 cm or |
| N3b                    | Lymph node metastases with ENE (+) |

| Distant Metastasis (M) |   |
|------------------------|--|
| M0                     | No distant metastases |
| M1                     | Distant metastases |

### ANATOMIC STAGE/PROGNOSTIC GROUPS

| Stage 0 Tis N0 M0 |   |
| Stage I T1N0M0   |   |
| Stage II T2N0M0  |   |
| Stage III T3N0M0 T1N1M0 T2N1M0 T3N1M0 |   |
| Stage IVA T4aN0M0 T4aN1M0 T1N2M0 T2N2M0 T3N2M0 T4aN2M0 |   |
| Stage IVB All TN3M0 T4b AllNM0 |   |
| Stage IVC All T All N M1 |   |
Hospital, 124 patient data were included. The distribution of patients by sex, age group, tumour location, histopathological findings and therapy performed is shown in Table 2.

The patients consisted of 63 men and 61 women with 24 - 79 years (mean 52 years). The data shows an increase in the number of cases of patients with oral squamous cell carcinoma at the Oral and Maxillofacial Surgery Department of Hasan Sadikin Hospital per year (Graphic 1), with more male patients than women (Graphic 2) and more patients in the age group of over 50 years (Graphic 3).

The most common location for oral squamous cell carcinoma is on the tongue (Graphic 3), with more histopathological findings of well-differentiated tumours.

**Discussion**

Oral cancer is a malignant neoplasm that occurs on the lips or oral cavity. Oral cancer is defined as squamous cell carcinoma because 90% of cancers in the mouth area histologically originate from squamous epithelial cells. The average age of people with oral squamous cell carcinoma in the United States is 62 years and is more common in men.4 The risk of squamous cell carcinoma of the oral cavity increases with exposure to risk factors and increasing age due to age-related mutagenic and epigenetic changes. The incidence of squamous cell carcinoma of the oral cavity is two times higher in men than women. The use of alcohol and tobacco likely causes this condition.2,17 In this study, the number of male patients is more than women, but the incidence is less than two times and mostly occurred in the age group of over 50 years. In this study, we did not study the risk factor of squamous cell carcinoma in the oral cavity because the data in the medical record were insufficient.

The majority of oral squamous cell carcinoma occurs in the tongue area. Patients generally experience mouth sores in the long term, or a lump can occur that causes an asymmetrical shape. In the case where squamous cell carcinoma on the tongue has spread, generally, the patient has difficulty moving the tongue, so the patient experiences problems in speech and swallowing.16 In this study, the most common location of
| Variables                  | Characteristics                      | n (%)         |
|----------------------------|---------------------------------------|---------------|
| Gender                     |                                       |               |
| Male                       |                                       | 63 (50.8%)    |
| Female                     |                                       | 61 (49.2%)    |
| Age                        |                                       |               |
| 0 - 17 years               |                                       | 0 (0 %)       |
| 18 - 30 years              |                                       | 4 (3.2%)      |
| 31 - 50 years              |                                       | 41 (33.3%)    |
| >50 years                  |                                       | 78 (63.4%)    |
| Tumor Location             |                                       |               |
| Tongue                     |                                       | 72 (58.1%)    |
| Gingiva                    |                                       | 9 (7.3 %)     |
| Buccal mucosa              |                                       | 41 (33.1 %)   |
| Palate                     |                                       | 1 (0.8 %)     |
| Lip                        |                                       | 1 (0.8 %)     |
| Histopathological findings |                                       |               |
| Well-differentiated tumours|                                       | 65 (52.8%)    |
| Moderately differentiated tumours |                     | 46 (37.4%)    |
| Poorly differentiated tumours |                                   | 12 (9.8 %)    |
| Treatment given            |                                       |               |
| Diagnostic                 |                                       | 5 (16.8 %)    |
| Surgery                    |                                       | 13 (15.1%)    |
| Hemiglossectomy + RND / SND|                                       | 3 (23.1%)     |
| Wide excision              |                                       | 3 (23.1%)     |
| Wide excision + RND / SND  |                                       | 1 (7.7%)      |
| Hemimaxillectomy           |                                       | 1 (7.7%)      |
| Hemimandibulectomy + RND / SND |                         | 2 (15.4%)     |
| Chemotherapy               |                                       | 72 (45.4 %)   |
| Radiotherapy               |                                       | 3 (2.5 %)     |
| Combination                |                                       | 31 (20.2 %)   |
| Wide excision + chemotherapy / radiotherapy | | 3 (9.7%)     |
| Wide excision + SND / RND + chemotherapy / radiotherapy | | 9 (29%)     |
| Hemimandibulectomy + chemotherapy / radiotherapy | | 2 (6.5%)     |
| Hemimandibulectomy + SND / RND + chemotherapy / radiotherapy | | 2 (6.5%)     |
| Segmental resection + SND / RND + chemotherapy / radiotherapy | | 1 (3.2%)     |
| Hemiglossectomy + chemotherapy / radiotherapy | | 2 (6.5%)     |
| Hemiglossectomy + SND / RND + chemotherapy / radiotherapy | | 10 (32.3%)    |
| Hemimaxillectomy + chemotherapy / radiotherapy | | 2 (6.5%)     |
oral squamous cell carcinoma is at the tongue, about 72 out of 124 cases or 58.1%. Most patients came in a weak condition where the tumor had spread all over the tongue, making it difficult to move their tongue and swallow food.

Oral squamous cell carcinoma is a cancer of the oral cavity with a fairly high mortality rate. Generally, this type of cancer is diagnosed at an advanced stage, and the 5-year survival rate is only 40-50%. Appropriate management can prevent metastases and increase the patient’s endurance and quality of life. The purposes of therapy include eliminating cancer cells from the body, restoring physiological functions, also maintaining and restoring facial aesthetic functions.15,16 Surgery is the most common therapy for squamous cell carcinoma of the oral cavity. Surgery is combined with local radiotherapy and/or systemic chemotherapy for more advanced tumours. The surgical technique depends on the access and size of the lesions that will be removed.15 Lymph node involvement in oral squamous cell carcinoma is common, and it requires neck dissection to prevent the risk of metastases. The neck dissection level performed is related to the number, size and location (ipsilateral, contralateral, bilateral) of the lymph nodes involved.16

A single treatment is more commonly used in the early stages of oral squamous cell carcinoma (Stage I & II) and carcinoma in situ (CIS), while patients with advanced conditions (Stage III & IV) are treated with combination therapy. The type and level of treatment are determined by factors related to the characteristics of the tumour, the patient’s general condition and the medical team. Tumour characteristics such as the location of the tumour, proximity to bone, depth of invasion, and TNM stage were considered along with patient age, comorbidities, adherence to treatment, and the urge for lifestyle changes. The expertise of the medical team will also influence treatment decisions. The possible side effects of therapy, both short and long term, and how they may affect the quality of life of people with cancer also have an impact on the final therapy decision.15

In this study, 95% of patients were treated with definitive treatment in surgery, chemotherapy, radiotherapy or combination. The rest of the 5% performed a diagnostic procedure in the form of incisional biopsy. The most definitive therapy given in this study was chemotherapy (45.4%) because most patients came in a condition where the tumour lesions were very large. A combination therapy that was carried out during the period of this study was 20.2%.

**Conclusion**

In males, oral squamous cell carcinoma is more common, dominated by elderly patients (>50 years) with location on the tongue. Histopathological findings mostly showed well-differentiated squamous cell carcinoma. Oral squamous cell carcinoma can affect the quality of life of the patient. Therefore, society’s knowledge of the aetiology, symptoms and clinical features of this disease is needed to reduce the incidence and mortality of oral squamous cell carcinoma, where patients usually present at an advanced stage with a poor prognosis.

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**Conflict of interest**

There are no conflicts of interest to declare by any of the authors of this study.

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