ORIGINAL ARTICLE

The Accuracy of Oral Cancer Clinical Diagnosis in Cipto Mangunkusumo Hospital: An Indonesian National Referral Hospital Study

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ABSTRACT

Background: Early diagnosis of oral cancer is believed to increase the survival rate. To the best of our knowledge, no research has been done on the accuracy of oral cancer clinical diagnosis in Indonesia. **Purpose:** This study aims to assess the accuracy of clinical diagnoses for patients presenting to the oral medicine clinic with suspected oral cancer lesions. **Methods**: This study is a retrospective cross-sectional study with convenience sampling, including patients who presented to the Oral Medicine Clinic of Cipto Mangunkusumo Hospital from January 2018 to December 2020 with suspected oral cancer lesions. A clinical diagnosis is accurate if the histologic diagnosis falls into the premalignant or malignant category. **Results**: As many as 112 cases of suspected tumours of the oral cavity were listed from January 2018 to December 2020. Only 58 patients met the inclusion criteria. The accuracy of clinical diagnosis was 89%. Most of the patients were in stage 4 oral cancer. The range of delay was 1 week to 192 weeks, with a mean of 27.60 ± 34.71 weeks. **Conclusion**: The clinical diagnosis accuracy of the oral medicine clinic was excellent. Unfortunately, most of the patients had stage 4 oral cancer when they arrived at the hospital. The delay in diagnosing oral cancer may be minimised if individuals and professionals in primary health centres were better educated.

Keywords: oral cancer; premalignant; diagnosis

INTRODUCTION

Oral cancer is the sixth most common cancer globally, with 300,373 new cases and 143,353 cancer deaths in 2012.[1,2] It was estimated that half of the world's oral cancer cases were found in Asia, and around 11% of these Asian cases were in South East Asia (SEA).[1] The mortality rate of oral cancer in SEA was estimated as 8.508 cases, considered as the highest in the Asia region.[1] Nevertheless, it was suspected that there are still some underreported oral cancer cases in SEA due to poor data recording or case registry in most of the SEA countries.[1]

Among oral cancer cases, epithelial tumours are the most prevalent compared to salivary gland tumours.[2] The squamous cell carcinoma is the most common among oral epithelial tumour cases, whilst mucoepidermoid carcinoma becomes the most common among salivary gland tumour cases.[2]

Oral cancer is considered to have a poor prognosis, as it has the lowest five-year survival rate among all cancers, with a survival rate of only 50% or less.[3,4] Early diagnosis of oral cancer is believed to increase the survival rate from 70% to 90%.[3] Unfortunately, it is commonly found that the delay from symptom onset to clinical diagnosis is relatively long.[3] Studies showed that the delay of oral cancer diagnosis can be months.[3] The longer the delay, presumably the higher the stage of oral cancer when it is diagnosed, thus associated with higher morbidity and mortality.[3] Stage of oral cancer is thought to be an essential factor in the prognosis and outcome of oral cancer cases.[4]

This study aims to evaluate the accuracy of oral cancer clinical diagnosis in the oral medicine clinic of Cipto Mangunkusumo General Hospital (Rumah Sakit Cipto Mangunkusumo/RSCM).

MATERIALS AND METHODS

This study is a retrospective cross-sectional analysis of patients presenting to the oral medicine clinic from January 2018 to December 2020 for evaluation of suspected oral cancer lesions. This study was approved by the Ethics Committee of the Faculty of Medicine, Universitas Indonesia, No. KET-112/UN2.F1/ETIK/PPM.00.02/2021. Patients were included if suspected oral cancer lesions were biopsied and had pathology reports.

Clinical diagnosis of suspected oral cancer lesions made by the oral medicine specialist will be compared to the pathology report. The pathology report will be categorised as benign, premalignant (any grade of dysplasia and moderate to severe cellular atypia), or malignant. A clinical diagnosis will be considered inaccurate if the pathology report falls into the benign group.

The staging of the oral cancer was done at the time of diagnosis. The staging system used in this report is the American Joint Committee on Cancer (AJCC) classification, also known as the TNM staging system.[5]

The demographic data, characteristics of suspected oral cancer lesions, types of delay, and the accuracy of diagnosis were presented as proportions. The correlation between cancer stage, delay duration, and delay type was measured using Spearman's rho correlation.

RESULTS

As many as 112 patients were initially listed as having suspected tumours of the oral cavity as the provisional diagnosis in the oral medicine clinic from January 2018 to December 2020. There were 40 individuals excluded because they did not return for additional assessment and, therefore, did not have pathology reports. Six people were excluded because the clinical diagnosis was not listed as suspected squamous cell carcinoma but rather as a nonspecific diagnosis, such as mandibular tumour or soft tissue tumour. Furthermore, because the medical records for eight individuals were lost, they were excluded from the study. Only 58 patients were included in this study, and they had pathology reports.

The patients included in this study were predominantly female, with a mean age of 51.4 years. The demographic data of the patients is shown in Table 1.

Table 1. Demographic data

Subject characteristics	N	%
Age (Years)	51.4±1.97*	
Gender		
Male	27	46.6
Female	31	53.4
Education		
Elementary School	11	19.0
Middle School	8	13.8
High School	17	29.3
Diploma	6	10.3
Bachelor	5	8.6
Master	1	1.7
Unknown	10	17.2
Race		
Melayu	34	58.6
Mongoloid	2	3.4
Melanesia	0	0
Caucasian-Indic	0	0
Unknown	22	37.9
Occupation		
Office Staff	10	17.2
Factory Laborer	1	1.7
Housewife	21	36.2
Self-employed	10	17.2
Others	16	27.6

*mean ±SD

The unhealing oral lesions clinically diagnosed as suspected oral cancer were initially described as deep ulcer, exophytic mass, or leukoplakia/erythroplakia/erythroleukoplakia, with mass as the most common feature found (64%). The most affected site was the base of the tongue (72%), which includes the dorsal surface of the base of

the tongue, the posterior third of the tongue, the posterior tongue, and the root of the tongue. The lesion characteristics are shown in Table 2.

Table 2. Lesion characteristics of suspected oral cancer

Lesion Characteristics	N	%
Lesion Type		
Ulcer	16	27.6
Mass	37	63.8
Leukoplakia, erythroplakia, or erythroleukoplakia	5	8.6
Lesion location		
Tongue	42	72.4
Gingiva	4	6.9
Maxilla	4	6.9
Mandible	1	1.7
Buccal	4	6.9
Palate	1	1.7
Lips	2	3.4

Based on the anamnesis, we found that the delays were caused by either the patient, a previous doctor or dentist, or both (Figure 1). Patient delay refers to the interval between the patient's initial observation of a symptom and their first visit with a healthcare provider (HCP) regarding that symptom. In contrast, the interval between the patient's initial visit with a healthcare practitioner and their first visit with the treating specialist is referred to as the doctor or dentist delay.[6] The range of delay was 1 week to 144 weeks with mean (SD) was 24.28 (26.90) weeks.
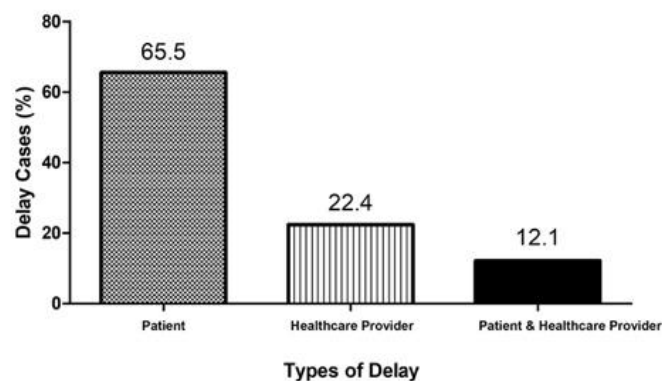

Figure 1. Proportion of delay types

The accuracy of diagnosis was calculated by comparing the clinical diagnosis with the pathologic report. Matched pairs were calculated as accurate and presented as a percentage. The accuracy of clinical diagnosis was 98%. On the other hand, 2% of the cases were inaccurately diagnosed where the pathologic reports came out to be tuberculosis oral ulcers.

Table 3. Correlation between cancer stage, delay duration, and delay type

Variables	Correlation(r)	p-value
Delay duration	-0.050	0.721*
Delay type	-0.009	0.950*

*Spearman's rho correlation

Eighty-five per cent of the patients were diagnosed with stage 4 oral cancer. Two per cent were stage 3, 9% were stage 2, and 3% were stage 1. There was no statistically significant correlation between the cancer stage and the duration of the delay.

DISCUSSION

Oral cancer is the sixth most common cancer worldwide, with a 5-year survival rate of less than 50%.[1,3] The incidence of lip and oral cavity cancer in the Southeast Asia region, as released by the Global Burden of Disease (GBD) in 2017, was 4.65 (4.36–4.94).[7] Being one of the top ten cancers worldwide, oral cancer is still underdiagnosed in some countries, especially in Southeast Asia.[1] This may be caused by poor data recording in the cancer registry, as well as by the ability of general practitioners to detect the signs and symptoms of oral cancer accurately.[1,9,10] Furthermore, the failure of most people to recognise the early signs of oral cancer may be a contributing factor.[11,12]

In this study, the age range of patients with suspected oral cancer is quite broad. However, the average age found in this study is similar to that of the prior study.[2] It is known that more than 50% of head and neck cancer cases occur in patients aged 60 years, and the rest occur in patients aged 70 years.[13] Females are slightly more affected than males, which is consistent with earlier research.[2,14]

The most common presentation of oral symptoms, according to our data, was a mass. This contradicts the previous report, which indicated that the most prevalent finding was "non-healing stomatitis."[13] In terms of anatomical distribution, our findings revealed that the base of the tongue is the most common site of oral cancer. This finding aligns with the results of a previous study by Danuthai in 2017, which identified the tongue as the most common site.[2]

In the current study, we evaluated the accuracy of clinical diagnosis of suspected oral cancer lesions. Results indicated that the overall accuracy was excellent. The accuracy was obtained by matching the clinical diagnosis and the pathology report. A biopsy followed by histopathologic examination remains the gold standard for diagnosing oral cancer.[10] Based on the pathology report, only a small portion of the patients were diagnosed with other lesions.

The range of the delay was quite wide. As stated in the previous study by Gigliotti, patient delay is the most significant factor contributing to the total delay pathway.[7] However, the data on patient delay are obtained via a retrospective study, and thus, it is subject to recall bias.[7] Age and education level are not correlated with delay duration (data not shown). This finding is consistent with a previous study from 2006, which stated that the sociodemographic status of patients did not correlate with the duration of patient delay.[15] This study showed that there was no statistically significant correlation between cancer stage and delay duration. The results of previous studies were also controversial.[16] Fifteen studies found that there was no difference in cancer stage and total delay in the time of diagnosis.[16,17] According to a 2020 study by Gondhowiardjo, the majority of patients had advanced diseases at the time of diagnosis, even though there is no positive correlation between the cancer stage and the delay in diagnosis.[18] These findings supported our study.

Certain factors can lead to diagnostic delays in oral cancer. The most common factors playing a role in patient delay are the lack of knowledge of oral cancer and its risk factors.[19,20] On the other hand, healthcare provider delay is sometimes caused by poor clinical practice.[19]

The limitations of this study included a small sample size and a limited time range. Further studies with a larger sample size and a wider time range are needed to establish the diagnostic accuracy and the correlation between delay duration and cancer stage.

The oral medicine clinic's clinical diagnosis accuracy was excellent. Unfortunately, the individuals had stage 4 oral cancer when they arrived at the hospital. The delay in diagnosing oral cancer may be minimised if individuals and professionals in primary health centres were better trained on diagnosing oral premalignant and oral cancer lesions. A skilled dentist, particularly an oral medicine specialist, is essential to a successful clinical diagnosis of oral cancer. Even in the earlier stages, a dentist or oral medicine professional needs to be aware of the main characteristics of oral cancer.

CONFLICT OF INTERESTS

The authors report no financial, consultant and/or other conflicts of interest and declare that no funding and/or grants have been received to assist in completing this research report.

REFERENCES

1. Cheong SC, Vatanasapt P, Yi-Hsin Y, Zain RB, Kerr AR, Johnson NW. Oral cancer in South East Asia: Current status and future directions. Transl Res Oral Oncol. 2017; 2: 2057178X1770292.

2. Dhanuthai K, Rojanawatsirivej S, Thosaporn W, Kintarak S, Subarnbhesaj A, Darling M, Kryshtalskyj E, Chiang C, Shin H, Choi S, Lee S, Shakib P. Oral cancer: A multicenter study. Med Oral Patol Oral Cirugia Bucal. 2017; : 0–0.

3. Pitiphat W, Diehl SR, Laskaris G, Cartsos V, Douglass CW, Zavras AI. Factors associated with delay in the diagnosis of oral cancer. J Dent Res. 2002; 81(3): 192–7.

4. Güneri P, Epstein JB. Late stage diagnosis of oral cancer: Components and possible solutions. Oral Oncol. 2014; 50(12): 1131–6.

5. Inchingolo F, Santacroce L, Ballini A, Topi S, Dipalma G, Haxhirexha K, Bottalico L, Charitos IA. Oral cancer: A historical review. Int J Environ Res Public Health. 2020; 17(9): 3168.

6. Zanoni DK, Patel SG, Shah JP. Changes in the 8th Edition of the American Joint Committee on Cancer (AJCC) Staging of Head and Neck Cancer: Rationale and Implications. Curr Oncol Rep. 2019; 21(6): 52.

7. Gigliotti J, Madathil S, Makhoul N. Delays in oral cavity cancer. Int J Oral Maxillofac Surg. 2019; 48(9): 1131–7.

8. Aupérin A. Epidemiology of head and neck cancers: an update. Curr Opin Oncol. 2020; 32(3): 178–86.

9. Braun LW, Martins MAT, Romanini J, Rados PV, Martins MD, Carrard VC. Continuing education activities improve dentists' self-efficacy to manage oral mucosal lesions and oral cancer. Eur J Dent Educ. 2021; 25(1): 28–34.

10. Buenahora MR, Peraza-L A, Díaz-Báez D, Bustillo J, Santacruz I, Trujillo TG, Lafaurie GI, Chambrone L. Diagnostic accuracy of clinical visualization and light-based tests in precancerous and cancerous lesions of the oral cavity and oropharynx: a systematic review and meta-analysis. Clin Oral Investig. 2021; 25(6): 4145–59.

11. Marlina E, Sumintarti, Ilmar H, Yusran A, Usman NA, Israyani, Mauliana AA. Oral potentially malignant disorder awareness level among elder community in the Belawa Distric, Wajo, South Sulawesi, Indonesia. J Dentomaxillofacial Sci. 2022; 7(3).

12. Mardhiana A, Harlina H. Student knowledge and awareness of oral cancer (study at Senior High School 2 Baubau, Southeast of Sulawesi). J Dentomaxillofacial Sci. 2016; 1(1): 45.

13. Moye VA, Chandramouleeswaran S, Zhao N, Muss HB, Weissler MC, Hayes DN, Zevallos JP. Elderly patients with squamous cell carcinoma of the head and neck and the benefit of multimodality therapy. The Oncologist. 2015; 20(2): 159–65.

14. Morikawa T, Shibahara T, Takano M, Iwamoto M, Takaki T, Kasahara K, Nomura T, Takano N, Katakura A. Countermeasure and opportunistic screening systems for oral cancer. Oral Oncol. 2021; 112: 105047.

15. Scott SE, Grunfeld EA, McGurk M. Patient's delay in oral cancer: a systematic review. Community Dent Oral Epidemiol. 2006; 34(5): 337–43.

16. Goy J, Hall SF, Feldman-Stewart D, Groome PA. Diagnostic delay and disease stage in head and neck cancer: A systematic review. The Laryngoscope. 2009; 119(5): 889–98.

17. Swaminathan D, George NA, Thomas S, Iype EM. Factors associated with delay in diagnosis of oral cancers. Cancer Treat Res Commun. 2024; 40: 100831.

18. Gondhowiardjo S, Hartanto S, Wirawan S, Jayalie VF, Astiti IAP, Panigoro SS, Sekarutami SM, Rachman A, Bachtiar A. Treatment delay of cancer patients in Indonesia: a reflection from a national referral hospital. Med J Indones. 2021; 30(2): 129–37.

19. Lima Am, Meira IA, Soares MS, Bonan PR, Mélo CB, Piagge CS. Delay in diagnosis of oral cancer: a systematic review. Med Oral Patol Oral Cirugia Bucal. 2021; : e815–24.

20. Mauceri R, Bazzano M, Coppini M, Tozzo P, Panzarella V, Campisi G. Diagnostic delay of oral squamous cell carcinoma and the fear of diagnosis: A scoping review. Front Psychol. 2022; 13: 1009080.