

Prevalence of Oral Mucosal Lesions in Patients with Hematological Disorders or Cancer: A Cross-sectional Study

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Abstract

Background: Oral cavity, as the main source of complications such as infection, is unfortunately ignored in cancer patients. In this study, the frequency, type, and location of oral mucosal lesions were determined among patients admitted in the hematology and oncology department.

Methods: In this cross-sectional study, 88 admitted patients were examined between November 20, 2017 to August 21, 2018. Demographic data, history of smoking, and denture use were documented. Oral examinations were further conducted to evaluate oral soft tissue lesions according to the checklist.

Results: 88 hospitalized patients were screened, out of whom 57(64.7%) had at least one lesion. A total of 79 oral mucosal lesions were identified and ulcerative lesions, found in 51 (57.9%) patients, were among the most frequently encountered problems. Pigmented lesions were more prevalent in smokers ($P<0.001$). Red and white lesions were significantly more than other lesions among complete denture wearing patients.

Conclusion: In light of the high prevalence of oral complications in our patients, this study indicates the need for consultation with oral medicine specialist for a timely diagnosis and better management during the treatment process.

Keywords: Oral manifestations, Hospital medicine, Dentures, Smoking

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Introduction

Oral health, as the mirror of body's health, plays an important role in the timely diagnosis and early treatment of systemic diseases.¹

Cancer is a common disease and leukemia is the ninth most prevalent cancer in the United States. Hematologic disorders impact oral mucosa with different mechanisms

such as anemia, thrombocytopenia, and neutropenia.^{2,3}

Oral mucosa is an area susceptible to complications of cancer therapy.² Range of problems differ from oral mucosal lesions to the aggravation of previous dental diseases. High incidence of oral complications has been associated with cancers and chemotherapy.⁴ Chemotherapy and aggressive therapy in hospitalized patients may induce changes in oral mucosa, which can upset the healthy balance of bacteria and lead to mouth sores, infections, and discomfort.⁵ Difficulties in nutrition and severe discomfort are other side-effects of mucositis, hence the necessity of a timely consultation with oral medicine specialist.⁴

Severe neutropenia and thrombocytopenia caused by chemotherapy can complicate oral health care.⁶ Untreated or persistent infections could be serious or even life-threatening. Due to pain, stress, and problems associated with hematologic disorders, admitted patients do not have enough energy and motivation to preserve their oral health,⁷ a condition in which oral infection occurs easily. Since dentists may be the first clinicians to confront oral lesions, they should be familiar with oral manifestations of hematologic problems for a timely diagnosis and rapid referral.^{4,8}

Given the importance of systematic oral examination of cancer patients, this study was designed with a new approach to assess oral mucosal lesions of admitted patients in the Hematology and Oncology Department of Yazd Shahid Sadoughi Hospital.

Materials and Methods

Study population

This descriptive cross-sectional study comprised 88 patients hospitalized in the Hematology and Oncology Department of Yazd Shahid Sadoughi Hospital from September 2017 to May 2018. Patients over 18 years old and willing to participate and cooperate in clinical examinations were included in the study. Simple census sampling method was selected and the sample size was determined based on similar

studies and incidence of oral mucosal lesions in normal population.

Clinical examination

Diagnostic criteria in oral mucosa are based on history and clinical features; in this study, the most probable clinical diagnosis was recorded on a form. According to past similar studies, diagnosis was made on clinical examination by two final-year dental students who had undergone additional training under the supervision of an experienced oral medicine specialist. If necessary, suspected cases were confirmed by photographs and referred to oral medicine specialist for further evaluation.

Each patient's examination was conducted on hospital bed, under artificial lighting and a mirror. They were evaluated for any abnormal changes in oral mucosa. In this study, normal variations such as Fordyce granules and leukoedema were not considered as lesions.

For a better understanding, oral mucosal lesions were classified into the following categories: ulcerative, red-white, pigmented, and exophytic. It is to be noted that patients with more than one lesion were analyzed in both groups of lesions according to their type.

Data collection

The following data were documented from each patient's medical records: age, sex, illness duration, smoker or non-smoker (if smoker, a current or a former one), denture type, oral healthcare status, use of drugs, and clinical diagnosis of oral mucosal lesions and their location.

Data analysis

The sample size was specified based on similar studies and the incidence of oral mucosal lesions in normal population. A 5% level of significance was utilized and SPSS software 17 was applied for statistical measurements. Fisher's exact and Pearson's chi-squared tests were used to analyze the gathered data.

Table1. Distribution of oral mucosal lesions according to sex and age groups

Groups		Ulcerative	Red-white	Pigmented	Exophytic
Sex	Male	28	9	8	0
	Female	23	9	1	1
	<i>P</i> -value	0.084	0.219	0.084	0.194
Age group	7-34yrs	13	0	3	0
	35-49yrs	7	1	0	1
	50-64yrs	18	2	4	0
	65-97yrs	13	15	2	0
	<i>P</i> -value	0.378	0.0001	0.416	0.178

Ethical considerations

This study was conducted in accordance with ethical principles and was approved by the ethics committee of Yazd Shahid Sadoughi University of Medical Sciences (IR.SSU.1396.26). All patients signed an informed consent form prior to the initiation of the research.

Results

88 patients admitted in the oncology ward of Yazd Shahid Sadoughi Hospital were consecutively examined from November 20, 2017 to August 21, 2018. The sample group consisted of 55 men and 33 women with a mean age of 51.2 and an age range of 18 to 92 years. Clinical examination was carried out to diagnose oral lesions by two final-year dental students who had undergone additional training under the supervision of an oral medicine specialist. If necessary, suspected cases were confirmed by photographs and referred to oral medicine specialist.

The participants were categorized and evaluated in four age groups: 7-34, 35-49, 50-64, and 65-97. There was no statistically significant difference between two sexes. Our results showed a higher prevalence of red-white lesions among older patients, underlining the importance of a routine examination of oral mucosa in the elderly (Table1).

A total of 79 oral soft tissue lesions were categorized into ulcerative (57.9%), red-white (20.5%), pigmented (10.2%), and exophytic (1.1%). The most common locations of ulcerative, red-white, and pigmented lesions were alveolar

mucosa, hard palate, and gingiva, respectively (Table2).

In view denture use, red-white lesions were significantly more popular in denture wearing patients (*P*-value=0.0001). In spite of other types of oral lesions, pigmented lesions were more frequent in smokers (*P*-value=0.0001).

Of 88 examined patients, 68 (77.3%) were reported to seek regular oral health care, among whom, 56 oral soft tissue lesions were observed. 23 oral mucosal lesions were found in the 20 (22.7%) patients with no reported regular oral health care (Table 3). It is to be borne in mind that some patients had more than one lesion, hence placed in more than one group.

Ulcerative and red-white lesions were statistically more frequent in poor oral health care patients with *P*-value=0.012 and *P*-value=0.031, respectively.

Discussion

In contrast to past literatures, this study with a new approach, classified oral lesions into four groups, namely ulcerative, red-white, pigmented, and exophytic. Similar to certain studies, the most prevalent types of oral lesions were ulcerative (58%).⁷ The present analysis showed that more than 80% of patients had at least one oral soft tissue lesion. Oral complications were found to be the major cause of morbidity in cancer patients.⁹ Since dental problems are associated with oral hygiene¹⁰ and osseous lesions should be assessed by radiography, due to loss of these data in this cross-sectional study, only oral soft tissue lesions were evaluated, while dental problems and osseous

Table 2. Distribution of oral mucosal lesions according to location

Location	Ulcerative	Red-white	Pigmented	Exophytic
Buccal mucosa	50	15	7	0
Alveolar mucosa	42	13	7	0
Hard palate	17	18	2	0
Gingiva	7	1	8	1
Soft palate	4	2	0	0
Anterior of tongue	1	0	0	
Ventral surface of tongue	0	1	0	0
Posterior part of tongue	1	1	0	0
Lateral side of tongue	1	1	0	0
Floor of the mouth	0	0	0	0
Tonsil	0	0	0	0
Lip	0	0	0	0

lesions were ignored. One of the priorities of this study was to consider a larger sample size compared with previous studies.^{7, 10-12}

In spite of some differences in age groups, this finding is in accordance with the result of Ali.¹³ In addition, both studies reported a significantly greater percentage of red-white lesions in older patients. High frequency of ulcerative and red-white lesions (81.1 % and 66.6%) may be attributed to the high rate of denture wearing in the elderly, poor quality of denture, low oral health awareness, or physical limitations.¹³⁻¹⁵ This point emphasizes the importance of oral examination, particularly in admitted aged patients.

The location of oral lesions was carefully documented. The most frequent regions for red-white lesions were the hard palate, while ulcerative lesions occurred mainly on the alveolar mucosa. Given the atrophic changes associated with chemotherapy regimen, traumatic locations are expected to have a high frequency of ulcerative lesions.

It is worth mentioning that smoking and denture are the main risk factors for the prevalence of oral lesions.¹⁶⁻¹⁸ Therefore, susceptibility to dysplastic conditions might be increased in old age. Employing conservative measures such as periodic examination, regular follow-up, and breaking bad habits can result in a timely diagnosis and ameliorate life quality.¹⁵

The present study proposed a new approach in view of denture wearing. Patients were divided into three groups: complete denture, partial

denture, and no denture.^{1,3,17,19} The prevalence rate of red-white lesions was reported 48.8 % in older nursing home residents.¹⁴

Previous studies had asked the participants about smoking with yes/no questions and some literatures ignored this problem.^{14, 20} Our results, which confirmed the greater risk of oral lesions in smoker patients, corroborate the results of Souza et al. and Batista et al.^{18, 21} According to the findings of our pilot study on the population, the cut-off point of 10 cigarette was selected to classify patients into non-smoker, less than 10 and more than 10 cigarettes, daily. This increase rate was statistically significant for pigmented lesions. Determining the cut-off point is a more novel approach in comparison to previous studies.^{3, 13}

The main limitation of our study was the evaluation of one referral center, hence the proposition of future multi-center studies with larger sample sizes.

Conclusion

According to the present findings, 64.7% of the admitted patients with hematological disorder or cancer had at least one oral mucosal lesion. Such lesions are more prevalent in smokers, denture wearing subjects, and older patients.

In light of the high prevalence of oral mucosal lesions in admitted cancer patients, the need for consultation with oral medicine specialist for a timely diagnosis and better management seems to be crucial.

Table 3. Behavioral features and habits of the patients

	Groups	Ulcerative	Red-white	Pigmented	Exophytic
Smoking	Non smoker	32	14	1	1
	<10 cigarette	14	2	4	0
	>10 cigarette	5	2	4	0
	<i>P</i> -value	0.224	0.303	0.0001	0.779
Denture	Complete denture	14	17	1	0
	Partial denture	0	0	0	0
	Without denture	37	1	1	1
	<i>P</i> -value	0.345	0.0001	0.59	0.845
Regular oral health care	Oral health	39	10	7	0
	Poor oral health care	12	8	2	1
	<i>P</i> -value	0.012	0.031	0.684	0.179

Conflict of Interest

None declared.

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