

# The Prevalence of Chemotherapy Induced Oral Lesions in Cancer Patients

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## ABSTRACT

**Introduction:** Cancer is, in fact, an uncontrolled tumor that has an illogical growth and affects the adjacent tissues and vital organs. Treatment modalities for cancer including surgery, radiotherapy, chemotherapy, and sometimes cold therapy have some complications even in oral cavity

**Objective:** our goal is to investigate the prevalence of chemotherapy induced oral lesions in cancer patients.

**Materials and method:** This cross-sectional study investigated the prevalence of oral complications in patients under cancer chemotherapy. The study sample included 80 patients admitted to the cancer institute who had undergone chemotherapy more than once. The oral lesions were evaluated by analyzing their general physical conditions and the drugs administered to them.

**Results:** Among the lesions, mucositis had the highest prevalence (66.2%) with a high percentage on the tongue (55%). Moreover, a high percentage of this lesion was reported in adults and elderly

**Conclusion:** making a protocol can be useful to decrease or even eliminated chemotherapy induced oral lesions which can affect quality of life.

**Keywords:** Cancer, chemotherapy, oral lesions, mucositis

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## INTRODUCTION

Cancer is, in fact, an uncontrolled tumor that has an illogical growth and affects the adjacent tissues and vital organs. Over the years, chemotherapy has dramatically helped cancer patients to treat their cancer and increase their longevity. However, along with all advantages of chemotherapy, it has consequences that are mainly associated with toxicities that occur following the application of chemical agents in other areas of the body, especially in the oral cavity due to its sensitivity<sup>1,2</sup>.

Dental care in these groups of patients is important owing to different reasons. Oral lesions can cause death and maladies in various groups of these patients. The most prevalent complications include infection (33%), mucositis (19%), bleeding (15%), dry mouth, periodontal problems and ulcer, neurotoxicity, dysphasia, and altered perception of smell, taste, etc.<sup>3,4</sup> Another reason mentioned for performing dental care is increasing the patient's self-confidence. By doing optimal dental care before, during, and after treatment, a clinician will be able to maintain the patient's facial appearance, thereby promoting their self-confidence<sup>3,4</sup>.

## MATERIAL AND METHOD

This cross-sectional study was conducted on all patients (n=80) hospitalized in the chemotherapy ward of the cancer institute (central 1) of Imam Khomeini hospital during April and May 2001. These patients had undergone chemotherapy at least once.

The patients were divided into four age groups: 47.5% in the adult and elderly group, 24% in the middle-aged group, 27.5% in the teenager and youth group and a small percentage in the chil-

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dren and newborn group. Further, 51% of them were females and 49% were males. The patients who were under the second day of chemotherapy were selected. The results were recorded based on the explanations of the patients and their companions, intra-oral examinations, and cooperation of an oncologist in doubtful cases. Among the study samples, 31% had sarcoma and 69% had carcinoma, from among them 20% suffered from head and neck cancer.

Table 1 presents the regional distribution of head and neck cancer in the study samples. Highest prevalence was found in esophagus and nasopharynx.

The patients referred to the cancer center were from the central provinces (42.5%), western provinces (27.5%), northern prov-

inces (18.75%), southern provinces (6.25%), and eastern provinces (5%).

**RESULTS**

The results of this study showed that 66.2% of patients suffered from mucositis and severe oral lesions after chemotherapy. Among them 35 (43.75%) had red atrophic lesions. Further, 31 (40.2%) patients had used 5-Fluorouracil (5-Fu) as a treatment regimen. Moreover, 18 patients under treatment with this drug had mucositis (Table 2).

Table 3 presents the frequency of different areas of oral mucositis, the highest rate being observed on the tongue.

From among the studied patients, 35% had painful lesions, 36.25% had burning sensation, and the rest had no such problems. Moreover, 18.7% of them suffered from constipation during chemotherapy. In addition, 50% of patients mentioned lack of sense of taste for a while. One of them was under radiotherapy and chemotherapy simultaneously, which could have intensified the destructive effects of radiation on oral mucosa and taste buds. Furthermore, 78.7% of patients had nausea during and after chemotherapy. Among the patients treated with cisplatin (66.2%), 89% suffered from nausea (Table 4).

The frequency of oral mucositis was higher in the adults and el-

derly than other groups (about 45%). The frequency of nausea was also higher in adults and elderly than other study groups (49%). Dry mouth was found to be 61.2% among the patients under treatment, from whom 37% were under simultaneous radiotherapy and chemotherapy.

Further, 15% of patients were affected with oral aphthous after chemotherapy, 25% of whom were under simultaneous radiotherapy and chemotherapy. This can be associated with a defective immune system in these patients after simultaneous application of both treatments.

The frequency rates of herpes, abscess and infection, angular cheilitis, gingival and oral bleeding, and extensive oropharyngeal ulcers were 3.7%, 2.5%, 3.7%, 1.2%, and 5%, respectively. Further, 5% of the patients complained of dry mouth after chemical treatments, especially radiotherapy, which was also confirmed in clinical examinations.

**DISCUSSION**

Chemotherapy is the most common and effective treatment for cancer, and the side effects of chemical treatments are one of the major problems associated with treatment. In a study conducted by Brain in 1994, the lesions on the tongue, lips, palate, and gum were the most prevalent disorders associated with chemotherapy<sup>5</sup>, which is in line with the results of the present study. In a study in 1987, it was emphasized that mucosal atrophy and ulcer, mucositis,

Table 1. Absolute and relative frequency distribution of head and neck cancers in the patients

Frequency / Cancer	Number	Head and neck cancer (%)
Esophagus	6	37/5
Jaw	1	6/25
SCC of parotid	1	6/25
SCC of nasopharynx	5	31/25
SCC of left buccal mucosa	2	12/5
Adenocarcinoma of the eyelid	1	6/25

Table 3. Different areas of the oral cavity with mucositis in the patients

Frequency / Lesion site	Number	Percentage of lesions
Gum	8	8/5
Cheek	8	8/5
Tongue	44	46/8
Lip	12	12/8
Mouth roof (palate)	11	11/7
Mouth floor	11	11/7

Table 2. Comparison of mucositis with 5-Fu and other drugs

Lesion / Drug	Mucositis		Absence of mucositis
	Number (%)		
5-Fu	Number	18	13
	(%)	58	42
Other drugs	Number	22	27
	(%)	45	55

Table 4. Comparison of frequency of nausea with cisplatin and other drugs

Lesion / Drug	Presence of nausea		Absence of nausea
	Number (%)		
Cisplatin	Number	47	6
	(%)	89	11
Other drugs	Number	10	17
	(%)	37	63

and taste and pain dysfunctions were some of the common complications during the treatment<sup>6</sup>. In the present study prevalence of mucosal atrophy and mucositis was found to be 36.2%. However, the prevalence of mucositis in the study of Coins et al. was higher (60%)<sup>7, 8</sup>.

The prevalence of nausea after chemotherapy in the patients under treatment with cisplatin was 89%, which is in agreement with the findings of the previous studies. Michael et al. reported that all patients under treatment with cisplatin had nausea<sup>9, 10</sup>. Victor et al. also reported that all patients were suffering from this problem during and immediately after cisplatin consumption<sup>11, 12</sup>. The prevalence of dry mouth in patients undergoing treatment was 61.2%, which confirms the results of Main et al.<sup>13</sup>. Maccarthy et al. reported a prevalence of 48% for herpes simplex<sup>11</sup>, which was very lower in the present study.

## CONCLUSION

By taking care of the oral complications caused by cancer treatment, a dentist can play a major role in the oncology system and hence reduce the morbidity and mortality of the critically ill patients.<sup>14, 15</sup> Studies have shown that observation of the following principles can be helpful in the control and treatment of oral lesions in patients under chemotherapy:

1. Oral hygiene is highly important and decreases the possible incidence of oral problems. Hence, these patients should brush their teeth, tongue, and gums at least twice a day, and in thrombocytopenic patients with less than 2000 plt, gauze pieces, cotton swabs, and toothpicks dipped in sodium bicarbonate should be used. Further, it is recommended to wash the mouth with luke-warm saline or sodium bicarbonate 3-4 times a day.<sup>16</sup>

2. It is better to evaluate periodontal health before chemotherapy and prevent consequent diseases by scaling and root planing. Periodontal treatments are preferred in cancer patients before chemotherapy.<sup>8, 20</sup>

3. Q9in patients with infected teeth who susceptible to sepsis during cancer treatment courses, tooth extraction has indications, although it needs to be investigated by complete blood count test, measuring the number of platelets, and determining PT and PTT in order to accurately assess the blood coagulation status of the patients.

4. If the patient has asymptomatic pulpal damage with or without pathologic changes in the periapical region, there is no need to do endodontic treatments. But if the patient is symptomatic even without any indication of periapical damage, primary biomechanical preparation ameliorates the symptoms and acute infection<sup>17, 18, 20</sup>.

Scientific advancements and further research are essential to help human race overcome cancer, like a simple illness.

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