ORIGINAL RESEARCH

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.

M**aterials 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[1, 2].

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.[3, 4] 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[3, 4].

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 children 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, intraoral 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-

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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 elderly 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[5], 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 2. Comparison of mucositis with 5-Fu and other drugs

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

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

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

and taste and pain dysfunctions were some of the common complications during the treatment[6]. 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%)[7, 8].

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[9, 10]. Victor et al. also reported that all patients were suffering from this problem during and immediately after cisplatin consumption[11, 12]. The prevalence of dry mouth in patients undergoing treatment was 61.2%, which confirms the results of Main et al.[13]. Maccarthy et al. reported a prevalence of 48% for herpes simplex[11], 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.[14, 15] 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 lukewarm saline or sodium bicarbonate 3-4 times a day.[16]

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.[8, 20]

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[17,18,20].

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

Reference:

1. Alberts DS, Manning MR, Coulthard SW, Koopmann CF Jr, Herman TS. Adriamycin/cis-platinum/ cyclophosphamide combination chemotherapy for advanced carcinoma of the parotid gland. Cancer 1981 Feb 15; 47(4): 645-48.
2. Athanasios Poulopoulos , petros Papadopoulos , Dimitrios Andreadis , Chemotheraphy : oral side effect and dental interventions – a review of Litrature , Mar 2017 .
3. Andrew I. Schafer , Internal medicine CECIL.2019 Jan, chapter55 .
4. Belani CP, Eisenberger MA, Gray WC. Preliminary experience with chemotherapy in advanced salivary gland neoplasms. Med Pediatr Oncol 1988; 16(3): 197-202.
5. Burket LW. Burket's Oral Medicine. London: Lippin Cott; 1994.
6. Begonya Chaveli-Lopez , Oral toxicity Prouduced by Chemotheropy Journal of clinican and Experimental Dentistry . 2014 Feb : 6(1):81-e90
7. Charles M, Hskell MD. F.A.C.P, Cancer Treatment. A Division of Harcourt Brace and Company. 1995, 31-57.
8. Main BE, Calman KC, Ferguson MM, Kaye SB, MacFarlane TW, Mairs RJ, Samaranayake LP, Willox J, Welsh J. The effect of cytotoxic therapy on salive and oral flora. Oral Surg Oral Med Oral Pathol 1984; 58(5): 545-48.
9. Morton M, Roberts H. Oral cancer and precancer: after-care and terminal care. Dent J 1990 Apr 7; 168(7): 283-87.
10. Mealey BL, Semba SE, Hallmon WW. Dentistry and the cancer patient: Part 1- Oral manifestations and complications of chemotherapy. Compendium 1994 Oct; 15(10): 1252, 1256 passim; quiz 1262.
11. Mc Carthy M, Awde JD, Gandi H, Vincent M. Risk factors associated with mucositis in cancer patients receiving 5 fluorouracil. J Oral Oncology 1998; 34: 484-90.
12. Oral Comlications of chemotherapy and Heal/Neck Radiation (PDQR) – Health professional version . pubmed Journal oral side effects , NATIONAL CANCER INSTITUTE .
13. Prada A, Chiesa F. Effects of benzydamine on the oral mucositis during antineoplastic radiotherapyh and/or intraarterial chemotherapy. Int J Tissue React 1987; 9(2): 115-19.
14. Peterson DE, D'Ambrosion JA. Nonsurgical management of head and neck cancer patients. Dent Clin North Am 1994 Jul; 38(3): 425-45.
15. Priestman TJ. Cancer Chemotherapy and Introduction. London: Churchill-Livingstone; 1997.
16. Reynolds MA, Minah GE, Peterson DE, Weikel DS, Williams LT, Overholser CD, DePaola LG, Suzuki JB. Periodontal disease and oral microbial successions during myelosuppressive cancer chemotherapy. J Clin Periodontol 1989 Mar; 16(3): 185-89.
17. Schubert MM, Izutus KT. Iatrogenic causes of salivary gland dysfuntion. J Dent Res 1987 Feb; 66 Spec No: 680-88.
18. Schramm VL Jr, Srodes C; Myers EN. Cisplatin therapy for adenoid systic carcinoma. Arch Otolaryngol 1981 Dec 107(12): 739-41.
19. Sonis ST. Mucositis as a biological process: a new hypothesis for the development of chemotherapy -induced Stomatotoxicity. J Oral Oncology 1988; 34: 230-35.
20. Tsavaris N, Caragiauris P, Kosmidis P. Reduction of oral toxicity of 5-fluorouracil by allopurinol mouthwashes. Eur J Surg Oncol 1988 Oct; 14(5): 405-6.
21. Wingard Brody Larner Schwarta. Human pharmacology molecular-to clinical. A Division of International Student. 1991; 585-602.