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Multidisciplinary Oral Management in Cancer Therapy Part II: During Cancer Treatment

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Abstract

One of the most important patients-related variables is the patient's oral health status that predisposes the patient to complications during cancer therapy. This especially is the result of therapy-related variable such as type of agents used and the dosage and frequency. Neglected oral health during cancer therapy perpetuates the oral complications results in enhanced severity of complications and compromises the therapy and prognosis. Hence this paper provides a pathway of multidisciplinary oral management during cancer therapy.

Keywords: Interceptive therapy; Oral prophylaxis; Salivary substitute; Xerostomia.

1. Introduction

Pre-therapy oral management of oncologic patient is usually postponed in situations where the patients were gravely ill or the dental treatment would delay oncologic therapy. In such case scenario indicated dental treatment hence, by necessity postpone until the patient reaches between courses of oncologic therapy and more conveniently post cancer therapy.

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Under such case scenario it is warranted that patient care must be continued during active phase of cancer therapy and manages the immediate adverse effect of cancer therapy. This pathway of management considered as an interceptive therapy phase. The aim of the intercept therapy phase is to relieve sensitivity and pain at priority, protect remaining oral hard and soft tissue, prescription of appropriate mouth rinses or gel for daily use, consultation with oncologic team for further referral. This phase is later taken over by reassessment therapy phase. Reassessment period constitute review & monitoring of oral conditions which basically involves diet analysis and counselling to control or reduce the effect of aetiological factors, maintenance of oral hygiene practices (Figure 1).

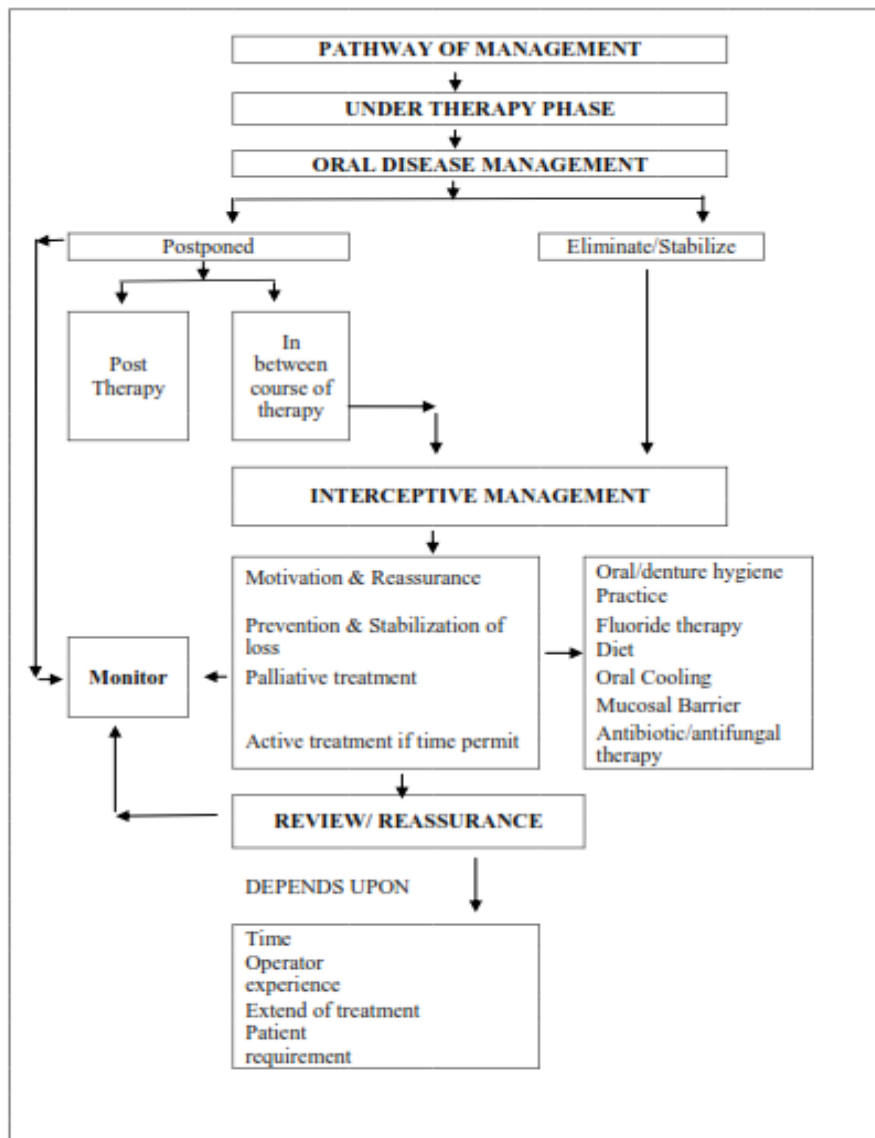


Figure1: Oral Management of Patient under Cancer Therapy.

2. Oral management during cancer therapy

2.1. Oral hygiene practice

- A high standard of oral hygiene should be encouraged, including denture hygiene.

- Normal daily toothbrushing with a powered or manual soft /supersoft brush should be undertaken, with supplemental use of floss or interdental brushes [1]. However, painful mouth often resists daily cleaning with a toothbrush. In such situation the oral tissues can be cleaned with oral sponges or gauze moistened with alcohol-free chlorhexidine mouthwash.
- The use of an alcohol free chlorhexidine mouthwash should be recommended if toothbrushing alone is inadequate for plaque removal; it can be used in addition or as a short-term alternative to tooth brushing. Chlorhexidine is available in concentrations 0.12-0.2% alcohol free preparations and 10ml should be rinsed round the mouth for 1 minute/twice daily. The 0.2% concentration may be diluted 1:1 with water if it causes mucosal discomfort [2].
- The patients receiving radiotherapy prior to bone marrow transplantation often necessitates highly calorific and cariogenic food supplements. These patients are at high risk of dental caries and should receive dietary advice and fluoride supplements appropriate to their age. For prevention of dental caries the dental team should work with the dieticians to manage the length of time for their usage [3-6]. Use sugar free medicines wherever possible and rinse the mouth after intake [7]. Adults should use an alcohol free fluoride mouth rinse at least once daily (0.05% NaF) at a different time from brushing. They should be prescribed 5,000ppm fluoride toothpaste for use twice daily. An alternative for adults is 1% sodium fluoride gel or 0.4% stannous fluoride gel application in custom made trays for ten minutes daily [8]. Children and young adults should have fluoride toothpaste, systemic fluoride supplements, application of fluoride varnish and fissure sealants and fluoride mouthwashes as appropriate to age [7].
- Dentures should be rinsed after meals and cleaned at least once daily by brushing and soaked in chlorhexidine mouthwash overnight. An alternative is dilute sodium hypochlorite solution (Milton's diluted 1 in 80) provided there are no metal components. Dentures should not be worn at night.

2.2. Oral infection prevention

- Children and adults receiving bone marrow transplants a prophylactic acyclovir dose if there is a high risk of viral infections should be undertaken. This is usually prescribed by the oncology team. There is increased risk of oral fungal infection in patients receiving chemotherapy and/or radiotherapy [9,10]. Topical agents may be preferred to systemic agents due to lower risk of side effects. However because of inconsistent results of efficacy of topical agents some advises systemic antifungal agents as preferable.
- Prosthesis hygiene is very important if there is fungal infection. Miconazole oral gel should be applied to the fit surface prior to insertion, provided it is not contraindicated.
- Every effort is made to reduce the severity of the mucositis. The use of mucosal shields and intensity modulated radiotherapy is to be encouraged to decreased severity of mucositis. Intensive oral hygiene, correction of poorly fitting dentures or sharp teeth reduces mucositis [11]. Difflam (benzylamine hydrochloride mouthwash 15%) reduces the frequency and severity of mucositis and is recommended [12]. A regime of 15ml four to eight times daily starting before radiotherapy and continuing during and for two to three weeks afterwards is recommended [13]. Topical application of antimicrobial pastes or lozenges shows some evidence of reduced severity of ulceration.

2.3. Specific recommendations during chemotherapy:

- Oral cooling for 30 minutes prior to chemotherapy is recommended where mucositis inducing chemotherapeutic agents are used (e.g. 5FU). Patients receiving high dose chemotherapy or total body irradiation for stem cell transplantation are recommended intravenous keratinocyte growth factor-1 since there are promising effects on preventing mucositis [10,11].
- Other palliative measure recommended is 2% lidocaine mouthwash used prior to eating [14,15].

2.4. Prevention of xerostomia:

- Parotid gland function can be partially maintained by radiotherapy delivery to affected side [16], minimizing the dose of radiotherapy to the parotid glands has shown to improve xerostomia related Quality of Life [17-19].
- Stimulation by chewing gum may be recommended although there is a limited evidence base [19]. Acidic pastilles are not recommended other than for edentulous patients as these may cause tooth erosion and sensitivity.
- For many patients saliva replacement is the only option such as frequent sips of water, or a spray bottle of water and using several substitutes.
- Improvement is only short term. Products may contain fluoride, or electrolytes to reduce demineralisation or antibacterial components [20].

2.5. Reassessment

The patient should be constantly reassured during this acute phase about the limited period of side effect of treatment. Certain food, drinks and mouthwashes, which irritate the oral mucosa, should be avoided to maintain oral comfort. Dental treatment is avoided wherever possible during therapy.

3. Conclusion

The oncologist must involve the oral health care provider during the initiation of the cancer therapy. The oral health care provider must recognize that cancer chemotherapeutics agents are not selective for malignant cells and may produce the adverse effects. The oral health care provider must focus on monitoring and minimizing these toxicities during cancer therapy. Therefore special care needs to be taken and timing of interventional dental treatment should be agreed with the hematologists or the oncology team.

Reference

- [1] Sicilia A, Arrequi I, Gallego M, Cabezas B, Cuesta S. Home oral hygiene revisited. Options and advice. *Oral Health Preventive Dent*, Vol.1, pp 407-422, 2003.
- [2] Laing E, Ashley P, Gill D, Naini F. An Update on oral hygiene products and Techniques. *Dental Update*, Vol.35, pp 270-279, 2008.
- [3] Jones LR, Toth BB, Keene HJ, Effects of total body irradiation on salivary gland function and caries

- associated oral microflora in bone marrow transplant patients. *Oral Surg, Oral Med, Oral Pathol, Radiol Endod*, Vol. 86, pp 286-92, 1998.
- [4] Epstein JB, Chin EA, Jacobson JJ, Rishiraj B, Le N. The relationships among fluoride, cariogenic oral flora, and salivary flow rate during radiation therapy. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, Vol. 86, pp 286-92, 1998.
- [5] Kielbassa A, Hinkelbein W, Hellwig E, Meyer-Luckel H. Radiation-related damage to dentition. *Lancet Oncol*, Vol. 7, pp 326-335, 2006.
- [6] Aguiar GP, Jham BC, Magalhaes CS, Sensi LG, Freire AR. A review of the biological and clinical aspects of radiation caries. *J Contemp Dent Pract*, Vol. 10(4), pp 83-89, 2009.
- [7] Meurman JH, Gronroos L. Oral and dental health care of oral cancer patients: hyposalivation, caries and infections. *Oral Oncology*, Vol. 46, pp. 464-467, 2010.
- [8] Barclay SC, Turani D. Current Practice in Dental Oncology in the UK. *Dental Update*, Vol. 37, pp. 555- 561, 2010.
- [9] Ramirez-Amador V., Silverman, S. Jnr., Mayer, P, Tyler, M, Quivey, J. Candidal colonization and oral candidiasis in patients undergoing oral and pharyngeal radiation therapy. *Oral Surg, Oral Med, Oral Pathol, Radiol Endod*, Vol. 84, pp.149-153, 1997.
- [10] Lalla R, Latortue M, Hong C Ariyawardana A, D'Amato-Palumbo S et al. A systematic review of oral fungal infections in patients receiving cancer therapy. *Support Care Cancer*, Vol.18, pp.985-992, 2010.
- [11] Stockman MA, Spijkervet FKL, Boezen HM, Schouten JP, Roodenburg JLN, de Vries EGE. Prevention Intervention Possibilities in Radiotherapy- and Chemotherapy-induced Oral Mucositis: results of Meta- analyses *J Dent Res*, Vol. 85(8), pp 690-700, 2006.
- [12] Keefe DM, Schubert MM, Elting LS, Sonis ST, Epstein JB, RABer-Durlacher JE, et al. Updated clinical practice guidelines for the prevention and treatment of mucositis. *Cancer*, Vol. 109(5), pp. 820-31, 2007..
- [13] Epstein, JB., Silverman S,Jr., Paggiarino DA, Crockett S, Schubert MM, Senzer NN, et al. Benzylamine HCL for prophylaxis of radiation-induced oral mucositis: results from a multicenter, randomized, double-blind, placebo-controlled clinical trial. *Cancer*, Vol. 92(4), pp 875-85, 2001.
- [14] Treister N, Sonis S. Mucositis: biology and management. *Otolaryngol Head Neck Surg*, Vol. 15, pp123-129, 2007.
- [15] Brizel DM, Overgaard J. Does amifostine have a role in chemoradiation treatment? *Lancet Oncology*, Vol. 4, pp.593, 2003.
- [16] Ship, J.A., Eisbruch, A., D'Hondt, E. Parotid sparing study in head and neck cancer patients receiving bilateral radiation therapy: one year results. *J.Dent.Res.*, Vol. 76(3), pp 807-813, 1997 .
- [17] Chambers MS, Rosenthal DI, Weber RS. Radiation-induced xerostomia. *Head and Neck*, Vol. 29: pp 58- 63, 2007.
- [18] Eisbruch A. Reducing xerostomia by IMRT: what may, or may not, be achieved. *J Clin Oncol*, Vol. 25, pp 4862-4, 2007.
- [19] Jensen SB, Pedersen A, Vissink A, Andersen E, Brown C et al. A systematic review of salivary gland hypofunction and xerostomia induced by cancer therapies: management strategies and economic impact. *Support Care Cancer*, Vol.18, 2010.

- [20] Nieuw Amerongen AV, Veerman ECI. Current therapies for xerostomia and salivary gland hypofunction associated with cancer therapies. *Support Care Cancer*, Vol.11, pp.226-231, 2003.