THE ORAL MANAGEMENT OF ONCOLOGY PATIENTS REQUIRING RADIOTHERAPY, CHEMOTHERAPY AND / OR BONE MARROW TRANSPLANTATION

Clinical Guidelines

Importance Of Integrated Oral Care

Complications in the oral cavity commonly arise as a result of malignancy and/or the undesirable effects of its treatment (Brennan et al., 2010) (Shaw et al., 2000). The prevalence, extent, severity and longevity of the complications depend on the regime of cancer therapy regime and its intensity (National Cancer Institute, 2016).

Complications may include profound functional and sensory changes to the oral mucosa, in addition to an increased susceptibility to Dental Caries and Periodontal Disease (National Cancer Institute, 2016) (Sroussi et al., 2017). These may impact directly on cancer therapy resulting in the need to pause treatment, but also have a significant impact on the longevity and quality of life during and after cancer therapy (Gandhi et al., 2017). Children with cancer may have untreated dental caries and, since many are under five years of age, a significant proportion may not have previously had a dental examination (Rosales et al., 2009).

Following major head and neck surgery, around 78% of patients have been reported to experience severe difficulties with mastication, which may have implications for normal social adaptation. At least one third of head and neck survivors had moderate and severe level of distress. Seventy-four percent reported at least one unmet need, the most common being oral and eating problems (Kraaijenga et al., 2015) (Wells et al., 2015) (Wilberg et al., 2014)

(Kamstra et al., 2013) (Roe et al., 2012). Haemato-oncology patients equally experience poorer quality of life when measured using the parameters of oral functional limitation, physical pain and physical disability (Tinoco-Araujo et al., 2015) (Mays et al., 2013). These difficulties can be improved by carefully planned oral and dental assessment, early intervention and reconstruction (Butterworth et al., 2016).

In summary, Pediatric Dentists are increasingly likely to find that they have children in their care who may present before or after cancer treatment requiring dental assessment and / or urgent dental care. The patient's oral care and function are important contributors to post-treatment social adaptation and life quality (Kolokythas, 2010) (Shavi et al., 2015) (Thani and Bumb, 2014). Appropriate preventive regimens, timely oral care and improved dental services can minimise complications and improve quality of life (Bennadi and Reddy, 2013).

Cancer therapy that may result in oral complications includes:

- Chemotherapy
- Radiotherapy to the head and neck
- Surgery to the head and neck
- Bone marrow transplantation – involves chemotherapy +/- total body irradiation

ORAL MANAGEMENT – OVERVIEW

1. PATHWAYS OF CARE

1.1 Pre-Treatment Assessment

1.1.1 Every relevant oncology protocol should include an early pre-treatment oral assessment.

1.1.2 A permanent member of the oncology team should be responsible for arranging the oral assessment using a standardized referral form.

1.1.3 A designated permanent member of The Pediatric Dental Team would be responsible for organizing oral care.

1.1.4 Dentally, the cancer patient will require multi-specialty, multidisciplinary and collaborative care approach to achieve best oral outcomes and an efficiently delivered oral care pathway.

1.2 Acute Phase Of Cancer Therapy

1.2.1 The oncology team must include a trained Pediatric Dental Professional who is responsible for the patients' oral care.

1.2.2 The designated member of Pediatric Dental Team would be responsible for arranging or carrying out any urgent dental treatment required.

1.3 Discharge Following Acute Phase Of Cancer Therapy

1.3.1 The oncology patient discharge protocol should include a procedure for ensuring continuing oral care.

1.3.2 The designated member of Pediatric Dental Team would be responsible for organising and monitoring appropriate continuation of oral care.

1.3.3 Following the receipt of a bone marrow transplant and subsequent discharge home from hospital, children must be reviewed to continually monitor the oral condition.

1.3.4 Children must be monitored during their period of growth and development.

2. PREVENTIVE AND CLINICAL REGIMEN

2.1. PRIOR TO CANCER THERAPY

2.1.1. *Importance Of Integrated Care:*

Oral care should be seen as a contribution to total patient care and implemented in conjunction with the care priorities agreed with the oncology team (Shaw et al., 2000).

2.1.2. *Oral / Dental Assessment:*

Prior to commencement of cancer therapy, an oral / dental assessment including radiographs, must be undertaken (Elad et al., 2015). The specific aims are to:

- Identify existing oral disease and potential risk of oral disease.
- Remove infectious dental / oral foci before the start of cancer therapy.
- Prepare the patient for expected side effects of cancer therapy.
- Establish an adequate standard of oral hygiene to meet the increasing challenges during cancer therapy.
- Develop a plan for maintaining oral hygiene, providing preventive care, completing oral rehabilitation and follow-up.

- Establish the necessary multidisciplinary collaboration within the cancer centre to reduce / alleviate oral symptoms and sequelae before, during and after cancer therapy.

2.1.3. *Oral Hygiene instructions:*

Detailed oral hygiene instruction are to be provided.

2.1.4. *Chlorhexidine:*

If gingival disease is diagnosed, oral hygiene practices can be supplemented with the use of an alcohol-free chlorhexidine mouthwash or dental gel.

2.1.5. *Periodontal treatment:*

Professional debridement of plaque and calculus deposits should be undertaken to stabilize periodontal disease.

2.1.6. *Dental caries:*

Where possible carious teeth should be definitively restored or stabilized with appropriate restorations (invasive or non-invasive).

2.1.7. *Removal of trauma:*

All sharp teeth and restorations are suitably adjusted and polished.

2.1.8. *Dental Extractions:*

Wherever possible, teeth with a dubious prognosis are removed no less than ten days prior to commencement of cancer therapy (Clayman, 1997).

2.1.9. *Antibiotic prophylaxis / haematological support:*

Antibiotic prophylaxis prior to invasive oral procedure may be warranted in the context of neutropenia (neutrophils less than 2000/mm3) although liaison with the oncologist should take place and clinical judgment exercised.

2.1.10. *Orthodontics:*

Orthodontic treatment should be discontinued and fixed appliances removed (Sheller and Williams, 1996).

2.2. DURING CANCER THERAPY

2.2.1. *Antibacterial Mouthwash:*

The use of an alcohol-free chlorhexidine mouthwash is recommended if toothbrushing is likely to be inadequate for plaque removal; it can be used in addition or as a short-term alternative to tooth brushing.

2.2.2. *Dental Caries Risk:*

Those patients receiving radiotherapy to the head and neck region, or total body irradiation prior to bone marrow transplantation are at higher risk of dental caries and should receive dietary advice and fluoride preparations appropriate to their age (Hong et al., 2010) (Gawade et al., 2015) (Gupta et al.,2015).

2.2.3. *Fungal Infections:*

Antifungal medication is used following detection of Oral Candida (Pappas et al., 2016). For children, this may be used routinely as a prophylaxis in some cancer centres.

2.2.4. *Mucositis:*

Regular assessment of the mouth should be undertaken to record the presence and severity of mucositis. Every effort is made to reduce the severity and control oral discomfort.

2.2.5. *Xerostomia:*

Every effort is made to reduce the effect of the xerostomia for quality of life and prevention of oral disease.

2.2.6.Foam swabs / Gauze:

If the mouth is too painful for cleaning with a soft toothbrush, the tissues can be cleaned with oral sponges, or gauze moistened with alcohol-free chlorhexidine mouthwash.

2.2.7.*Dental Treatment:*

Elective dental treatment is avoided wherever possible during cancer therapy.

2.3. FOLLOWING CANCER THERAPY

2.3.1 *Monitoring:*

Susceptibility to dental disease can be lifelong following cancer therapy therefore patients must be monitored closely.

2.3.2 *Dental Caries Risk:*

The risk of dental caries following cancer therapy will depend on the type of treatment the patient has received, and changes in oral health-related behaviours as a consequence of the treatment. Individualized oral health prevention and monitoring programme should be established for each patient, with frequent recall intervals based on the patient's oral disease risk assessment.

2.3.3 *Preventive Advice and Fluoride supplementation:*

Dietary analysis and advice should aim to encourage a healthy balanced diet and reduce the amount and frequency of sugars and acids. Close liaison with the patient's dietitian is necessary. The Pediatric Dentist should provide tailored oral hygiene support. The use of fluoride preparations is recommended.

2.3.4 *Abnormal Blood counts:*

Patients on maintenance chemotherapy or with persistent haemato-oncology disease may need blood tests pre-operatively if invasive dental treatment is planned. Bleeding and infection risk may be of concern for invasive dental procedures and require close liaison with the oncology team.

2.3.5 *Growth and Development:*

This should be closely monitored. Survivors of childhood cancer are at risk of dental developmental abnormalities. Microdontia, tooth agenesis and xerostomia may present as delayed side effects of cancer therapy. Early specialist involvement is essential to ensure good outcomes.

2.3.6 *Orthodontics:*

The decision to embark upon orthodontic treatment must be taken carefully. Challenges include increased dental caries susceptibility, root stunting, risk of osteonecrosis following orthodontic extractions in patients who have received anti-resorptive agents, and the inhibiting effect of bisphosphonates on orthodontic tooth movement.

2.3.7 *Restorations:*

Restorations are kept simple (mostly non-invasive where possible) ensuring acceptable aesthetics and function.

2.3.8 *Dental Extractions:*

The risk of osteoradionecrosis and / or medication-related osteonecrosis of the jaw should be considered. Dental extractions should be avoided wherever possible in patients at risk of developing these complications. If essential, they must be performed with appropriate precautions.

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