Clinical Guideline on the Dental Management of Pediatric Patients Receiving Chemotherapy, Bone Marrow Transplantation and/or Radiation

Originating Council
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Purpose

Methodology

Background/Literature Review
The pediatric patient who is beginning, currently receiving, or has received chemotherapy, a bone marrow transplant (BMT), and/or radiation requires special consideration and altered oral/dental treatment schemes due to the systemic impact of any of these cancer treatments.

The level of a child’s oral health can be a significant determinant in the outcomes of any of these cancer treatments. A child who is immunosuppressed is at high risk for septicemia due to oral infections. The eradication of active and potential sites of infection prior to initiation of chemotherapy, bone marrow transplantation and/or radiation is paramount. Therefore, it is highly recommended that an oral/dental examination and treatment be a part of the pre-cancer treatment protocols at all institutions providing those type of services.

These guidelines are general recommendations for the management of the pediatric cancer patient. Since there are a myriad of protocols for chemotherapy, BMT, and radiation, oral/dental care must be provided in consultation with the oncologist and, if necessary, tailored to the individual patient. There are few “absolute” guidelines in the care of these patients, but the literature supports the following:

Hematologic Guidelines
The following are general hematologic guidelines. Specific guidelines should be established between the pediatric dentist and oncology service.

1. Elective dental procedures
   a. Absolute Neutrophil Count (ANC) > 1,000/mm³
   b. Platelet count > 40,000/mm³
2. Emergency dental procedures
   May be performed with any hematologic status to remove sources of infection if done in coordination with the oncology service. Consider platelet replacement if the platelet count is < 40,000/mm³.
3. Preventive dental procedures
   a. Daily tooth brushing and flossing when the ANC > 500/mm³ and platelet count > 20,000/mm³
   b. Dental hygiene with a moist gauze or toothette only when ANC < 500/mm³ and/or platelet count < 20,000 mm³.

Antibiotic Prophylaxis Guidelines
Refer to Guideline for Antibiotic Prophylaxis for Patients at Risk, published elsewhere in this manual. The following are general antibiotic prophylaxis indications:

1. Patient has an ANC < 500/mm³ and/or white blood cell count (WBC) < 2,000/mm³
2. Patient has a central venous catheter
3. Patient is taking long-term immunosuppressive drugs, i.e. cyclosporine, prednisone, etc.

Management Objectives
1. Decrease the morbidity and mortality due to infection.
2. Decrease the morbidity due to hemorrhage.
3. Facilitate the patient’s nutritional status.
4. Improve the patient’s comfort.
5. Increase the education of the patient, family, and physician relative to the importance of maintaining oral health and the methods to achieve it.

Management of the pediatric cancer patient can be divided into three phases of care. Although the overall management of these patients is a continuum of assessment and treatment decisions, they can be roughly divided into phases based on time and hematological status. Each presents unique potential oral problems and opportunities for treatment.

Phase 1 The period of time from the medical diagnosis/admission to the initiation of chemotherapy/radiation. The child has active disease and hematological changes related to the disease.

Phase 2 A period lasting approximately 30-45 days after chemotherapy induction, bone marrow transplantation, and/or radiation. This period represents the most intense therapy. Significant myelosuppression and immunosuppression is the result of chemotherapy/radiation.

Phase 3 Post chemotherapy, BMT, and/or radiation. The long term follow-up which may last anywhere from a year to a lifetime.

Recommendations

Phase I

A. Assessment and Diagnosis
Ideally, the oral assessment of the pediatric patient should occur 7–10 days prior to the initiation of chemotherapy/radiation. Oftentimes, however, this is not possible due to the medical status of the child and treatment options may be limited. Every effort should be made to educate the oncology service as to the importance of early intervention and to encourage them to make the dental referral as early as possible.

1. Review the child’s health history particularly as related to the child’s current disease.
2. Review current blood data with particular attention to WBC, differential, ANC, and platelet count.
3. Review the proposed chemotherapy/BMT/radiation protocol making special note of treatment cycles, agents, dosages, and in the case of BMT, human leukocyte antigen (HLA) matching.
4. Complete a thorough head, neck, oral, and dental examination.
5. Make a panoramic and bitewing radiographs as basic screening films. Additional radiographs should be based on clinical findings.
6. Give standard oral hygiene instructions with emphasis on instructions specifically related to chemotherapy and/or radiation.
7. Formulate a treatment plan in coordination with patient, family, and oncologist.

B. Treatment

Treatment should only be provided in consultation with the oncologist and after careful review of blood lab data (see Hematologic Guidelines, on previous page). Consideration must be given to antibiotic prophylaxis.

1. Complete a dental scaling and polishing.
2. Apply a fluoride gel in the standard manner.
3. Restore carious teeth and replace defective restorations.
4. Institute pulp therapy as indicated. Pulpotomy and pulpectomy are preferable to extraction if no breakdown of periradicular supporting tissues is present.
5. Extract teeth with acute or chronic infections and breakdown of periradicular supporting tissues. Ideally, all extractions should be done 5–7 days prior to the initiation of chemotherapy/radiation.
6. Manage soft tissue lesions related to disease conservatively and symptomatically.
7. Remove all orthodontic appliances and removable prostheses.
8. Initiate an antimicrobial rinse (e.g. chlorhexidine) 2–3x/day beginning two days prior to the start of chemotherapy/radiation.

Phase II

A. Assessment and Diagnosis

1. Patients should be followed and regularly assessed for the development of oral lesions secondary to chemotherapy/radiation.
2. Monitor mouth care and consult with nursing staff, if necessary.
3. Keep the oncologist apprised of any oral problems.

B. Treatment

1. Elective oral/dental treatment should be avoided.
2. Biopsy or dental treatment for eradication of sites of infection should only be done with the approval of the oncologist.
3. Continue antimicrobial rinses (2-3x/day).
4. In head and neck radiation cases, provide appropriate fluoride application.
5. Provide symptomatic care for mucositis and stomatitis as needed.

Phase III

A. Assessment and Diagnosis

1. Place the child on a 3-month recall for the first 12 months after cancer treatment and 6 months thereafter, or as indicated by the individual patient's needs/susceptibility to dental disease.
2. At recall visits, review current medications to determine if the child continues to receive immunosuppressive or myelosuppressive drugs.
3. At recall visits, review current blood data to assess the child's return to a normal hematologic status. Particular attention should be paid to the WBC, differential, ANC, and platelet count.
4. Provide oral/dental exams, dental prophylaxis, and fluoride therapy.

5. Educate the patient and parents about the possible long-term sequelae of chemotherapy and radiation on the craniofacial complex.

B. Treatment

1. Provide restorative and periodontal therapy to return the patient to an optimal state of dental health.
2. Provide symptomatic care for any residual/long-term oral lesions.
3. Restart or initiate orthodontic treatment as indicated.

References


