 DOI: 10.18231/2455-6785.2017.0002

Orthodontic care for patients with bleeding disorders

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Abstract

Oral care providers must be aware of the impact of bleeding disorders on the management of dental patients. Initial recognition of a bleeding disorder, which may indicate the presence of a systemic pathologic process, may occur in dental practice. Furthermore, prophylactic, restorative and surgical dental care of patients with bleeding disorders is best accomplished by practitioners who are knowledgeable about the pathology, complications and treatment options associated with these conditions. The purpose of this paper is to review common bleeding disorders and their effects on the delivery of oral health care.

Keywords: Blood coagulation/physiology; Blood coagulation disorders/complications; Dental care

Introduction

Bleeding disorders are a group of conditions that result when the blood cannot clot properly [(1)]. Such cases do need proper attention and care as there are very much different from the normal patients we encounter. Since the incidence of malignancies and various other bleeding disorders are cropping up, we need to update ourselves in order to manage such cases in our day today practice. Management of the patient with a bleeding disorder must be based on a complete understanding of the disease.

The dentist should consult with the patient's primary physician or hematologist to discuss (1) the severity of the disease; (2) the dental and oral/maxillofacial procedures planned and nature of the bleeding risk; (3) the patient's response to previous dental treatment, surgery, and trauma; and (4) the patient's response to various modes of systemic therapy, including blood component replacement therapies. With appropriate management strategies, nearly all bleeding disorder patients can benefit from the full range of dental procedures available to establish and maintain good oral health.

Hemophilia:[(2,3,4)] This bleeding disorder occurs in one out of 7,500 males and is marked by common bleeding episodes, which increase in frequency with increasing severity of deficiency of the clotting mechanism.[(5)] The most common sites of bleeding are joints, muscles and skin, and important complications include arthritis and degenerative joint disease secondary to recurrent bleeding.

Oral manifestations: Mouth lacerations are a common cause of bleeding with all severities of hemophilia, and Persistent oral bleeding is seen in about 14 percent of all hemophilic patients.[(8)]

Orthodontic care: Early recognition of the developing malocclusion is important in the orthodontic management of the hemophilic child as selective guidance can diminish or eliminate developing complex orthodontic problems.[(6,7)]

Orthodontic treatment is certainly not contraindicated, but caution should be exercised to avoid any lacerations during procedures.

Direct bonding of attachments rather than fitting bands helps to reduce these risks.

Care should be taken to ensure that there are no sharp edges or wires protruding from the orthodontic appliances.

The orthodontist should carefully weigh the advantages of functional appliances in these children against the potential of bleeds due to tissue irritation, as well as in the temporomandibular joint. Prolonged orthodontic treatment increases the risks of a bleeding episode, and therefore, orthodontic treatment in conjunction with planned orthognathic surgery with prior transfusion should be a major consideration for them.

During orthodontic treatment with fixed appliances, oral hygiene is particularly important to avoid inflamed and edematous gingival tissues, which are prone to hemorrhage.

Hemophiliacs with a history of transfusion treatment with Factor VIII or IX concentrate are considered potential carriers of blood-borne viral infections, and the orthodontist is obligated to take necessary precautions for infection control.

Sickle Cell Anemia: These hereditary disorders are the result of the presence of an abnormal Hemoglobin (Hb S) in the red blood cells.[(9)] There are two main types of presentations of this condition. Children affected by Sickle Cell Trait, the heterozygous form, generally do not exhibit anemic symptoms unless exposed to low oxygen pressure conditions.[(10,11)]

Orthodontic treatment can be undertaken for them with only a moderately higher risk than in unaffected patients. The less frequently occurring homozygous form, Sickle Cell Anemia, is characterized by chronic anemia, delayed wound healing and retarded dental development. Blood transfusions are required during acute episodes, with a resultant increased risk of iron

overload.[12,13] A vaso-occlusive or aplastic crisis may be triggered due to infection or trauma, leading to significant morbidity and mortality.

Oral manifestations:[14] There is a generalized osteoporosis of the jaws related to the degree of hyperplasia of the bone marrow, which in some patients may cause enlargement and protrusion of the maxillary alveolar ridge.

Orthodontic care: Orthodontic treatment should have definitive goals for such children and should preferably be of limited duration. Orthognathic surgery under general anesthesia places these patients under high risk and, therefore, should generally be avoided.

Hematologic malignancies:[15] More than half of pediatric malignancies are hematologic (leukemias or lymphomas). With present antineoplastic protocols, the mortality rate has been steadily declining, and nearly 60 percent of diagnosed patients are long-term survivors.

Oral manifestations:[16] Oral symptoms do not play a major role in the diagnosis of leukemias. However, in a patient undergoing orthodontic treatment, petechiae, hematomas, ulcerations, gingival pain, gingival hypertrophy, mucosal pallor, pharyngitis and lymphadenopathy, should raise the clinician's index of suspicion. Referral to a physician should be made for a patient exhibiting these oral symptoms without evidence of local causative factors.

Chemotherapy is now the mainstay of therapy, with radiation and surgery playing a smaller role than earlier. Once a diagnosis of malignancy has been made, the goal of the dental team, including the orthodontist, should be to first eliminate oral infection. It must be remembered that infection due to the compromised immune status is the leading cause of death. Xerostomia and mucositis are common side effects resulting from antineoplastic therapy.

Oral infections by opportunistic organisms may also occur. Due to the impaired regenerative capability of the mucous membrane, orthodontic appliances can cause stress to the oral mucosa, which may lead to ulcerations and painful stomatitis with even the slightest oral insult.

Orthodontic care:[17] For a patient undergoing orthodontic treatment who is diagnosed with malignancy, the patient's safety and comfort are enhanced if all fixed appliances are removed and replaced with comfortable and well-fitting removable retainers. The orthodontist should consult the physician for a realistic appraisal of the prognosis and to jointly determine the best approach for management.

A consultation among the patient, parents, physician, dentist and orthodontist before the removal of fixed appliances helps to make the transition to holding retainers less traumatic and helps to avoid any misinterpretation of "giving up" on the patient.

The patient and the patient's family should be reassured and told that this is not a permanent change, but a holding phase during which active treatment is being suspended.

During the phase of antineoplastic therapy, maintaining good oral hygiene and a periodic check-up with the dentist are important for caries control and fluoride prophylaxis, and to keep a close guard on situations that could lead to infection.

Once a patient has completed antineoplastic treatment and has at least a two-year event-free survival, orthodontic treatment can be restarted.

Vitamin K deficiency: Vitamin K deficiency is a form of avitaminos is resulting from insufficient vitamin K1 or vitamin K2 or both colonic bacteria synthesize a significant portion of the Vitamin K required for human needs, individuals with disruptions to or insufficient amounts of these bacteria can be at risk for Vitamin K deficiency.[18] Newborns, as mentioned above, fit into this category, as their colons are frequently not adequately colonized in the first five to seven days of life. (Consumption of the mother's milk can undo this temporary problem.) Another at-risk population is those individuals on any sort of long-term antibiotic therapy, as this can diminish the population of normal gut flora.

Clinical manifestations:[19] Symptoms include bruising, petechiae, hematomas, oozing of blood at surgical or puncture sites, stomach pains; risk of massive uncontrolled bleeding; cartilage calcification; and severe malformation of developing bone or deposition of insoluble calcium salts in the walls of arteries. In infants, it can cause some birth defects such as underdeveloped face, nose, bones, and fingers.

Conclusion

Care should be taken that orthodontic appliances do not lacerate soft tissues and more importance should be given to excellent and atraumatic oral hygiene. Both fixed and removable orthodontic appliances can be used along with preventive therapy in these patients. Preferences should be given to fixed appliances as plaque control is relatively more difficult with removable appliances. Special attention should be drawn when treatment is done in a patient with bleeding disorders and that the gingiva is not damaged during fitting of an orthodontic appliance. The manifestations of bleeding disorders should be carefully recognized for proper diagnosis and treatment plan which is essential for the commencement of the required treatment. All patients with hemophilia or any other bleeding disorder can be treated the same way as any other patient if certain guidelines are followed.

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