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Orthodontics & Medically Compromised Patients

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Abstract
Advancements in medical science and awareness amongst masses has lead to increase in dental needs of medically compromised patients. For the majority, treatment of orthodontic problem is feasible but special precautions are usually required. As orthodontic treatment can provide positive benefits ,it should not be withheld because of presence of medical problem.

Key Words
Orthodontist, medically compromised patients, special considerations

Introduction

The nature of the orthodontic patient base seeking treatment continues to grow. Many of these patients have significant medical conditions that may alter both the course of their oral disease and the therapy provided.

Practicing orthodontist should be well prepared to face challenges in diagnosing and management of medically compromised patient. Treatment plan should be modified according to impact of the particular disease in the oral cavity.
Systemic problems commonly encountered in routine orthodontic practice are:

1 Infective Endocarditis
2 Metabolic disorders
3 Hematological disorders
4 Autoimmune disorders
5 Bronchial Asthma
6 Allergies
7 Central nervous system disorders

Infective Endocarditis (IE)

Infective endocarditis (IE) is a disease in which micro-organ-isms colonize the damaged endocardium or heart valves.

Orthodontic Considerations

Any cardiac pathology should be evaluated in initial medical history. Patients at risk of endocarditis should be treated in consultation with their cardiologist and within the appropriate guidelines

Patients must understand the need to maintain a high standard of oral hygiene and make a firm commitment to do so. Immaculate oral hygiene is must for starting orthodontic treatment.

1 Patients may be encouraged to use a daily antimicrobial mouthwash, e.g, chlorhexidine 0.2% to aid plaque control, particularly for the two days leading up to fitting removal or major adjustments of a fixed appliance.
2 Bonded appliances are to be preferred to banded appliances where possible, exceptions being cases needing RME, quad helix or headgear.
3 For unerputed teeth avoid bonding with closed eruption

Metabolic Disorders

Diabetes Mellitus

Diabetes mellitus (DM) is a metabolic disorder of diverse etiologic factors, characterized by hyperglycemia resulting from deficiencies in the insulin secretion , insulin action or both ..
The two major types of diabetes are

Type 1 (formerly known as "insulin-dependent")
Type 2 (formerly called "non-insulin - dependent diabetes"

Orthodontic Considerations

1. The key for treating orthodontic problems in diabetic patients is good medical control. Orthodontic treatment should be avoided in patients with poorly controlled insulin-dependent DM as these patients are particularly susceptible to periodontal breakdown.
2. There is no treatment preference with regard to fixed or removable appliances. It is important to stress good hygiene, especially when fixed appliances are used.
3. In adults especially it is important to evaluate periodontal status before initiating orthodontic treatment. If plaque control is difficult to achieve with mechanical aids like toothbrush and interdental aids, chlorhexidine mouthwash should be used. To minimize neutralizing effect of the chlorhexidine molecule, there should at least a 30-minute interval between toothbrushing and the chlorhexidine rinse.
4. The most common dental office complication seen in diabetic patients taking insulin is symptomatic low blood glucose or hypoglycemia. The clinician should question diabetic patients about past episodes of hypoglycemia. When planning dental treatment, it is best to schedule appointments before or after periods of peak insulin activity. Morning appointment is preferable. If a patients is scheduled for a long treatment session.e.g., about 90

minutes, he or she should be advised to eat a usual meal and take the medication usual.

Adrenal Insufficiency (cortical crisis)
Acute adrenal insufficiency is associated with significant morbidity and mortality owing to peripheral vascular collapse and cardiac arrest.
There are two types of adrenal insufficiency:

1. Primary with histories of primary adrenal insufficiency (Addison's disease)
2. Secondary adrenal insufficiency (most often caused by use of exogenous glucocorticosteroids)

Orthodontic Considerations
Steroid cover should be considered for minor oral surgery procedures. Current corticosteroid therapy and corticosteroid therapy in the last 12 months should be evaluated. Before treating a patient with a history of recent or current steroid use, physician consultation is indicated to determine whether the patient's proposed treatment plan suggests a requirement for supplemental steroids.

Hematological Disorders
The main inherited coagulation disorders include hemophilias A and B, and von Willebrand's disease. Hemophilia A is the most commonly occurring bleeding disorder commonly encountered in dental clinic. In addition, hemo-philia A (Factor VIII deficiency), a number of congenital coagulation abnormalities caused by deficiency of other clotting factors have been recognized.

Orthodontic Considerations

1. Excellent oral hygiene is must for preventing gingival bleeding before it occurs. Every effort should be made to avoid any chronic irritation from orthodontic appliance.
2. Archwires should be secured with elastomeric modules rather than wire ligatures, which carry the risk of cutting the mucosal surfaces. Special care is required when placing and removing archwires.
3. Duration of orthodontic treatment for my any patient with a bleeding disorder should be given careful consideration. The longer the duration of treatment, greater the potential for complications.
4. Bleeding can be managed by replacement of missing clotting factors, so extractions and orthognathic surgery is not contraindicated if managed carefully.

Autoimmune Disorders - Juvenile Rheu-Matoid Arthritis
Juvenile rheumatoid arthritis (JRA) is an autoimmune inflammatory arthritis occurring before the age of 16 years. Juvenile rheumatoid arthritis is more severe than the adult disease and leads to gross deformity.

One form of this disease which affects girls in late childhood may involve any joint and is associated with rheumatoid nodules, mild fever, anemia and malaise. Temperomandibular joint (TMJ) can be damaged up to complete bony ankylosis. In 30 per cent of the cases, a severe skeletal Class II jaw discrepancy occurs due to restricted growth of the mandible. Classic signs of rheumatic destruction of the TMJ include condylar flattening and a large joint space.

It has been suggested that orthodontic treatment for patients with JRA would prevent worsening of TMJ condition by reducing mechanical loads resulting from stabilization of occlusion. This contributes to long -term stability with a functional improvement.

Bronchial Asthma
Asthma is a diffuse chronic inflammatory obstructive lung disease with episodes of chest tightness that causes breathlessness , coughing, and wheezing, all of which are related to bronchiole inflammation.

Orthodontic Considerations
Management in orthodontic care can be divided into three parts----before orthodontic treatment, during treatment and after treatment.

Before treatment

1. When an asthmatic dental patient seeks care, the clinician must assess his or her risk level taking an oral history of the illness : ascertaining the frequency and severity of acute episodes, reviewing the patient's medications thoroughly (as they provide an indication of disease severity) and determining the patient's specific triggering agents. Preventing a sudden episode of airway obstruction is essential when treating an asthmatic patient.
2. As a general rule, elective orthodontics should be performed only on asthmatic patients who are asymptomatic or whose symptoms are well controlled, To minimize the risk of an attack. the patient's appointment should be in the late morning or the late afternoon.
3. Orthodontist needs to be aware of the potential for dental materials and products to exacerbate asthma. These items include dentifrices, fissure sealants, tooth enamel dust (during interproximal slicing) and methyl methacrylate. Therefore, Fixed appliances and bonded retainers without acrylic are preferable.
4. Anxiety is a known asthma trigger. For most patients, asking for a simple confirmation that they have taken their most recent scheduled dose of medication can prevent stress. Oxygen and bronchodilator be available during treatment.
5. Before sending patients to any invasive work to another specialist, he should be informed about the medical history. Dental local anesthetics with vasoconstrictors should be used with caution in asthmatic patients as many vasoconstrictors contain sodium metabisulfite, a preservative that is highly allergenic.

During Treatment

1. It is been found that improper positioning of suction tips, fluoride trays or cotton rolls could trigger a hyper-reactive airway response in sensitive subjects. Eliciting a cough reflex should be avoided.
2. Prolonged supine positioning , bacteria-laden aerosols from plaque or carious lesions and ultrasonically nebulized water can provoke asthma triggers in the dental setting.
3. In case of acute attack following steps should be taken:

- Discontinue the procedure and allow the patient to assume a comfortable position.
- Maintain a patent airway and administer bronchodilator via inhaler/ nebulizer.
- Administer oxygen via face -mask.
- Alert emergency medical services, Maintain a good oxygen level until the patient stops wheezing and /or medical assistance arrives.

Owing to chances of allergy, offending NSAIDs include ketorolac, ibuprofen and naproxen sodium should be avoided

after banding and bonding. Analgesic of choice is acetaminophen.

Allergies

Latex Allergy :-

Latex allergy is a common allergy in dental office Latex can cause:

1 Irritant contact dermatitis.
2 Delayed cutaneous reaction which can extend beyond the area of latex contact.
3 Immediate hypersensitivity reaction, e.g., angioedema

Orthodontic Considerations

1 If latex allergy is suspected, refer to dermato-logist.
2 If confirmed latex allergy, use latex-free products and ensure the patient's notes are marked "latex allergy".
3 Use of powder free and low free latex protein gloves recommended for all patients.

Nickel Allergy

Intraoral reactions to nickel are extremely rate and cannot usefully be predicted from skin tests.

Contact hypersensitivity may occur on the skin of the cheeks or neck in response to the outer headgear bow or studs of the headgear in patients with nickel allergy.

Orthodontic Considerations

Most patients with nickel allergy can tolerate orthodontic treatment with normal orthodontic components. In the rare event of a marked intraoral reaction, nickel-free components will need to be used. The outer bow of the headgear or any studs can be covered if a skin reaction occurs.

In case of doubt , a trial appliance with one or two bands and brackets may be used to assess reaction.

Wires and brackets are available in nickel-free alloys of titanium and cobalt-chromium or non - metallic materials .

Central Nervous System Disorders

- Avoid removable appliances if epilepsy is poorly controlled. Phenytoin may cause gingival hyperplasia. A very high standard of oral hygiene is required to minimize the development of gingival enlargement and orthodontic treatment should never be contemplated unless the oral hygiene is good.
- Antibiotic prophylaxis may be required. Consult specialist.
- Stress may occasionally precipitate seizures, Sedation may be indicated.

Conclusion

An orthodontist needs to recognize the disease process and significance of different systemic diseases. Good patient cooperation, consent before treatment, proper referral when required and constant monitoring of the progress of the treatment are necessary to minimize physical damage and to maximize treatment outcome.

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