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Review Article

Orthodontic management in medically compromised patients

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ABSTRACT

Medically compromised patients are increasing in number day by day who are seeking orthodontic care. For majority of the medical emergencies orthodontic treatment is not contraindicated but special care and precautions are necessary for their successful treatment without any further complication. One of the most important things that patients can do with their medical history is to share it with health care providers. Medical history helps to provide best possible treatment to the patient and thus helps to maintain good health. Successful orthodontic treatment can be done for most patients with relevant management. Actively managing this will avoid numerous complications, life threatening emergencies and will avoid many medico-legal incidents. This article enlightens the possible medical emergencies faced by orthodontist in day-to-day practice and helps to understand the management of such patients.

Keywords: Medically compromised, Orthodontic considerations, General management

INTRODUCTION

The obligation of any medical and dental professional is to make sure the individual they are treating should maintain best possible health.

One of the most important things that patients can do with their medical history is to share it with health care providers. Medical history helps to provide best possible treatment to the patient and thus helps to maintain good health.

Medical history is important for many reasons: to know the problem so that proper preventive measures can be taken; provide proper first aid; respond to an emergency; respond to new signs or symptoms; and medical history helps to know if an individual is allergic to certain things so that it can help to assist the health professional to avoid those things the patient is allergic to.

The orthodontist frequently treating medically compromised patients in modern day practice. Orthodontists should be aware of the possible clinical indications of these diseases. There are some conditions that significant to orthodontic practice.[1]

Various medical conditions relevant to orthodontic practice are categorized as: localized diseases; allergies - Nickel allergy and latex allergy; systemic disease - infective endocarditis, bleeding disorders, leukemia, sickle cell anemia, diabetes, thyroid and parathyroid disorders, hepatitis, juvenile idiopathic arthritis, osteoporosis, epilepsy, asthma, renal disorders, and human immune-deficiency virus (HIV).

Other miscellaneous medical conditions encountered by orthodontists include: Down's syndrome, herpes, mumps, and measles.

Orthodontist most often encountered with patients having latex or Nickel allergies.

NICKEL ALLERGIES

Orthodontic materials comprised of nickel as most common component. Nickel is a potent allergen and sensitizer metal.

In 1925, the nickel-plating industry laborers were reported with Dermatitis due to the exposure to nickel.[2,3]

Oral manifestations of nickel allergy can include the following: burning sensation, gingival hyperplasia, angular chelitis, periodontitis, stomatitis with mild to severe erythema, loss of taste or metallic taste, and numbness of the tongue.

Due to the inflammatory response caused by corrosion of orthodontic appliances, which leads to release of nickel, nickel allergic contact stomatitis (NiACS) is manifested.[1]

Management

Patients with history of dermatitis to nickel containing metals should be treated with caution and closely monitored during orthodontic treatment.

Patients with nickel hypersensitivity and with evident signs and symptoms should be treated with Stainless steel arch wires with a low nickel content, titanium molybdenum alloy (TMA) which is nickel free, fiber reinforced composite wires, pure titanium or gold-plated wires.

If any severe allergic reaction develops, the patient should be referred to a physician to be treated with antihistamines, anesthetics or topical corticosteroids.

Plastic aligners or invisaligns should be used in such cases instead of fixed appliances.[1]

LATEX ALLERGY

In the mid-1980s, due to the concerns of the transmission of viral Infections, natural rubber latex was introduced to the environment. Protective gloves made of NRL, being used routinely for clinical procedures. The increment within the utilization of NRL clinical gloves has been accompanied by a rise within the frequency of NRL hypersensitivity in health-care specialists and patients.[4,5] The increment within the utilize of NRL clinical gloves has been accompanied by a rise within the frequency of NRL hypersensitivity in health.

Orthodontic considerations in patients with latex allergy

Latex free products should be stored in a 'latex-screened' area in order to prevent prior contamination.

Patients with latex allergy should be given early morning appointments to minimize the exposure to airborne latex particles.

The diagnosed patients should be observed for any adverse signs or reactions. The team ought to be competent of providing provoked emergency care.

The emergency drugs and equipments should be free from latex.[6]

Latex- screened dental environment should be created.

NRL-free gloves should be worn in the latex-screened environment.[7]

Latex free orthodontic materials should be used. Natural rubber latex is found in orthodontic materials such as gloves, elastomeric modules, separators, elastomeric chain, and band removers. Non-latex gloves made from nitrile and polychloroprene are available for clinical use. Self-locking separating springs can be used instead of elastomeric separators. Alternatives such as latex free power chain, ligature chain and masks can be used.[1]

SUBACUTE BACTERIAL ENDOCARDITIS

Endocarditis is a life-threatening disease.[8]

Infective endocarditis is an inflammation of inner tissues of the heart, the endocardium which may include one or more heart valves, which results to congestive heart failure and myocardial abscesses.[9]

Patients suffering with congenital heart disease, cardiac damage from rheumatic fever, with a prosthetic heart valve, or recent cardiovascular surgery should undergo antibiotic prophylaxis to intercept bacterial endocarditis whenever there is a possibility of bacteremia due to dental treatment.[10]

Orthodontic considerations in patients with cardiovascular disorders

The orthodontist should be in regular contact with the physician of the patient in order to confirm the probability of IE.

The orthodontist should guide people with risk of IE, the significance of maintaining standard oral hygiene.

Brushing with battery powered toothbrushes results in bacteremia more commonly than brushing with a manual or ultrasonic toothbrush.

Placement of a separator is the most potent orthodontic procedure that can cause bacteremia.

In high-risk patients with indigent oral hygiene, the use of orthodontic bands should be avoided.

Incidents of infection in people with IE should be observed and treated timely.[1]

BLEEDING DISORDERS

Hemophilia is defined as a congenital hematological condition caused by a deficient activity or absence of clotting factors that are required for haemostasis.[11]

Bleeding disorders comprises of clotting factors deficiencies, platelet disorders, fibrinolytic disorders and vascular defects.

Among these, hemophilia A, B and von willebrand's disease are most frequently encountered congenital defect of the coagulation system.[12]

Orthodontic treatment consideration

Complete medical and dental history is important while dealing with hemophiliac patients. It is essential to know the type and severity of the disease, the medications, previous hospitalizations, and transfusions.

It is important to know the requirement of appropriate preoperative coverage of the hemophiliac patient while doing any invasive procedures.

Poor oral hygiene and gingivitis are the possible reasons that can lead to the risk of bleeding. In such cases, precautions and essential steps should be taken while using orthodontic appliances, extracting tooth or performing minor surgeries.

Any kind of damage to gingival tissues from orthodontic appliance should be avoided. Elastomeric modules should be used instead of ligature wires to secure the orthodontic arch wires as ligature wires can cause mucosal irritation and gingival impingement.

Non-extraction approach should be adapted if feasible so as to refrain from complications. If extraction or orthognathic surgeries are must, patient should be hospitalized and missing clotting factors should be transfused. "Self-ligation" brackets give better results as compared to "conventional" brackets in such cases.

Lighter forces should be used as compared to high level forces in order to avoid worsening of condition.

It is better to use preformed bands or bondable molar tubes instead of custom-made bands as it can impinge the gingiva and can cause laceration.[13]

LEUKEMIA

Leukemia is a malignant condition of lymphoid or myeloid progenitor cells.[8]

Leukemia is characterized of acute and chronic forms.

Orthodontic treatment consideration

If the patient with leukemia requires chemotherapy, orthodontic treatment should be postponed.

It has been suggested that orthodontic treatment should be postponed for at least 2 years after BMT so that the risk of relapse of the malignancy should minimized and the patient is no longer needs immunosuppressive therapy.

There are no evidences of adverse effects of orthodontic treatment in these patients.

Such treatment mechanics should be adapted that minimizes the risk of root resorption.[1] In patients with short blunt roots, if any evidence of apical root resorption is seen, treatment should be interrupted for 3 months.

Salivary dysfunction is evident in such patients which increases risk of caries. Topical fluoride application and artificial saliva are suggested.

These patients have reduced resistance to infections. Minor irritations can lead to severe ulcerations, so, vacuum formed aligners are recommended appliances as compared to fixed appliances.[1]

SICKLE CELL ANEMIA

Sickle cell syndromes are characterized of the presence of an abnormal form of hemoglobin, (hemoglobin S), in red blood cells.[14] This is a genetic disorder comprised of a hemoglobin gene mutation.[15] Chronic anemia, slow healing, and delayed dental development are likely to occur in such patients. Pallor oral mucosa, glossitis, and Periodontitis may result

Orthodontic consideration

Orthodontic treatment is not contraindicated for such condition, however essential steps should be taken to prevent others from contaminating clinical staff and the orthodontist.

The orthodontist should pay attention to the possible bone turnover during orthodontic movements with heavy forces. These can result in painful mandibular episodes and the susceptibility to infections.

Minor surgeries, such as the extraction for orthodontic purposes are contraindicated.

Intensity of orthodontic and orthopedic forces such as extra oral anchorage or maxillary distraction should be supervised with care.[10]

DIABETIC PATIENTS

Diabetes mellitus is a chronic disease of carbohydrate, protein and fat metabolism. The typical symptoms of

hyperglycemia are polyuria, polydipsia, weight loss, and susceptibility to infections. Other complications comprise of retinopathy, nephropathy, peripheral and autonomic neuropathy, cardiovascular disease.[16]

Oral manifestations of diabetes mellitus

Most of the patients are unaware of their diabetic condition and dental examination gives the first indication of the disease to them.[17]

Oral indications comprise of xerostomia, oral candidiasis, burning mouth or tongue, impaired wound healing, recurrent oral infections, decreased salivary flow, alterations in the flora of the oral cavity, with predominance of *Candida albicans*, hemolytic *Streptococci*, and *Staphylococci* that increases the prevalence of dental caries.[2,18]

Orthodontic treatment consideration

Orthodontic treatment is contraindicated in a patient with uncontrolled diabetes. For DM patients with no complications of DM, all dental procedures can perform without any precautions.[18]

At each follow-up, the signs related to diabetes, in oral cavity should be evaluated.

Maintenance of good oral hygiene should be advised.

Application of lighter forces are advised and regular check on the vitality of the teeth involved should be performed.[19]

Orthodontic appliances promote increased plaque retention if not maintained properly, and can results in tooth decay and periodontal breakdown in patients with DM.[16,18,20]

Diabetes can influence the bone turnover, resulting in declined bone-mineral density, osteoporosis, and increased intensity of periodontal disease.[1]

THYROID AND PARATHYROID DISORDERS

The thyroid gland and its hormones play vital role in the regulation of growth, development and metabolic functions of the body. Thyroid diseases include a group of condition that can affect the dental care. Modifications of dental care must be considered when treating patients who have thyroid disease.[21]

Parathyroid hormone plays an important role in the metabolism of calcium and phosphorus, so, influence the mineralization of bone and teeth.[22]

Orthodontic consideration

Orthodontic therapy requires minimal alterations in the patient with adequately managed thyroid disease.

In hyperthyroidism enlarged tongue may pose problem during treatment.

The bone turnover can influence orthodontic treatment. High bone turnover (i.e. hyperthyroidism) can increase the amount of tooth movement compared with the normal or low bone turnover state in adult patients.

Low bone turnover (i.e. hypothyroidism) can result more root resorption, suggesting that in subjects where a decreased bone turnover rate is expected, the risk of root resorption could be increased.

Patients with histories of hyperthyroidism should be carefully evaluated to determine the level of medical management, and they should be treated in a way that limits stress and infection.

Medications such as epinephrine and other vasopressor amines should be given with caution in patients with treated hyperthyroidism.

Routine orthodontic therapy may be provided to patients with parathyroid disease once that disorder has been identified and the proper medical treatment given.[23,24]

LIVER DISORDERS

Hepatitis

Hepatitis referred to certain infections caused by different viruses which may lead to inflammation of the liver and affects liver. The most common types are hepatitis are A, B, and C, and less common are hepatitis D and E.[21]

Hepatitis viruses are blood borne and can be transmitted through saliva or sharp contaminated appliances, hence can't be ignored while performing orthodontic treatment. Hand pieces and micromotors generate aerosols that can cause infection in dental care workers and patients. Orthodontic procedures such as reproximation, removal of composite after debonding, and scaling can generate aerosols.[25]

Orthodontic treatment consideration

Prevent the cross-contamination and exposure of dental team while attending patient with hepatitis should be the main focus.

Orthodontist should communicate with hepatologist before initiating orthodontic treatment.

Guidelines by health administration should be followed. It is essential for all the dental staff to get immunized against HBV. Proper dress code including gloves, eye glasses, and mouth mask should be followed.[23]

Dental impressions can transmit HBV, as HBV can survive on innate objects for 1 week. Disinfecting sprays

like sodium hypochlorite or glutaldehyde can be used to prevent contamination.[23,26]

Any surgical procedures or extractions that has the risk of bleeding should be performed in hospital settings to provide emergency care in time of need.

Caution should be taken while prescribing medications to patients with hepatic impairment as it can results in certain drug toxicities such as acetaminophen, non-steroidal anti-inflammatory agents.[27]

Juvenile rheumatoid arthritis

Juvenile rheumatoid arthritis (JRA) is an autoimmune inflammatory arthritis occurs in patients less than the age of 16 years. JRA is classified according to the cause of the disease and the number of joints involved during the 6 months duration. If joints involved are four or less than four, condition is known as pauciarthritis or oligoarthritis while polyarthritis term is used when five or more joints are involved.

Temporomandibular joint (TMJ) can be involved upto complete bony ankylosis. Skeletal class II jaw discrepancy may result due to restricted growth of the mandible.[28]

Skeletal class II malocclusions and open bite malocclusions are easily evident in JRA patients.[29]

Orthodontic consideration

According to Proffit et al, orthodontic treatment procedures that leads to TMJ stress such as functional appliances and class II elastics should be avoided in rheumatoid arthritis condition.[30]

Kjellberg et al proposed that functional appliances disburden the condyle and react as "joint protector".[31]

If the condition is not treated well orthodontically, surgery can be the option; however, instead of mandibular surgery, maxillary surgery and a genioplasty should be done in mandibular deficient patients.[32]

Osteoporosis

Osteoporosis is systemic, degenerative disease results in diminished bone mass, a micro architectural deterioration of the bone and ensuing increment in bone fragility.[23]

Osteoporosis occurs most commonly in menopausal women. Risk variables that cannot be modified are progressed age, being female and lack of estrogen after menopause.

Studies suggest that bone resorption and deposition are accelerated which leads to loss of attachment and hence may affect the rate of tooth movement in such patients.[1]

Oral manifestations of osteoporosis are decreased ridge height, decreased arch width, accelerated alveolar bone loss, loss of teeth, loss of attachment and gingival recession.

In osteoporosis women, bisphoshonate (BP) drugs are the drug of choice. 1 BPs helps in improving bone density, but certain side effects are associated with consumption of BPs during orthodontic treatment such as delayed tooth eruption, impaired tooth movement, BP-induced osteoradionecrosis (ONJ) of the jaws.

Orthodontic considerations in patients treated with bisphosphonates[33]

Invasive dental procedures should be avoided while planning orthodontic treatment.

Passive retainers should be used instead of active one so that no pressure exerted on the soft tissues.

Orthodontic treatment is planned so as to minimize risks. Reproximation should be considered instead of extraction protocol to accelerate treatment time.[34]

Epileptic patients

Seizure is a temporary, sudden involuntary disruption of brain's electrical activity caused due to abnormal electrical discharge from CNS neurons.

Epilepsy also known as epileptic fits or seizure fits represents a condition in which patient experience recurrent seizures. It is a chronic neurological condition comprises of unprovoked repetitive epileptic seizures.

Treatment

Dentofacial trauma due to seizures can cause injuries to the tongue, buccal mucosa, avulsion, fractures of teeth or face and subluxation of the temporomandibular joint.[35]

Management

General management

Seizure patients should make feel comfortable as such patients confront challenges in numerous occasions in their life.

Stress-inducing factors should be eliminated before beginning treatment as stress is the major factor that provokes seizure.

Early morning appointments should be given to epileptic patients and treatment sessions should kept short.

Bright lights and extreme noises should not be used on such patients.

Treatment should be avoided in patients with recurrent seizures and on medications until emergency care is required.

Gingival overgrowth may result due to phenytoin consumption but resolves within six months after withdrawal of the phenytoin. Gingival overgrowth will cause delayed eruption, retention of food debris, malposed teeth and bad breath.

Antiepileptic medications can cause xerostomia. Fluoride treatment should be considered in such cases for caries reduction and prevent temporomandibular disorders. Frequent follow ups should be done in patients with gingival overgrowth.

If seizure occur during dental treatment – sharp Instruments should be kept away from the patients; dental chair should be placed in supine position; patient should be placed on side to decrease the risk of aspiration of dental materials in the mouth; emergency treatment needed in case seizure lasts more than 3 minutes; oxygen should be administered at a rate of 6–8 l/minute; if the repeated episodes of seizures occur, administration of 10mg diazepam IM or IV, or 5 mg of mid-azolam IM or IV; and dental team should be aware of the probability of uncontrollable seizure.

Once the seizure is over – discontinue further dental treatment; communicate with the patient to assess the level of consciousness post-seizure episode; do not restrain the patient, as it can confuse them; ask the patient to be seated and ensure that patient has regained full awareness before leaving the office; and do not attend the patients with seizure alone. Family presence is important as it is dangerous to discharge the patient alone in case episode of seizure occur.

Orthodontic management

Comprehensive orthodontic approach required in patients with epilepsy and malocclusion.

Ensure the patient is receiving proper preventive dental care to decrease risks of dental disease. Removable appliances should be avoided in epileptic patients as these can be dislodged easily during seizure episode.

An occlusal splint must be retentive when used to treat epileptic patients. Metal occlusal surfaces are recommended over ceramic so that it can withstand clenching forces.

Patients with uncontrolled seizure and bodily movements are not appropriate candidates for orthodontic treatment.

Asthma

Asthma is a chronic inflammatory obstructive lung disease with incident of chest tightness that results in breathlessness, coughing, and wheezing. It is associated with hyper reactivity of the airways to a variety of stimuli and a high degree of reversibility of the obstructive process.[28]

Asthma results in increased prevalence of caries, altered nasal respiration function that leads to mouth breathing. Patients with asthma can have increased upper anterior facial height, high palatal vaults, and increased overjet, crossbite. Inhaled corticosteroids in asthma if not used properly may results in oral candidiasis.

Orthodontic considerations in patients with respiratory disorders

Orthodontist should be in contact with patient's physician before initiating treatment procedures to access the severity of the problem. Patient should have their inhaler by their side during procedures.

If patient feel any problem related to breathing, patient should immediately put in supine position for proper airway passage.

Morning appointments should be given to the asthmatic patients, short waiting and treatment span helps to relieve stress and anxiety.

Orthodontic extractions should be done under local anesthesia. NSAIDs should be prescribed to asthmatic patients with care as many asthmatic patients are at risk of aspirin allergy.[1]

Renal disorders

Chronic renal failure is a progressive and irreversible decrease in number of functioning nephrons, which causes reduction in glomerular filtration rate. CRF is followed by clinical changes that represents the inability of the kidney to excrete metabolites and conduct endocrine functions, including secretion of active vitamin D and erythropoietin.[36,37]

Orthodontist can encounter following CRF patients: patient having CRF but are not dialysis dependent- if the renal failure is advanced and approaching to dialysis, orthodontic treatment should be postponed; patients having CRF and are dialysis dependent- orthodontic treatment procedure can be carried in patients with doctor's consent before kidney transplant; and children with kidney transplant – drug induced gingival hyperplasia is evident in such patients hence, Orthodontic fixed appliances can create substantial response in the gingival tissues.[38]

Orthodontic management

Special attention to be given in such cases if extraction is planned as it may result in abnormal bone healing that may

lead to bone demineralization due to alterations in calcium and phosphors metabolism.[39]

It has been postulated that less orthodontic forces should be used and re-adjusted at shorter spans.[23]

Appointments should not be scheduled on dialysis days so that we get optimum time for invasive procedures as platelet function will be optimal after dialysis.[23]

Penicillin and its derivates are the choice of antibiotics for these patients as many antibiotics can be actively excreted by kidney. Dose of the drugs should be planned accordingly. Paracetamol is the choice of analgesia in such patients.[23,40]

Gingival hyperplasia can impair the orthodontic tooth movement so, gingivectomy can be treatment choice in such patients.[23]

Aids

Acquired immunodeficiency syndrome caused by HIV, is an infectious disease that is characterized by extreme immunosuppression that is followed by opportunistic infections, secondary neoplasm and neurologic manifestations.

Oral manifestations are common and are often leads to systemic manifestations. This characteristic is important as early detection of HIV infection through oral lesions may be possible.

Oral manifestation

Leukoplakia included white, thick and hairy patches can appear on the side of the tongue in many HIV patients. This can be caused due to Epstein-Barr virus in patient with weakened immune system.

Thrush or candidiasis included white patches, red dots formed around the tongue.

Aphthous ulcers appeared as red sores inside of the cheeks or mouth covered by a thin layer of skin.

In herpes simplex viral infection, herpes can be seen as painful red sore appears on the roof of the mouth or around the lips.

Neoplasm is a type of oral cancer appears as red and purple lesions that can multiply in size.

Orthodontic considerations

Center for Disease Control (CDC) as well as the American Dental Association (ADA) introduced sterilization standards in order to prevent Aids are not transmission. Proper safety measures and dress codes should be followed by dental staff such as latex gloves, masks and eye protection for treating such patients. Needles, blood and saliva contaminated disposable appliances should be disposed of properly and other instruments should be sterilized for each patient according to the protocol. Dental rooms or operating rooms should be disinfected properly.

HIV infection does not alter the orthodontic treatment plan for but clinician's approach to treatment may alter.

Proper masks, gloves and eyewear should be used as water splash may be common during orthodontic treatment and should be avoided in order to prevent contamination.

During follow ups, patient must be educated for maintaining oral health and antiseptic mouthwashes should be provided to patient for use during treatment procedures.

Xerostomia has been observed in pediatric patients. Sugarless gum should be prescribed to alleviate xerostomia.

Post exposure prophylaxis (PEP) should be prescribed immediately after the accidental occurrence. NACO recommend zidovudine/stavudine plus lamivudine (basic regimen) and zidovudine plus lamivudine plus lopinavir/ritonavir.[23]

Down's syndrome

Down syndrome (DS) was first described by John Langdon Down and caused due to the trisomy of the 21st chromosome 41.

The orofacial structures in Down syndrome are characterized as: underdeveloped midfacial region which gives a prognathic class III occlusal relationship, and contributes to an open bite; delayed eruption pattern and delayed exfoliation of deciduous teeth can be seen in Down syndrome patients, they have congenitally missing teeth, can have unusually shaped teeth and defected enamel; pseudo prognathic profile with decreased lower facial height, small midface, macroglossia, crossbites, anterior open bite, and crowding are common features associated with Down syndrome; and children with Down syndrome have destructive periodon-tal disease and are asso-ciated with low IQ level.[23,42]

Orthodontic consideration

The following technologic steps are specifically useful for patients with DS: dental Impressions should be taken with flavored impression materials and quick-set materials so as to reduce the sensitive gag reflex that are frequently observed in DS patients; easy methods of bonding should be used and uncomfortable banding procedures should be avoided in DS patients; self-etching primer should be used instead of conventional etchants as it is difficult to maintain a dry field for long time in such patients; high-memory wires should be used for longer activation; self-

ligating brackets are better option in such patients for comfortable appointments and less irritation to these patients; and TADs can be used to minimize for better tooth movement and patient compliance is not required in TADs.[43]

Herpes simplex

Herpes simplex is an acute infectious viral disease caused by herpes simplex virus. It is of two types: type 1 and type 2. HSV-1 causes sores and skin infections whereas HSV-2 causes genitals infection.

HSV infection is primarily caused by direct contact with infected area or with secretions. HSV-1 predominantly infect the face, lips, and the upper body skin.

Clinical features

It may develop on lips or intraorally. The lesions formed are followed by burning and tingling sensation and a feeling of swelling or slight soreness at the location may develop. The lesions heal itself within 10 days and leaves no scar.

Orthodontic consideration

An infection control program is needed to control the transmission. Exposure control covers proper sterilization and disinfection.

Orthodontist and other health personnel should wear proper personal protective equipment.

Percutaneous injuries and blood splashes to the eyes, nose or mouth occur frequently during orthodontic treatment should be avoided by wearing proper mask and eyewear.

Retainers if used by patient should be asked to remove for the time being.

Proper oral hygiene maintenance and diet plan should be recommended to the patient

Impressions of the patients should be disinfected before pouring.

Measles

Measles is an acute, contagious, dermatropic and endemic viral infection that predominantly affects children. Disease spreads when comes in direct contact with affected person or by droplet infection, the portal of entry being the respiratory tract.

Oral manifestations

It includes: Koplik's spot, palatal and pharyngeal petechiae, and focal ulceration of gingiva and palate.

Orthodontic consideration

In case the patient is having measles, discontinue the treatment and send the patient home immediately.

Ask the parents or attendees of the patient to immediately consult with their physician as it spreads really fast.

Orthodontist should make sure that the patient, parent and the staff is immunized.

Treatment should be discontinuing for the time being and the patient must be isolated until it gets resolved.

Mumps

Mumps is an acute contagious viral infection characterized by unilateral and bilateral swelling of salivary glands, usually the parotid.

Other than salivary gland, it may also involve nerves, meninges, pancreas and gonads

Mumps is a childhood disease, but sometimes may affect adults also.

Systemic symptoms in mumps appears as low- grade fever, chill, headache and sore throat.

Orthodontic consideration

Treatment of mumps is conservative. Proper hydration and alimentation should be done. Prevention is by means of vaccination.

Risk exposure to mumps is through contact with secretions from upper respiratory system or saliva of infected people.

Treatment should be delayed in patients with symptoms of mumps.

Standard infection control protocols should be followed for sterilization of surfaces and instruments.

Wear proper facemasks, gloves and eye protection and hand washing after every appointment are the preventive measures that should be followed every now and then.

Sometimes orthodontic appliances can precipitate mumps occur due to irradiation of the outlet of the parotid duct in the presence of bracket projecting laterally towards the duct around molar tooth.

In such cases, repositioning of the bands are recommended along with other preventive measures.

If possible, removal of the appliances and discontinue the treatment for time being so that problem gets subside.

CONCLUSION

Comprehensive medical history, making proper documentation and keeping these for records is of utmost importance!

An orthodontist should be aware of different systemic diseases, its progression and its impact on the treatment planning for the patient's wellbeing for best results of orthodontic treatment.

Medically compromised patients are increasing in number day by day who are seeking orthodontic care. For majority of the medical emergencies orthodontic treatment is not contraindicated but special care and precautions are necessary for their successful treatment without any further complication

Orthodontist should have the knowledge of drugs and all necessary medical procedures, well trained team and well-equipped medical setup so that they can deal with any medical emergency.

Orthodontist should keep in touch with the concerned doctors of the patient and should have complete updated medical records of the patient to tackle with any complication if occur.

Treatment should be delayed sometimes until the medical problem is in remission and the side effects of the drug therapy are minimized.

Good patient cooperation, consent before treatment, proper referral when required and constant monitoring of the progress of the treatment is necessary to minimize physical damage and to maximize treatment outcome.

Successful orthodontic treatment can be done for most patients with relevant management. Actively managing this will avoid numerous complications, life threatening emergencies and will avoid many medico-legal incidents.

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REFERENCES

1. Patel A, Burden D J, Sandler J: Medical disorders and orthodontics. J Orthodont. 2009;36:1-21.
2. Namikoshi T, Yoshimatsu T, Suga K, Fujii H, Yasuda K. The prevalence of sensitivity to constituents of dental alloys. J Oral Rehabil. 1990;17:377-81.
3. Counts AL, Miller MA, Khakhria ML, Strange S. Nickel allergy associated with a transpalatal arch appliance. J Orofac Orthop. 2002;63:509-15.
4. Jacobsen N, Hensten-Pettersen A. Changes in occupational health problems and adverse patient reactions in orthodontics from 1987 to 2000. Eur J Orthod. 2003;25:591-8.
5. Snyder HA, Settle S. The rise in latex allergy: implications for the dentist. J Am Dent Assoc. 1994;125(8):1089-97.
6. Field EA, Longman LP. Guidance for the management of natural rubber latex allergy in dental patients and dental health workers. London: Faculty of General Dental Practitioners (UK), The Royal College of Surgeons. 2004.
7. Hain MA, Longman LP, Field EA, Harrison JE. Natural rubber latex allergy: implications for the orthodontist. J Orthodont. 2007;34:6-11.
8. Burden D, Mullally B, Sandler J. Orthodontic treatment of patients with medical disorders. Eur J Orthodont. 2001;23:363-72.
9. Dnyandeo Tekale P, Arun R Mhaske Et Al; Clinical Management and Guidelines for Infective Endocarditis in Orthodontics. World J Dentistry. 2015;6(4):226-8.
10. Mashru AC. Orthodontic Treatment In Systemic Disorders. J Indian Orthodont Soc. 2007;41(4):133-14.
11. Gómez-Moreno G, Cañete-Sánchez ME, Guardia J, Castillo-Naveros T, Calvo-Guirado JL. Orthodontic management in patients with haemophilia. About two clinical cases. Med Oral Patol Oral Cir Bucal. 2010;15(3):463-6.
12. Gupta A, Epstein JB. Bleeding Disorders of Importance in Dental Care and Related Patient Management. JCDA. 2007;73(1).
13. Agarwal L, Gupta A, Kulshrestha R. Bleeding Disorders in Orthodontics and Their Management - A Review. JDS. 2016;4(3).
14. Proffit WR, Van Venroroy JR. 1985;111.
15. Platt OS, Brambilla DJ, Rosse WP. Mortality in sickle cell death: Life expectancy & risk factors for early death; N Engl J Med. 1994;331:1022-3.
16. Rizvi O, Sabrish S, Pai S, Pattabiraman V. Diabetes mellitus, A dilemma in orthodontics. J Orthodont Res. 2014;2(3).
17. Little JW, Falace DA. Dental Management of medically compromised patient. Fourth edition Mosby. 1993;347-50.
18. Bensch L, Braem M, Van Acker K, Willems G. Orthodontic treatment considerations in patients with diabetes mellitus. Am J Orthod Dentofacial Orthop. 2003;123(1):74-8.
19. Bensch L, Braem M, Willems G. Orthodontic consideration in diabetic patient. Semin Orthodont. 200410(4):252-8.
20. Firkin D, Ferguson J. Diabetes mellitus & Dental patients. N Z Dent J. 1985;81:7-11.
21. Charles A, Senkutvan RS, Jacob S, Krishnan CS, Subbiah S. Clinical management of medical disorders in Orthodontics. Int J Dent Sci Res. 2014;2(2):36-41.
22. Mittal S, Gupta D, Sekhri S, Goyal S. Oral manifestations of parathyroid disorders and its dental management. J Dent Allied Sci. 2014;3(1):34-8.

23. Ansar J, Maheshwari S, Chaudhari P, Verma SK. Orthodontic care of medically compromised patients. Indian J Oral Sci. 2012;3(3):129.
24. Sankar SG, Vannala V, Raja SK, Rao KS. Management of the Medically Compromised Cases in Orthodontic Practice. Asian J Med Sci. 2010;1:68-74.
25. Toroglu MS, Bayramoglu O, Yarkin F, Tuli A. Possibility of blood and hepatitis B contamination through aerosols generated during debonding procedures. Angle Orthod. 2003;73(5):571-8.
26. DePaola LG. Managing the care of patient infected with blood borne diseases. J Am Dent Assoc. 2003;134:350-8.
27. Al Khalidi JA. Current concepts in the diagnosis, pathogenesis & treatment of autoimmune hepatitis. Mayo Clin Proc. 2001;76:1237-52.
28. Sankar SG, Vannala V, Raja SK, Rao KS. Management of the Medically Compromised Cases in Orthodontic Practice. Asian J Med Sci. 2010;1:68-74.
29. Sidiropoulon- Chatzigianni S, Papadopoulon MA. Dentoskeletal morphology in children with Juvenile Idiopathic arthritis, compared with healthy children. J Orthod. 2001;28:53-8.
30. Proffit WR, Henry F. Contemporary Orthodontics. Mosby year book. 1991;253-4.
31. Kjellberg H, Starvos K, Bergit T. Dentofacial growth in orthodontically treated & untreated children with juvenile chronic arthritis; A comparison with Angle class II, Div 1 subjects. European J Orthod. 1995;357-73.
32. Van Voonroy DR, Proffit WR. Orthodontic care for medically compromised patients; possibility and limitations: Am J Dent Assoc. 1985;11(2):262-6.
33. Tarvade SM, Daokar SG. Osteoporosis & Orthodontics: A review. Sci J Dent. 2014;1:26-9.
34. Zahrowski J. Bisphosphonates treatment: An orthodontic concern calling for a proactive approach. Am J Orthod Dentofacial Orthop. 2007;131:311-20.
35. Ekka SB, Balani R, Shukla C, Agarwal S, Swamy K. Management of Epileptic Patient in an Orthodontic Clinic. RRJDS. 2014;2(2).
36. Gupta M, Gupta M, Abhishek. Oral condition in renal disorders & treatment considerations- A review. The Saudi Dent J. 2015;27:113-9.
37. Fogo A, Kon W. Pathophysiology of progressive chronic renal disease. In: Avner ED, Harmon WE, Niaudet P, Editors. Textbook of Pediatric Nephrology, fifth ed. Lippincott Williams & Wilkins, Philadelphia. 2004;1267-480.
38. Klassen JT, Krasko BM. The dental health status of dialysis patients. J Can Dent Assoc. 2002;68:34-8.
39. De Rossi SS, Glick M. Dental consideration for patient with renal disease receiving hemodialysis. J Am Dent Assoc. 1996;127:211-9.
40. Miller CS, Little JW, Falace DA. Supplemental corticosteroids for dental patients with adrenal insufficiency; Reconsideration of the problem. J Am Dent Assoc. 2001;132:1570-9.
41. Pietrzak P, Kowalska E. Possibilities of orthodontic-orthopaedic treatment in patients with Down syndrome, based on review of literature and on own observations. Pediatriapolska. 2012;87:626-32.
42. Dash S, Soni UN, Baldawa RS, Toshniwal NG, Mani SA. Treatment of Special Children: An Orthodontic Perspective. Int J Curr Res Rev. 2016;186173625.
43. Musicha DR. Orthodontic Intervention and Patients with Down syndrome. The Role of Inclusion, Technology and Leadership. Angle Orthodontist. 200;76:4.

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