

Periodontal management of medically compromised Patients (part 2)

4) Endocrine disorders

a) Diabetes Mellitus:-

The diabetic patient requires special precautions before periodontal therapy. The two major types of diabetes are type 1 (formerly known as insulin-dependent diabetes) and type 2 (formerly called non-insulin dependent diabetes) . Diabetic patients are managing their blood glucose levels (glycemia) through diet, oral agents and insulin therapy. The **classic signs of diabetes** include polydipsia (excessive thirst), polyuria (excessive urination), and polyphagia (excessive hunger with unexplained weight loss). If the patient has any of these signs and symptoms, physician consultation is indicated for further investigation because periodontal therapy has limited success in the presence of undiagnosed or poorly controlled diabetes. If the patient is suspected of having undiagnosed diabetes, the following procedures should be performed:

1- Consult the patient's physician .

2- Analyze laboratory tests .

a) Fasting blood glucose ≥ 126 mg/dL. Fasting is defined as no caloric intake for at least 8 hours.(normal fasting glucose is 70 – 100 mg/dL).

b) Symptoms of diabetes plus non-fasting plasma glucose ≥ 200 mg/dL. Non fasting glucose may be drawn at any time of the day without regard to time since the last meal.

c) 2 hours postprandial glucose tolerance test.(the glucose level is measured immediately before and 2 hours after a person drinks a liquid containing 75 g of glucose dissolved in water). Normal 2 hours postprandial glucose is < 140 mg/dL.

3- Provide emergency periodontal treatment only for such patient like acute periodontal abscess until diagnosis is established.

If a patient is known to have diabetes, it is important to determine the level of glycemic control before initiating periodontal treatment. The primary test used to assess glycemic control in a known diabetic individual is the **glycosylated or glycated hemoglobin test (HbA1c)**. HbA1c is a fraction of hemoglobin found in normal persons and it increases in the presence of hyperglycemia and it reflects blood glucose concentration over the preceding **2 to 3 months** and may provide an indication of the potential response to periodontal therapy. Normaly, patient should

have 6% to 8% HbA1c .In well-controlled diabetic patient , the level of HbA1c should stay below 7%.Those patients usually respond to therapy in a manner similar to non diabetic individuals. The level of hyperglycemia as indicated by HbA1c may reach as high as 20% in some uncontrolled cases.

Poorly controlled patients (>8%) often have a poor response to treatment, with more postoperative complications. Patients do not have to fast before they undergo testing , which can be useful in monitoring the progress of the disease. In diabetic patients taking insulin injections, the **most common dental complication** is hypoglycemia. The sign and symptoms of hypoglycemia are tremors, confusion, anxiety, sweating, tachycardia, unconsciousness. It is important to know the number of times per day the patient taking insulin and the time of the last dose. Periodontal treatment often can be timed to avoid peak insulin activity. If hypoglycemia occur during periodontal treatment, therapy should be immediately terminated, and the patient should take juice or glass of water and sugar. As a general guideline, well-controlled diabetic patients having routine periodontal treatment may take their normal insulin doses as long as they also eat their normal meal. If the procedures are going to be long, the insulin dose before treatment may need to be reduced. Consultation with patient's physician is important to determine any modifications needed.

b)Thyroid disorders:-

Hyperthyroidism or thyrotoxicosis may increase risk for hypertension, angina, congestive heart failure. So

- 1) Avoid any periodontal treatment for patient with thyrotoxicosis until good medical control.
- 2) **Avoid** epinephrine and other pressor amines in incompletely treated patient.
- 3) Avoid stress and control periodontal infection **to prevent** the occurrence of thyrotoxic crisis in untreated patient.
- 4) Once under good medical management, patient may receive dental treatment.

In hypothyroidism

- 1) Avoid stress and infection to prevent the occurrence of hypothyroid coma.
- 2) **Avoid** narcotics and tranquilizers in untreated hypothyroid patients because of inability to tolerate drugs.
- 3) In patient under good medical management, dental treatment may be performed.

c)Adrenal Insufficiency:-

Most commonly, adrenal insufficiency is seen in persons who have received steroid therapy. The degree of suppression of adrenal gland depends on the drugs used, the dose, the duration of administration, the length of time elapsed since steroid therapy was terminated and the route of administration whether systemic or topical route.

Doses of different corticosteroids include

25 mg cortisone equivalent to →20 mg hydrocortisone equivalent to →5 mg prednisolone.

Those patients can't tolerate stress caused by dental anxiety, surgical procedure or infection and may develop adrenal crisis which characterized by severe hypotension.

For patients who is currently receiving steroid therapy, the following regimen is followed:-

- 1) Patient taking low dose (less than 20 mg) or high dose (more than 20 mg) cortisol daily for **less than** one month :- **supplementation is not required**
- 2) Patients taking large dose (more than 20 mg cortisol daily) for extensive dental procedure: **double the normal daily dose** one hour before the procedure.
- 3) Patients on topical steroids like eye drops which used for a short time and small amount: **supplementation is not required.**

For patient with a past history of steroid therapy, it has been reported that full regeneration of cortical function may occur within 12 months or after 2 years. So a minimum of 12 months should have passed since the last dose was taken before normal periodontal therapy is performed. Otherwise, supplementation of steroid is required.

5)Pregnancy:-

The aim of periodontal therapy for pregnant women is to reduce the exaggerated inflammatory response of the periodontal tissues to local factor which related to hormonal changes associated with pregnancy.

The precautions that should be taken during the treatment of a pregnant patient:

- i) Short appointments, served in series because patient fatigues easily.
- ii) Position the patient on her **left side and not in supine position** for long time because of discomfort of remaining in one position.
- iii) Advice non-alcoholic mouthwash and neutral sodium fluoride rinse

iv) Advice not to brush right after vomiting to prevent erosion as nausea and vomiting is common in first trimester. Destruction of the enamel due to prolonged morning sickness.

v) Recommend less strong flavored dentifrice because of adverse reaction to strong smells and flavor to the pregnant patient

vi) Recommend a small toothbrush; take care in instrumentation and radiographic film placement to prevent gagging.

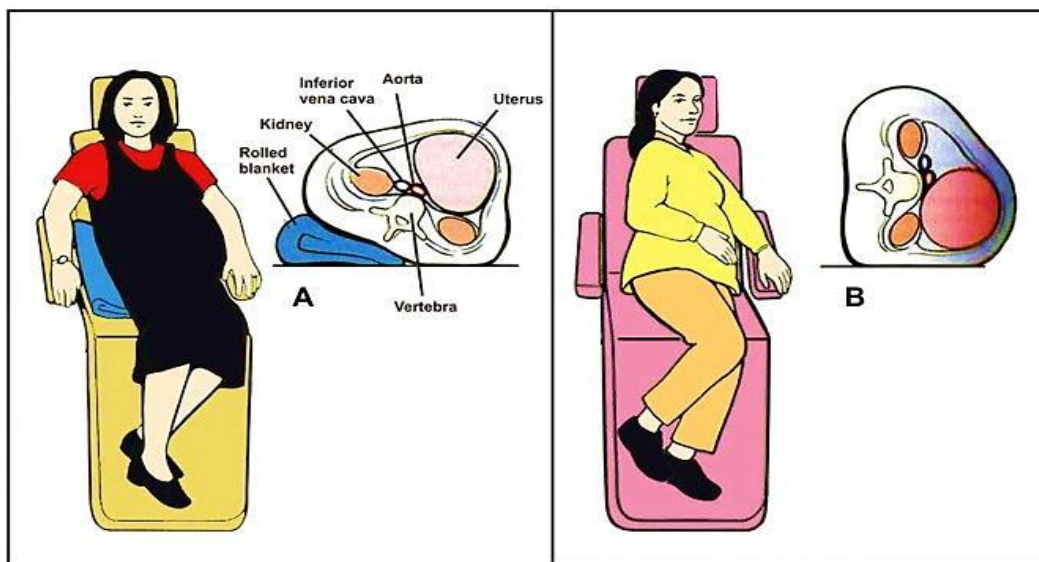
vii) Ideally, no medications should be prescribed that cross the placenta and affect the fetus because of toxic or teratogenic effects of therapy on the fetus.

viii) Use of dental radiographs during pregnancy should be kept to a minimum. When they are required during pregnancy patient is covered with a lead apron, thyroid collar and a second apron for the back to prevent secondary radiations from reaching the abdomen .

The second trimester is the safest time for treatment (scaling, polishing, root planing) while surgical procedures should be postponed after delivery.

The position of pregnant patient on dental chair during treatment:

Place the patient on left side or elevate the right hip 5-6 inches by placing pillow or blanket roll underneath. Supine position specially in the 3rd trimester allows the weight of developing fetus to bear down directly on vena cava, aorta and major vessels. The reduction in return of cardiac blood supply may cause **supine hypotension syndrome**.



Clinical management of Breast feeding patient

- i) Avoid giving tetracycline, ciprofloxacin, metronidazole, aspirin, vancomycin, barbiturates and benzodiazepines to the breast feeding patient.
- ii) The mother should take prescribed medication just after breast feeding and then avoid for 4 hours or more.

6) Hemorrhagic disorders:-

Patients with a history of bleeding problems caused by disease or drug should be managed to minimize risks of hemorrhage. Identification of these patients via the health history, clinical examination and clinical laboratory tests is important. Health questioning should cover

- 1) History of bleeding after previous surgery or trauma.
- 2) past and present drug history
- 3) history of bleeding problems among relatives
- 4) illnesses associated with potential bleeding problems.

Clinical examinations should detect the existence of jaundice, ecchymosis, petechiae, spontaneous gingival bleeding.

Laboratory tests include bleeding time, prothrombin time, complete blood cell count, partial thromboplastin time and coagulation time. Bleeding disorders may include the following:-

- 1) **Hemophilia A** (result in a deficiency of coagulation factor VIII).
- 2) **Hemophilia B** (result in a deficiency of factor IX).
- 3) **Von Wille brand's disease** (results from a deficiency of Von Wille brand factor which mediates adhesion of platelets to the injured vessel wall).
- 4) **Liver disease:** Most coagulation factors are synthesized by the liver or it is the site for production of the clotting factors. Long-term alcohol abusers or chronic hepatitis patients often demonstrate inadequate coagulation.
- 5) Patients taking anti-coagulation drugs: Patient with prosthetic heart valves, or histories of myocardial infarction, stroke or thromboembolism are frequently placed on anticoagulation therapy using **dicumarol and warfarin**. These drugs are vitamin K antagonists. Another drug is aspirin which interferes with normal platelet aggregation and can result in prolonged bleeding . For patients taking more **than 325 mg of aspirin per day**, the drug should be discontinued at least 7 to 10 days before periodontal therapy in consultation with the physician.

6) Thrombocytopenic Purpuras

Thrombocytopenia is defined as a **platelet count < 100.000/mm³**. The Purpuras could result from radiation, chemotherapy, leukemia or infections and it's characterized by extravasations of blood into the tissues under the skin or mucosa producing spontaneous petechiae (small red patches) or ecchymosis (bruises). In general speaking for patients with bleeding disorders, Never do any type of periodontal treatment unless consultation with the physician and it's preferable to do periodontal surgery if needed in the hospital.

7) Blood Dyscrasias:-

It include disorders of red and white blood cells which may affect the course of periodontal therapy. Ex: leukemia.

Leukemic patients having bleeding tendency and enhanced susceptibility to infections.

- ☒ **Refer the patient for medical evaluation and keep consultation with the physician.**
- ☒ **Periodontal treatment as scaling and root planning can be performed if the patient condition allows (chronic leukemia).**
- ☒ **Rinsing with 0.2% chlorhexidin twice daily is recommended.**
- ☒ **Administer antibiotic coverage before periodontal treatment because infection is a major concern.**
- ☒ **Periodontal surgery is contraindicated in the dental office because of uncontrolled bleeding. It must be done in the hospital.**

8) Liver diseases:-

Major causes of liver disease include drug toxicity, cirrhosis, viral infections(ex: hepatitis B and C), neoplasm. Because the liver is the site of production for most of the clotting factors, excessive bleeding during or after periodontal treatment may occur in patients with severe liver disease.

Management of such patient include the following:-

- a) consultation with the physician.
- b) screening for hepatitis B and C.
- c) check prothrombin time and partial thromboplastin time

9) Neurologic Disorders

Several diseases affecting the nervous system are of clinical significance in dental practice. The **more common and significant neurologic diseases** are stroke , Parkinson disease, Alzheimer disease, epilepsy, and multiple sclerosis (MS).

EPILEPSY:

Epilepsy is not a specific diagnosis but rather a term that refers to a group of disorders characterized by chronic and recurrent, paroxysmal changes in neurologic function (seizures), altered consciousness, or involuntary movements caused by abnormal and spontaneous electrical activity in the brain.

Although seizures are required for the diagnosis of epilepsy, not all seizures imply presence of epilepsy. Seizures may occur during many medical or neurologic illnesses, including stress, sleep deprivation, fever, alcohol or drug withdrawal, and syncope.

Management of those patients include:

1- Identification of the patient by the medical history and by discussion with the patient or family members.

2- Well controlled patients with anticonvulsant drugs are able to receive normal routine dental care.

3- Poorly controlled disease may require additional anticonvulsant or sedative medication, as directed by the physician.

4- Possibility of bleeding tendency in patients taking **valproic acid(Depakene)** or **Carbamazepine(Tegretol)** as the result of platelet interference(decrease platelet aggregation) so consult with the physician.

5- No contraindication has been identified to the use of local anesthetics with Epinephrine (1 : 100,000 and no more than two carpules) in these patients.

6- If a patient has a seizure while in the dental chair, the primary task of management is to:

- Protect the patient and try to prevent injury.**
- No attempt should be made to move the patient to the floor.**
- The instruments and instrument tray should be cleared from the area**
- The chair should be placed in a supported supine position**
- The patient's airway should be maintained patent. Turn the patient to the side (to avoid aspiration).**
- If the mouth prop is used, it should be inserted at the beginning of the dental procedure not at the time of seizure.**

7- After a seizure:

a- Examine for traumatic injuries as fracture of teeth and laceration of lower lip during seizure

b- Discontinue treatment; arrange for patient transport.

8- Gingival overgrowth is associated with phenytoin administration is the most significant oral complication in patients with epilepsy . If gingival overgrowth is significant, surgical reduction will be necessary.

10) Infectious diseases:-

Because medical histories are often inaccurate or incomplete, all periodontal patients **should be treated as they have an infectious disease**. Protection of patients, clinicians and office staff requires use of universal (standard) precautions for each patient. An examples of these diseases are **hepatitis , AIDS ,Tuberculosis and Coronavirus (COVID-19)**.

Hepatitis: -

Six distinct viruses causing viral hepatitis have been identified **A,B,C,D,E and G** viruses. These forms differ in their virology, epidemiology and prophylaxis. **Hepatitis A and E** are both self-limiting infections with no associated chronic Liver disease and these viruses transmitted via fecal-oral route.

Hepatitis B infection may result in chronic liver disease, it transmitted mainly through hematogenous routes and through contaminated instruments or needles in the dental office. Hepatitis B vaccine is recommended for all care health workers.

Hepatitis D virus requires the presence of hepatitis B virus to survive and replicate because the virus genetic material is packaged within the hepatitis B virus surface antigen coating. So prevention of this virus depends strongly on hepatitis B virus vaccination.

Hepatitis C is the most serious infection due to high chronic infection rate. Only 15% of patients infected with this virus recover completely and 85% develop chronic infection which increases the risk for cirrhosis , carcinoma and liver failure. No vaccine is available for this virus.

Hepatitis G is a newly discovered virus and its virology is not clearly understood and its known to be transmitted via blood.

☒ If the disease is in the active stage, do not provide periodontal treatment.

☒ For patients with past history of hepatitis, consult the physician to determine the type of hepatitis, course & length of the disease and mode of the transmission.

- ☒ For recovered type A or E hepatitis patients, perform routine periodontal care.
- ☒ For recovered type B and D hepatitis patients you must screen for HBsAg (Hepatitis B surface antigen). if this test is positive , so the patient is infective.
- ☒ Patient with positive anti-HBs (Hepatitis B surface antibody) may be treated routinely.
- ☒ Patients with active hepatitis and need emergency treatment, we should do the following:
 - 1- Using full barrier techniques including masks, gloves and eye glasses.
 - 2-Do not use ultrasonic instrument or air syringe so that not to transfer the infection by the saliva.
 - 3-Rinsing with chlorhexidin mouth wash is recommended.
 - 4-When the procedure is complete; all instruments should be sterilized carefully.

AIDS:-

AIDS is characterized by impairment of the immune system. The human immunodeficiency virus (HIV) was isolated in 1984 as the causative agent or virus of AIDS. Most of the patients develop long lasting acute illness with flulike symptom last for 10-14 days with enlarged lymph nodes, night sweat, weight loss, fever, malaise and chronic diarrhea. **Oral manifestation** characterized by oral hairy leukoplakia and oral candidacies, necrotizing gingivitis or periodontitis (NG or NP). Periodontal management of AIDS patients involves:

- ☒ Using full barrier techniques.
- ☒ Care in use of all sharp instruments.
- ☒ proper sterilization.
- ☒ Do not use ultrasonic instrumentation.

Tuberculosis:-

The patient with tuberculosis should receive emergency care only. Physician should be consulted for the result of sputum cultures for **mycobacterium tuberculosis**. When the results are negative, the patient may be treated normally. When the results are positive we have to know that adequate treatment of tuberculosis requires a minimum of **18 months** with a post treatment follow up. So periodontal treatment should include emergency only. In general in case of infectious disease it is preferable to wear double gloves and double masks. The sterilization should be done in auto clave 120-130 °C for about one or two hours.

Special recommendation during Coronavirus (COVID-19) epidemic

1- Upon patient arrival in dental practice, patients should complete a detailed medical history form. It is crucial to avoid overcrowding in circulation areas and waiting rooms (patients are scheduled by appointment, with a safety time frame between dental consultations, preventing contact or even proximity with other patients).

2- Oral health care providers should prioritize urgent and emergent situations over elective ones.

3- For both suspected or confirmed COVID-19 cases requiring urgent dental care (e.g., abscess drainage) it is necessary, if possible, to leave them for the end of the service

4- As respiratory droplets are the **main route** of SARS-CoV-2 transmission, particulate respirators (e.g., N-95 masks) are recommended for routine dental practice.

5- Preoperative antimicrobial mouth rinse is recommended.

6- Intraoral x-ray examination is the most common radiographic technique in dental imaging; however, it can stimulate saliva secretion and coughing. Therefore, extraoral dental radiographies, such as **panoramic radiography and cone beam CT**, are appropriate alternatives during the outbreak of COVID-19.

7- **Aerosol**-generating procedures, such as the use of ultrasonic instruments, should be avoided or minimized as much as possible (the use of manual scalers is recommended). Furthermore, face shields and goggles and gowns are essential .