PREGNANCY CONSIDERATIONS IN DENTISTRY

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Abstract: A dentist in day to day practice faces various medical situations in which he/she has to alter the treatment plan. One such condition is pregnancy which involves various physiological as well as physical changes. Even a healthy pregnancy causes major changes in maternal anatomy, physiology and metabolism. These can include changes in the cardiovascular, respiratory and gastrointestinal systems, as well as changes in the oral cavity and increased susceptibility to oral infection. This article discusses the various changes that occur during pregnancy and modifications in dental management that should be considered.

Keywords: dentistry, emergency, pregnancy.

Introduction:-

Pregnancy involves various physiological as well as physical changes due to the interaction of hormones (1). Even a healthy pregnancy causes major changes in maternal anatomy, physiology and metabolism. These can include changes in the cardiovascular, respiratory and gastrointestinal systems, as well as changes in the oral cavity and increased susceptibility to oral infection (2). This article discusses the various changes that occur during pregnancy and modifications in dental management that should be considered.

Physiological changes during pregnancy

Most common changes in pregnant patients include nausea, vomiting, acidity, shortness of breath and fatigue (3). These changes may pose various challenges in providing dental care for pregnant patient. Therefore, understanding physiologic changes of the body and effects of dental procedures, radiation and drugs used in dentistry on pregnant patients and fetus is indispensable for the management of the pregnant woman.

Cardiovascular System

Cardiovascular system undergoes tremendous changes in pregnancy like increase in blood volume and cardiac output, plasma volume and heart rate. Because of vasomotor instability, pregnant patients are susceptible to postural hypotension (1). As the uterus increases in size, it causes pressure on the vena cava and aorta, resulting in decreased cardiac output, venous return and uteroplacental blood flow. 8% of pregnant women experience supine hypotensive syndrome especially in supine position. It is characterized by hypotension, nausea, dizziness and fainting. The best way to prevent this from happening in the dental chair by placing a pillow or...
rolled towels to elevate her right hip by about 15° or simply to roll her to the left side. This will lift the uterus off the inferior vena cava and hence prevent hypotension from occurring (3).

Respiratory System
There is an increase in the demand of oxygen during pregnancy. The changes seen are dyspnoea, hyperventilation which is due to oxygen demand or decrease in the residual capacity of lungs (3). Also there is increased estrogen production during pregnancy, which results in capillaries in the mucosa of the nasopharynx to become engorged, resulting in edema, nasal congestion and predisposition to epistaxis1. Nasal breathing becomes more difficult, leading in mouth breathing and thus xerostomia. These problems lead to high caries index and should undergo early caries control to minimize harmful effects on the dentition.

Gastrointestinal System
Combination of hormonal and mechanical changes in the gastrointestinal system and increased sensitivity of the gag reflex increases the risk of gastric acid reflux resulting in nausea, vomiting, heartburn1. To relieve abdominal pressure and keep the patient comfortable, the chair should be kept as upright as possible during dental treatment.

Haematological system changes
During pregnancy there is an increase in the red blood cells, white blood cells and ESR and decrease in haemoglobin which leads to anaemia1. Also there is hypercoagulable state during pregnancy because of increase in all the coagulation factors except XI and XIII, resulting in deep vein thrombosis. Before carrying out any surgeries involving oral tissue it is important to review hemoglobin level and the red blood cell count to prevent any further complications.

Endocrine system changes
Estrogen, progestrone, and human gonadotrophin are responsible for the various physiologic changes occurring during pregnancy. Thyroxin, steroid and insulin levels also increase in pregnancy. There is higher risk of developing Gestational Diabetes, due to increase in the insulin resistance during pregnancy (1). Hence, clinician should perform tests to check the blood sugar level before carrying out any dental procedure.

Dental considerations in pregnancy
It is very important that pregnant woman receive routine dental care throughout their pregnancy. These patients have different response to taste, and smell which can result in nausea or vomiting1. Hypoglycemia may result in fainting. It can be prevented by allowing patient to eat a snack containing protein and complex carbohydrates before the appointment. Patients should be well hydrated, and the duration of chair treatment time should be as short as possible.

Timing of Treatment
Routine general dentistry procedures should be done in the second trimester of pregnancy because organogenesis usually takes place in the first trimester. Extensive elective procedures should be postponed until after delivery. However, in case of an emergency, dental treatment can be carried out at any time during the term of pregnancy.

Radiography
For the diagnosis of certain oral disease, radiographs are required. Since X-rays can damage to the cells and DNA(1), hence radiographs should be avoided in the first trimester as oogenesis takes place during that time. However, oral radiography is safe for pregnant patients, provided protective measures such high-speed film; a lead apron and a thyroid collar are used. A bitewing and panoramic radiograph generates about one-third the radiation exposure associated with a full-mouth series with E-speed film (4). Dental staff should practice the ALARA (As Low As Reasonably Achievable) principle and take only radiographs necessary for diagnosis.

Drugs
Drugs should be prescribed with great caution to the pregnant women as some drugs are known to cause miscarriage, teratogenecity and low birth weight of the fetus (1).

Analgesics
Analgesics like acetaminophen are commonly prescribed during pregnancy as it is proved to be safe and effective pain killer. Acetaminophen is the safest analgesic for use during pregnancy. Aspirin should be avoided at any cost as it can lead to
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Constriction of ductus arteriosis of the fetus if prescribed during the third trimester of pregnancy(1). However any medication should be prescribed only after consultation from the obstetrician. Prolonged use of narcotic analgesics in the third trimester can result in neonatal respiratory depression(6).

Antibiotics

Penicillins and cephalosporins are considered safe in pregnant patients. For patients who are allergic to penicillin, macrolides such as erythromycin and clindamycin can be prescribed (1). Use of ciprofloxacin in pregnancy has been restricted because of arthropathy and adverse effects on cartilage development observed in immature animals. The risk–benefit ratio for the patient should be determined and the obstetrician consulted before prescribing this drug.

Local Anesthetics

Local anesthetics are relatively safe when administered properly and in the correct amounts. Lidocaine is one of the most common local anaesthesia used during dental treatment. For a healthy pregnant patient, use of 1:100,000 epinephrine concentration is safe (7).

Steroids

Corticosteroids are commonly used to reduce inflammation. When used locally they are safe but its systemic use can harm the mother and the fetus and thus should be avoided during pregnancy (1).

Fluoride

Fluoride treatment is used in patients with severe gastric reflux caused by nausea and vomiting during early pregnancy, which can cause erosion of tooth enamel. In these cases, fluoride is used to cover the exposed dentin and reduce the sensitivity of and injury to the teeth (8). Topical fluoride gel may cause nausea, so application of a fluoride varnish may be better tolerated.

Sedatives and Anxiolytics

Barbiturates and benzodiazepines should be avoided during pregnancy. Benzodiazepines have been shown to result in the development of cleft lip and palate. It is best to avoid the use of nitrous oxide in the first trimester of pregnancy, when organogenesis is occurring (9). Use of nitrous oxide is known to affect vitamin B12 metabolism, rendering the enzyme methionine synthase inactive in the folate metabolic pathway. Because methionine synthase is vital for the production of DNA. After the first trimester of pregnancy, short-term administration of nitrous oxide with a minimal concentration of 50% oxygen, can be considered safe (9).

Conclusions

Pregnancy has significant dental implications. Proper diagnosis and management of the pregnant patient is essential for the health of the mother and the baby.

Paying attention to the physiologic changes associated with pregnancy, practicing careful radiation exposure, prescribing medications on the basis of drug safety categories and timing appointments and aggressive management of oral infection appropriately are important considerations. Elective procedure can be avoided till the termination of pregnancy. Any emergency dental treatment, if possible, should to be delayed till the second trimester.

References


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