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A Review on Dental perspective of Oral Health in Pregnant Patients.

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ABSTRACT

Pregnancy is one such time in a woman's life, which brings about a wide array of changes with a potential of having a profound effect in the oral health. It should be clear that pregnancy is not a diseased condition and they simply shound not be discouraged and denied treatment on the pretext of being pregnant. This article elaborates the changes that need to be discussed in relation to the oral health and discusses the normal changes during pregnancy .The important advisory in the care of pregnant patients and possible dental complications in pregnancy and their management have also been explained in the article.

Keywords: Oral Health, Pregnancy.

INTRODUCTION

A healthy pregnancy causes significant changes in anatomy, physiology and metabolism. These include changes in the cardiovascular, respiratory and gastrointestinal systems including changes in the oral cavity and susceptibility to oral infection. pregnant patients are in good numbers healthy and should not be discouraged or avoid dental treatment on the pretext of being pregnant. The changes taking place during pregnancy is normal and are for preparing the body for such physiologic stage and state of the maternal body and therefore changes during dental treatment are necessary and should be strictly adhered to. In this original article a wide array of changes that take place in normal pregnancy are discussed along with their management from the point of dental treatment.

Systemic Changes in the physiology of the pregnant patients:

Gastrointestinal System

The increase in progesterone levels during pregnancy causes a decrease in lower esophageal tone and gastric as well as intestinal motility. The synergistic effects of hormonal and mechanical changes in the GI tract along with gag reflex over all increases the acid reflux. Considering the fact that the stomach is already displaced superiorly due to increase in size of uterus and therefore increaseing the intragastric pressure. Keeping in view of these changes the position of the chair during dental treatment should be as upright as possible in order to avoid any associated abdominal discomfort and pressure

Besides the above mentioned changes, excess production of saliva is one such entity which is a cause of discomfort for the pregnant patient .This condition is known as Ptyalism and seen mostly in women suffering from nausea. The excessive saliva in the oral cavity causes decrease in the ability to absorb normal amounts of saliva. Reduction in the carbohydrates intake may help in recovering from ptyalism.[1]

Respiratory System

Surge in estrogen hormones in pregnancy results in the engorgement of the capillaries in and around the mucosa of the nasopharynx and thereby causing oedema, nasal congestion and ocassional nasal bleed.[1] Nasal breathing tends to be somewhat difficult and ultimately causing mouth breathing if the situation persists especially during sleep. Mouth breating can cause xerostomia and patients those having high caries index, should get caries control procdures to avoid dental decay and other related dental complications.[1]

Cardiovascular System

Cardiac changes in pregnancy causes increases in heart rate, cardiac output and plasma volume. A

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systolic ejection murmur, due to increased blood flow across the pulmonic and aortic valves occurs in 96% of pregnant women,[1] without warranting any treatment. In addition, as a result of vasomotor instability, pregnant patients are prone to postural hypotension. Therefore, dental chair position manouvering and changes from reclining to upright should not be sudden and needs to be done slowly. With the increases in size of uterus, pressure on the vena cava and aorta increases and as a result decreases in cardiac output, venous return and uteroplacental blood flow takes place. Aortocaval compression, which specifically is common in the supine position causes supine hypotensive syndrome and presents with symptoms and signs such as lightheadedness, weakness, sweating, restlessness, tinnitus, pallor, decrease in blood pressure, syncope and, in severe cases, unconsciousness and convulsions.

Patients who have a prior experience of the above syndrome are generally well acquainted with its occurrence and can give indication to the health care personal if they begin to notice such symptoms developing. The condition need to be treated by placing the patient on to the left side and placing a towels in such a way to elevate her right hip and buttock by around 15°. This procedure lifts the uterus from putting pressure on to the vena cava and re-instate aortocaval circulation.[1]

High-Risk Patients

Gyneacological advice and clearance is generally not manadatory for dental treatment in case of healthy pregnancy. Special consideration and consultation should be taken whenever dealing with high risk cases of pregnancy for example pregnancy-induced hypertension, gestational diabetes, threat of spontaneous abortion or history of premature labour.

High-risk pregnancy is generally managed through complete medical questionarre keeping in view of the course and nature of the pregnancy. Blood pressure measurement, pulse and respiratory rate are essential at the start of any invasive procedure including administration of local anesthetic. High blood pressure readings above 140/90 mmHg on more than three occasions warrants consultation of the obstetrician.[1]

Dental Management of Pregnant Patients:

Routine general dentistry procedures are generally done in the second and third trimester of pregnancy. Scaling, polishing and root planing can be advised any time for maintainence of oral health .simple and uncomplicated extractions can be performed in the second trimester. Major surgical and other elective dental procedures should be avoided till the completion of pregnancy. The main aim of any dental treatment should be to control disease, a healthy oral cavity and prevention of complications that could occur later in and around the term of pregnancy.[2]

Dental Imaging and Radiography:

Dental Radiography is considered safe in preganancy for oral cavity if safety protocols as advised for protection like lead apron, thyroid collar and high-speed film are used. Intrauterine growth retartdation IUGR, congenital anomalies has not been documented for radiation exposure during pregnancy totalling less than 5–10 cGy, and a full-mouth series of dental radiographs results in only 8 × 10–4 cGy.[3]

Radiation exposure has been found to be one-third with bitewing and panoramic radiographic study in comparision to full-mouth series with E-speed film and a rectangular collimated beam. Reassurance, Proper counsellling and ALARA (As Low as Reasonably Achievable) principles in cases of over anxious pregnant patients should be utilized and only radiographs necessary for diagnosis will be obtained.[4]

Periodontal Disease

Periodontium is perhaps the most effected part of oral cavity during pregnancy Pregnancy gingivitis [Figure 2] usually appears in the first trimester of pregnancy. This form of gingivitis results from increased levels of progesterone and estrogen causing an exaggerated gingival inflammatory reaction to local irritants. The interproximal papillae become red, edematous and tender to palpation, and they bleed easily if subjected to trauma. In some patients, the condition will progress locally to become a pyogenic granuloma or “pregnancy tumour,” which is most commonly seen on the labial surface of the papilla [Figure 3].

Small lesions respond well to local debridement, chlorhexidine rinses and improved oral hygiene measures, but large lesions require deep excision. Because intraoperative bleeding can be difficult to control, such surgery should be performed by clinicians with requisite training and experience.

Tooth mobility is a sign of periodontal disease caused by mineral changes in the lamina dura and disturbances in the periodontal ligament attachments. Vitamin C deficiency contributes to this problem, so the patient should be advised accordingly. Removal of local gingival irritants, therapeutic doses of vitamin C and delivery typically result in reversal of the tooth mobility.[2]

Some observational and interventional studies have shown an association between periodontal disease and adverse pregnancy outcomes such as preterm labour and low birth weight, but other studies have shown no relation between periodontal disease and pregnancy outcomes. While research continues into the pathophysiology of a cause-and-effect relation between oral health and pregnancy outcomes, it is advisable without any doubt to keep the pregnant

patient's periodontal system as free of disease as possible.[5]

Figure 1: Pregnancy gingivitis.

Figure 2: Pyogenic granuloma

Infections in the oral cavity:

Infection during pregnancy whether odontogenic or non-odontogenic in origin should be treated at the first hand at any given period of time. In pregnancy a lot of changes are happening in the immune system of the patient .Immunity in pregnancy as such is decreased because of the maternal effect of immune cells on the foetus.[1] And therefore a fall in cell-mediated immunity and natural killer cell activity is commonly seen .Therefore , infections in the oral cavity can develop fastly into cellulitis and space infections with a propensity to obstruct the airway. Abscesses should be promptly incised and drained along with the removal of infected pulp or tooth extraction to prevent spread of infection. The concerned obstetrician should be consulted regarding the patient's condition with proper line of treatment along with treatment outcome. Patients who are in acute pain should be attended and managed on first priorty basis. Chronic use of pain killers should be avoided and discouraged.[1]

Medications

Another concern is the prescription and administration of drugs. The most common understanding is that the drug can pass the blood placental barrier and can induce dysmorphic or teratogenic effects to the fetus. The U.S. Food and Drug Administration (FDA) has defined categories of pregnancy risk associated with various drugs (list A), and guidelines for safely prescribing drugs during pregnancy have been published.

List A: FDA Pregnancy Categories

Category A

Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).

Category B

Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women.

Category C

Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Category D

There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Category X

Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.6

Analgesics

Analgesic drug should use on short-term basis (2 to 3 days) for a specific disease process. Acetaminophen (PARACETAMOL), (category B), is the safest painkiller for use in pregnancy. Since there is a potential for liver dysfunction, patients are advised to use it within normal limits (not more than 4 g/day adult dose limit). The other commonly prescribed painkillers are category C drugs and although these category C drugs are considered safe, complete information on controlled human trials are lacking. That's why, treatment protocol incorporating these drugs should be for limited period of time along with the most effective therapeutic dose. Ibuprofen usage should be judiciously used because it falls in category B drugs in the first and second trimesters but it is a proven category D drug during the last trimester and has been linked with decreased levels of amniotic fluid, premature closure of the FDA fetal ductus arteriosus and cessation of labour . It should be prescribed only after consultation with and advice from the obstetrician. Obstetricians

generally advised a combination of drugs like (acetaminophen and codeine) to replace common NSAIDS nonsteroidal anti-inflammatory drugs. Chronic intake of narcotic painkillers in the last part of pregnancy can cause intra uterine respiratory depression.[2] although, these regimens are generally not advised in dental treatments and therefore are not of much concern. The underlying principle is to avoid codeine and thatswhy nusing mothers are also expected to avoid codeine on lond term basis. Codeine converts into morphine, and can pass from mother to infant through breast-feeding. Therefore nursing mothers on codeine should be acquainted with the signs of morphine overdose in their babies especially when the infant shows increased stretches of sleep (more than 4 hours at a time) and breathing problems. In that case consultaio with the physician should be sought at the earliest.[7]

Antibiotics and Antimicrobials

Antibiotics in common practice of dentistry falls into category B type except tetracycline and doxycycline which are category D owing to its effect on bone and teeth. The other common drug like flouroquinolone / Ciprofloxacin for gingival problems comes under category c type and is generally avoided because of its potential to induce arthropathic changes and deleterious implications on cartilage format.8 Metronidazole (a category B drug). Has a restriction advisory over its use in the first trimester due to its ability to cause fetus malformation; a claim which has been rejected in the recent studies and trials. Similarly erythromycin should not be prescribed as is having harmfull effects on the liver. Chlorhexidine gluconate is a category B antimicrobial mouth rinse and is safe. The overall benefit in comparison to risk for the patient should be evaluated and consultation with the obstetrician should be taken.[9]

Local Anesthetics

Local anesthetics are considered safe in correct doses and when proper adminstered techniques are followed. Anaesthetic agents have been categorized as per there use in dentistry and allied branches as follows:

Lidocaine and prilocaine - category B drugs, mepivacaine, articaine and bupivacaine - category C.

Epinephrine, a category C drug has been added in amounts of up to 0.1 mg to local anesthetics and is also used for epidural anesthesia to impart analgesia during labour). Its use is considered safe without any reported complications in the literarture.[10] Therefore in a healthy pregnant patient, the usual 1:100,000 epinephrine concentration in dental procedures, utilizing standard protocols technique is safe.[2]

Fluoride

Fluoride is a category C drug. Its treatment is generally prescribed in cases of severe gastric reflux due to nausea and vomiting during pregnancy and as a result causes erosion of enamel. Fluoride restorations are utilized to cover the exposed crown portion and to decrease the perception of abnormal sensitivity to the dentition. Topical fluoride varnish should be advised owing its lesser potention of causing nausea and vomiting as compared to Fluoride gels.[11]

Sedatives and Anxiolytics

Barbiturates and benzodiazepines are category D drugs and better be avoided in pregnancy due to its involvement in the development of cleft lip and palate. Nitrous oxide is not recognized in the FDA system, and its use during dental treatment is still controversial. The long term study of more than 50,000 dentists health providers inferred that chronic use of nitrous oxide can be linked with ailments like abortions, congential defects etc .Nitrous oxide usage is known defector in vitamin B12 metabolism causing inactivity in enzyme methionine synthase and thereby hindering the normal functioning of folate metabolism. And since this enzyme is vital for the DNA generation, nitrous oxide should better be avoided in the first trimester of pregnancy, during organogenesis is occurring.[12]

The prime importance for patients safety is its tendency to cause hypoxia during its use as painkiller or analgesia. Hi tech latest anesthetic improved quality machines with a fail-safe and flow-safe systems decreases the potential for hypoxia and for patient comfort a prior consultation with obstetrician and physician should be sought out if normal pregnancy is expected. In second trimester and afterwards short-term nitrous oxide in amounts of 50% oxygen concentration, is found safe.[2,12]

Conclusions

Oral health is one of the most important aspect of a healthy gestational period and should be given properly and effectively. Proper knowledge of the physiology of pregnancy, following standard protocol of radiation safety measures, proper medications in terms of drug safety ,proper timing of dental treatment and timely control and of oral infection effectively are some important considerations. periodontal disease are an important part of oral condition of the pregnant patients and needs to be checked properly and meticulously considering the fact many studies have reflected its role in treatment outcomes of may affect pregnancy outcomes, dentists needs to play an investigative as well as palliative role in the realization and maintenance of the oral health in pregnancy .

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