

Periodontal Disease in Mother and Consequences for both Mother and Baby

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Abstract

Periodontal disease is a type of bacterial infectious disease that causes bone destruction and supportive fibers of periodontal tissues. It seems the prevalence of this disease is more common in adults and would increase during pregnancy. Researchers believe hormonal changes are the main factors of developing this disease. Inflammation or infection of the gums increases the risk of low birth weight and preterm birth. If the problem is left untreated, mothers who would experience severe oral infections and gingival bleeding during the pregnancy would be at a greater risk for preterm birth.

Keywords: Periodontal disease; pregnancy; hormonal changes; Inflammation and infection; gingival bleeding; preterm birth; low birth weight

Introduction

Hormonal changes during pregnancy affect the oral tissues that may develop problems such as inflammation, bleeding, and swelling of the gingiva and periodontal tissues. Periodontal disease can induce a significant source of infection in the mother's body. Most women suffer from gingivitis during pregnancy that this type of gingivitis is usually called pregnancy gingivitis. This is caused by the changes in the mother's body hormones during pregnancy. Hormonal changes cause an inflammatory reaction that increases the risk of gum disease [1-3]. There are two sets of proteins in the immune system called cytokines that regulate the body's response to inflammation. These proteins are present in two types of pro-inflammatory cytokines and anti-inflammatory cytokines. In a normal pregnancy, the proteins that cause inflammation in the body (pre-inflammatory) are controlled by the proteins that cause inflammation (anti-inflammatory). This prevents the body from becoming inflamed because the inflammation in the pregnant woman's body can repel the fetus [4-7]. When a pregnant woman has inflammation and infection around the teeth, the balance between the proteins that cause the inflammation and the proteins that fight the inflammation is disturbed [6-8]. As a result, premature labor pain may occur in a pregnant woman [7].

Periodontitis: A Risk For Delivery of Premature Labor

When a baby is born at or before 37 weeks of gestation, it's called preterm birth [9-11] that causes the babies to suffer some complications and consequences throughout their lifetime.

Preterm birth has various factors. However, for our purposes in this article, there is strong evidence to support that periodontal disease is also a risk factor for preterm births. Since pregnant females are more at risk of developing gum diseases due to overactive hormones, mothers should be more cautious of their oral hygiene, hence, it requires immediate attention in a pregnant female. The treatment has to be more aggressive and involves scaling and root planning. It is believed the bacterial of the oral cavity can reach the endometrium [12]. The bacterial activity will release toxins are known as endotoxins there causing inflammation of that muscle. Therefore, it develops muscle contractions that lead to premature birth [13,14]. In 1996, Offenbacher and et al. were the first ones who indicated the relationship between maternal periodontal disease and preterm birth. Periodontal disease is a bacterial infection of the mouth that affects the majority of the population, and the prevalence has to be higher in pregnant women

[15]. The possibilities of reaching oral periodontal pathogens to the placenta and enforcing various changes in pregnancy have been reported. These changes may lead to the development of adverse pregnancy outcomes such as preterm birth that a few researchers have provided evidence for that [16]. Some studies recently have been focused on oral infection (especially periodontal infection) as a risk factor, or risk indicator for preterm birth [15,17]. The evidence reveals that maternal periodontal disease is correlated with the enhancement of the incidence of preterm births [18]. Periodontopathic bacteria have also been associated with PTB [19-25].

The Relation Between Periodontitis and Low-Birth-Weight Infants

Low birth weight, defined as a weight of fewer than 2,500 grams, is strongly associated with mortality [26]. If the baby weighs less than 1500 grams, his probability of death is 100 percent [27]. Recently, the researchers believed periodontal disease could be a risk factor for low-birth-weight babies (PLBW) since in the pathway of the disease the bacteria could migrate from periodontal tissues into blood circulation, and it could induce the production of inflammatory mediators which are responsible for the early onset of delivery. In other words, due to microbial toxins entering the uterine cavity during pregnancy, the inflammation in this area could promote the preterm birth and delivery of the baby with low birth weight [15,28-33]. Jeffcoat and colleagues indicated similar results and reported that the risk of early birth of a preterm infant increases 4-7 times if the severity of the periodontal disease increases [17]. Another study by Lopez et al showed a correlation between pregnancies with gingivitis and LBW [34]. On the contrary, Mitchell-Lewis et al and Lunardelli and Peres reported that periodontal disease had no significant effect on having preterm infants, or there is no relation between maternal periodontal disease and LBW [35,36]. Lastly, even though most studies show a relative association between preterm birth and low birth weight, the main aim should be the prevention of periodontal disease during pregnancy. Hence, a periodontal assessment as an oral hygiene protocol is essential to proceed before and during maternity for all mothers.

Conclusion

Studies show that periodontal disease during pregnancy may be associated with preterm delivery and low birth weight. During pregnancy, with increasing levels of estrogen and especially progesterone, the rate of vascular permeability increases, which causes gingival swelling and gingival exudation. As a result, it causes inflammation of the gingival tissue, which over time can lead to gum disease. Periodontal diseases are infections that can affect the production of significant amounts of pro-inflammatory cytokines that induce labor pains, rupture of fetal membranes, and preterm labor and low-birth-weight babies.

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