

Gum disease possibly linked to preterm delivery of low birth weight babies

Because periodontal disease is a silent infection, most people are unaware of the condition.

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CHAPEL HILL, N.C. — A possible link between periodontal infection and the premature delivery of low birth weight babies was recently revealed in a study conducted by a team of periodontologists, obstetrician-gynecologists and epidemiologists.

The study, conducted at the University of North Carolina at Chapel Hill, found that women with periodontal disease were seven times more likely to have preterm low birth weight babies (PLBW) than women not affected by the disease.

Steven Offenbacher, DDS, PhD, principal author of the study, and James Beck, DDS, PhD, professor of dental ecology at UNC and co-investigator of the study, cautioned that while the case-control study found a definite and statistically significant association between periodontal disease and low birth weight babies, this does not necessarily mean that the gum infections cause the preterm births.

"This is a new potential risk factor and just the first step in a long process. Additional research must be conducted to probe the precise nature of the relationship and whether or not it can be determined that periodontal infection actually causes preterm deliveries," said Offenbacher, professor of periodontics at the University of North Carolina School of Dentistry and director of the Dental School Clinical Research Unit.

While there has been a decrease in infant mortality over the last 40 years, there has been minimal decline in the incidence of low birth weight.

Unrecognized risk factor

Study estimates suggest 18.2% of all PLBW cases may be attributable to periodontal disease and that periodontitis represents a previously unrecognized and clinically important risk factor for preterm low birth weight, which occurs as a sequelae to premature rupture of membranes or preterm labor at less than 36 completed weeks of gestation.

The research was conducted between 1991 and 1992 and the total study sample included 124 mothers who were pregnant or had recently delivered. They were examined by senior periodontal residents who were blinded to prevent bias.

A full-mouth periodontal exam was performed on all 124 mothers either at the time of

volunteering at the UNC Memorial Hospitals prenatal clinic or at the UNC School of Dentistry Clinical Research Center within three days of their delivery.

The research team decided to use race, age and parity as control variables in their model because they appeared to affect the relationship between other risk factors and birth weight, and because they are well-established contributors to prematurity.

Offenbacher believes that this is the first research conducted to study the relationship of periodontal disease and preterm low birth weight babies. He said further research will need to be conducted to confirm these findings in a prospective study using more subjects.

Yet, "The significance of this phase of the research can't be ignored. Because there are no painful symptoms, the condition can become potentially severe without the patient realizing it," Offenbacher said.

"We think that pregnant women and their obstetricians need to be aware of these findings, and to be as concerned about periodontal infection as they would any infection that can be detrimental to the health of mother and baby," said James T. Mellonig, DDS, MS, president of the American Academy of Periodontology.

Larger study needed

A prospective study, slated to begin in the spring, will use a larger population at multiple sites and will include examinations of all patients during their pregnancies. This study is expected to provide a more accurate risk assessment. An intervention study is also planned.

"We hope to make a strong case for the association between periodontal disease and preterm low birth weight babies," Offenbacher said. "We are coming at the human side with a good foundation in animal research and expect to show a substantial relationship between the two."

Studies in animal models suggest that the presence of periodontal disease may not always be a risk factor. While the hormonal increase during pregnancy generally worsens the disease, it does not always cause a "flare up" that appears to increase the risk of low birth weight. Thus, it is possible that periodontal disease progression which occurs during pregnancy may be necessary for preterm complications.

LBW infants account for 5 million neonatal intensive care unit days per year at an annual cost of more than \$5 billion, the study concluded.

Low Birth Weight (LBW) Facts

- 10% of U.S. newborns are LBW
- 25% of preterm LBW cases occur without any known risk factors
- The number of LBW cases increased 6% between 1985 and 1993
- More than \$5 billion is spent on health care for LBW babies each year
- Efforts to prevent LBW or preterm births are generally unsuccessful

- African American infants are twice as likely as infants of nearly all other U.S. ethnic/racial groups to be LBW preemies.

Low Birth Weight (LBW) Effects

- Respiratory distress syndrome
- Anemia
- Jaundice
- Mental retardation
- Cerebral palsy
- Impaired sight, hearing and lung function
- Intracranial hemorrhage
- Malnutrition
- Congestive heart failure

Source: The American Academy of Periodontology

For more information:

- Offenbacher S, Beck J. **Periodontal infection as a possible risk factor for preterm low birth weight.** J Periodontology 1996;67:1103-1113.

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