

ARTICLE

COMPARING THE CLINICAL PERIODONTAL STATUS IN WOMEN WITH PRETERM AND FULL-TERM DELIVERY- A CASE CONTROL STUDY

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ABSTRACT

Introduction: Several studies considered periodontal disease risk as a factor for preterm delivery. The aim of this study was to investigate a possible link between periodontal diseases as a risk factor for opposite results of pregnancy. **Method:** This case-control study was conducted over three months in the Shiraz Zeynabieh hospital. 88 participants were equally divided into two experimental (n=44) and control (n=44) groups and periodontal examination was performed 1-3 days after delivery. The measured periodontal clinical index was consisted of bleeding index, mass index, plaque index and gingival index and the depth of the platelets were measured in all subjects. Data analysis was conducted by SPSS 11 statistical software and chi-square test. **Findings:** No significant correlation was found between periodontal disease and preterm delivery. Bleeding index in the experimental group was significantly lower than the control group (p=0.01). The plaque index was significantly higher in the experimental group than the control group (p=0.009). The average of other indicators of periodontal and pocket depth in both groups was the same. **Conclusion:** The results of this study indicated no association between periodontal health during pregnancy and improving the results delivery.

INTRODUCTION

The relationship between pregnancy and periodontal inflammation has been known for years. Despite the knowledge about pregnancy and its effects on periodontal tissues and diseases, only recent evidence has shown that periodontal disease inversely associated with public health. Current research suggests that periodontal disease may alter the patient's general health and the inversely affect the health of the fetus and increase the risk of premature birth and low birth weight infants [1]. Preterm delivery or birth before 37 weeks of gestation that its consequences are premature birth or low birth weight infants, is the main discussion subject of developed and developing countries public health [2]. The incidence of preterm delivery in America is ten percent and it is 6.7 percent of all live births in England. The average rate of premature birth rate is 15 per cent in Asia and it is 12 percent in Africa. In total, about 16 percent of newborns in the world are preterm infants [2-4]. Compared with normal-weight newborns, premature infants in preterm deliveries are 40 times more prone to the risk of death in the first 4 weeks after birth and about 2/3 of death in infants in industrialized countries are due to low birth weight and preterm delivery. 5 billion dollars annually is estimated for these infants' health care in America. In addition to the economic, psychological and emotional consequences affecting families with premature infants in preterm deliveries, it can have long-lasting results social health [5]. Approximately 25-50 percent of preterm deliveries with preterm infants take place without expected risk factors [6]. Certain risk factors are including maternal age (less than 17 years and more than 40 years), African-American race, the lower social status, the lack of adequate prenatal care, use of certain drugs, alcohol, tobacco, high blood pressure, localized infections of the urinary tract, diabetes, multiple pregnancies [2-3]. Among the mentioned factors, the most important factor affecting preterm deliveries is infection. In 30-50 percent of premature delivery cases, infection is detected [2]. The researchers, also consider periodontal disease as a source of infection, on the other hand, some studies have shown that mothers of premature and low birth weight babies significantly have the loss of clinical attachment than mothers with normal weight [1]. According to the findings seems that if mothers, obstetricians and gynecologists and dentists have sufficient knowledge and adequate information about the relationship between periodontal disease and preterm delivery, they can take effective steps to reduce the rate of Preterm delivery stop. Following this reduction, of course will improve physical health of mothers, infants and families and ultimately spiritual psychological health. The aim of this study by using periodontal index was to understand the relationship between maternal periodontal diseases with an incidence of preterm deliveries. The emphasis on proper oral and dental hygiene during pregnancy and considerations for the prevention of gum disease during this period is inevitable. If it is determined that the presence of periodontal disease during pregnancy can act as a risk factor for preterm delivery, the need to control oral health (preventive actions) in women of childbearing age and during pregnancy is more specific and stronger.

KEY WORDS

Periodontal, preterm delivery, full term delivery

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MATERIALS AND METHODS

This case-control study was conducted on 44 participants in experimental group and 44 participants in the control group in the Shiraz Zeynabieh hospital. Before starting, their verbal consent to participate in the study was drawn. The women participating in this study aged between 17-35 years. The control group consisted of women who had taken their delivery after 37 weeks of pregnancy and the experimental group consisted of women who had labor before 37 weeks of gestation or spontaneous and premature rupture of membranes. Gestational age was determined by last menstrual date. At the end, health directives and guidelines for the treatment of periodontal problems were given to studied pregnant women. The study population had no risk factors for preterm delivery, including: 1. consumption of alcohol, 2. tobacco consumption, 3. previous preterm delivery record, 4. record of 2 or more abortions, 5. lack of pregnancy care exposure, 6. younger than 17 or older than 35 years, 7. urinary tract infection is not treated or treated two months before the delivery, 8. history of sexually transmitted diseases, 9. systemic diseases such as diabetes or autoimmune disease, 10. corticosteroid use, 11. aklmpsy and preeclampsia. Given the importance of urinary tract infection as a known risk factor for preterm delivery, urine cultures were immediately performed for all subjects after delivery and in case of positive culture, they were excluded. Periodontal examinations were done lying or sitting on a hospital bed and took. Periodontal examinations were done by a dentist in a standing position and by using the single head lights. The following periodontal examinations were conducted on the subjects.

1. Measure bleeding index

In this index in addition to time factor (30-20 seconds after entering the probe Williams) the extent of bleeding is considered. Based on the above considerations it can be expressed as 5 degrees.

Grading	Description
0	The absence of bleeding
1	blood spots only and about 20 to 30 seconds after the probe off
2	Existence of several blood spots or a thin line of blood
3	Fast filling of the interdental triangle with blood after probe
4	Immediate bleeding in a large amount

2. Measure plaque index

By using this index and the plaque revealer pills (Erythrosin) facial and lingual surfaces plaque on the teeth were examined and graded as follows.

Grading	Description
0	The absence of plaque
1	There are scattered plaque around the cervical margin of dental
2	There is a thin and persistent layer
3	There is a strip of more than 1 mm thick plaque that covers less than 1/3 of crown
4	There are plaques with more than 1/3 and less than 2/3 dental crowns coverage
5	Plaque presence so that 2/3 or all of the crown is covered.

3. Measurement gingival index:

Gingival status in terms of Inflammation based the above mentioned index was investigated in the four areas distobuccal, buccal, mesiobuccal and lingual and was graded as follows:

Grading	Description
0	Normal gingival
1	Mild inflammation
2	Moderate inflammation
3	Severe inflammation with redness

4. **Measurement of the depth of the plate:** was performed by the Williams probe from gingival margin to end of the pocket in six points for each tooth.

5. **Mass Index measurement:** the amount of dental calculus based on the grading below was investigated in buccal and lingual surfaces.

Grading	Description
0	Absence of calculus

1	Calculus less than 1mm
2	The average amount of calculus
3	Too much calculus

It should be noted that the bleeding index measurement was performed for all teeth, but other indicators and measurement of depth of plaque were performed on six teeth of RAMFJORD. Nowadays RAMFJORD TEETH as a limited number of teeth that reliably represents the state of the teeth, applied in various studies. In this study also the number of extracted teeth was revealed. In this study demographic characteristics included: age, education, occupation, number of previous pregnancies, number of children and birth weight at delivery.

RESULTS

This study was performed over three months in the Shiraz Zeynabieh hospital. 2 study groups were consisted of 44 patients in experimental and 44 patients in control groups. The experimental group consisted of women who give birth earlier than 37 weeks and the control group was consisted of full-term pregnancies after 37 weeks of gestation. The age range was 17-35 years. The average age of mothers in the control group was 25 years and 24 years for the experimental group, there is no significant difference between the two groups ($p=0.786$). Also the percentage of different age groups showed that the highest percentage was the age group of 24-20 years. Based on Chi square no relationship has been seen between age groups and preterm delivery ($p=0.502$). According to chi-square analysis the likelihood of women preterm delivery at first delivery was more ($p=0.008$). Chi-square test results showed a statistically significant difference between the two groups in terms of the number of extracted teeth ($p=0.949$). In [Table 1] average of various periodontal indices and the average depth of the plaque are shown.

Table 1: Comparison of indicators of periodontal pocket depth in the two study groups

Characteristics of periodontal index	TB	PB	P-VALUE
Bleeding index	0.84+ 0.56	0.56+ 0.43	0.010
Gingival index	1.07+ 0.57	1.02+ 0.30	0.593
Calculus index	0.57+ 0.40	0.59+ 0.34	0.724
Plaque index	2.18+ 0.73	2.63+ 0.84	0.009
The depth of pocket	2.10+ 0.36	2.19+ 0.45	0.304

In this study inverse relationship between bleeding index and preterm delivery was found ($p = 0.010$). On the other hand the plaque index was significantly higher in the experimental group compared to the control group ($p = 0.009$). Also no significant differences were observed in probing depth, gingival index and mass index in the two groups. Also mean bleeding index in the two groups showed [Table 2] that the mean of the experimental group bleeding was more the control group ($p<0.05$).

Table 2: Average bleeding index in the two study groups based on the number of hemorrhagics

Characteristic	TB	PB	P-VALUE
Average	0.36+ 0.18	0.27+ 0.18	0.033

DISCUSSION

This study is as; case-control does not show any association between periodontal disease and an increased risk of preterm delivery. Also a reduction was seen in bleeding in the TB Group compared to PB ($p = 0.01$). Devenport et al. (2002) in their study on 236 patients and 507 control subjects found that the probability PLBW was reduced by increasing the depth of the plate (7). Also Moore in 2004 in a prospective study conducted on 3738 women did not find any link between periodontal disease and preterm birth or low birth weight (8). But other studies, including studies of Offenbacher (9), Lopez (4), Hasegawa (10), Mokeem (3) and Louro (11) demonstrate a positive relationship between periodontal

disease and preterm delivery alone or with birth low birth weight (LBW). It seems that the main reason for the different results this study from the most of the studies is the difference in how to do research. Following items defines the difference with different studies. 1. The number of subjects 2. range and average of the patients' age, 3. genetic and racial characteristics of the subjects, 4. the impact of environmental factors and socioeconomic status, 5. type of study (prospective or case control), 6. time of analyzing the periodontal status.

The average age at study in PB and TB are respectively 24.9 and 25.2 years that compared with an average age of mothers in Mokeem's (3) study are respectively 35/39 and 34/63. This indicates that the studied population is younger. Considering that with aging the risk of periodontal disease is also increased in people and chronic periodontal disease onset is usually 30-35 years is for adults, it is possible that the younger population in this study due to lower age generally show a lower percentage of periodontal disease. Due to the fact that pregnancy itself does not cause gingivitis and pocket depth rise, but hormonal changes resulting aggravate tissue reactions to the plate As a result, the underlying periodontal disease (pre-pregnancy) is necessary to tighten or symptoms of periodontal disease during pregnancy. The aim of this study was to investigate various aspects of periodontal health status of the subjects. For convenience and comfort of examined participant, the determining CLINICAL ATTACHMENT LEVELE unlike most studies has not been performed. Due to the shallow depth of pocket in majority of the participants, it becomes clear that the ATTACHMENT LOSS level in the examined participant has been slight.

Mokeem to facilitate the study did not use CAL and instead by CPITN examined the periodontal status. Randai et al. (9) also believe that CAL periodontal disease and loss of connections made in the past is not indicative of active disease. He states that the investigation of the envelope for providing the space required for bacteria is more important. The study group consisted of women with preterm labor before 37 weeks and must be separated from birth weight less than 2500 grams. In this study the selection of experimental and control groups is based on gestational age at childbirth. Whereas in most studies the experimental group included women who delivered before 37 weeks of gestation or had LBW infants and comparing the results with the results of these studies can lead to error (3-5, 11 -12). The average weight of babies in the control group in this study is similar to Mokeem's study, but the weight of infants in experimental group in this study is slightly greater than the study mentioned (3). In this study both groups showed symptoms of mild gingival inflammation (gingivitis) and 40.9% of the control group and 43.2% of the experimental group showed signs of moderate gingivitis. If moderate plaque index status of plaque is present in both groups, the participants in this study had relatively good health despite relatively low socio-economic status.

CONCLUSION

In this study no association between maternal periodontal disease and PB was received. It seems that to achieve more conclusive results, wider epidemiological studies and more samples are needed in different races.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

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