

PERIODONTAL DISEASE AND PROINFLAMMATORY CYTOKINES LEVELS RELATED WITH PRETERM BIRTH

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Aim:

To compare levels of proinflammatory cytokines (IL-1 β and TNF- α) in serum and saliva of pregnant women (26-33.6 weeks of gestation) with and without periodontitis and controls by ELISA.

Introduction:

Preterm birth and low weight product are health problems worldwide associated with high mortality and morbidity in newborns. About 15 million of premature babies are born every year (1:10) and 1 million die due to its complications. Many survivors face a lifetime of learning, visual and hearing disabilities¹. Preterm birth is a multifactorial condition where inflammatory response plays a fundamental role and cytokines such as IL-1 β and TNF- α have been associated. These cytokines are involved in Periodontitis, and there are multiple reports about association between preterm birth and periodontitis, but there is few information about immune mechanisms^{3,5}.



Material and methods:

This cross sectional study included 60 healthy women, divided into 3 groups: control group (n=20), pregnant group (n=20) and pregnant with periodontitis group (n=20). All of them with a mean age of about 28 years old. Previous informed consent, a medical and periodontal examination was performed by a calibrated observer. Women with presence of systemic or infectious diseases were excluded from the study. Serum and saliva samples were obtained and the concentration of cytokines was measured by ELISA (Human IL-1 β and TNF- α Standard ABTS ELISA Development Kit (PeproTech, USA) .

Results:

Results showed a mean age of about 28 years old in the three groups (p>0.05) and the period of gestation was around 30 weeks. The highest probing depth (3.3 mm) and clinical attachment loss (1.2 mm) obtained, were detected in pregnant women with periodontitis (p<0.05) as well as highest serum and salivary concentration of proinflammatory cytokines. In this group, levels of cytokines in serum were similar to saliva.

Table 1. Serum and saliva concentrations of IL-1 β and TNF- α in the study groups (pg/ μ l).

	Control n=20	Pregnant n=20	Pregnant with periodontitis n=20	p
	Mean \pm SD(Range)			
IL-1 β				
saliva	1.4 \pm 2.4 (0-6.1)	2.0 \pm 2.0 (0-5.5)	5.4 \pm 3.4 (0-8.8)	0.0116*
serum	2.2 \pm 1.2 (0-5.6)	6.4 \pm 2.3 (3.5-12.5)	9.4 \pm 5.2 (4.5-12.4)	0.0001*
p	0.2107	0.0001	0.4206	
TNF- α				
saliva	0.4 \pm 0.9 (0-2.4)	0.5 \pm 0.8 (00-2.6)	1.6 \pm 0.5 (1.1-2.3)	0.0185**
serum	1.6 \pm 0.9 (0-3.4)	3.1 \pm 1.1 (2.1-6.7)	5.9 \pm 4.7 (2.1-12.5)	0.0029**
p	0.0069	0.0001	0.0807	

SD= Standard deviation *Kruskal-Wallis test **ANOVA

Conclusions:

IL-1 β and TNF- α were found in a higher concentration both in serum and saliva of pregnant women with periodontitis compared with pregnant women without periodontitis and controls. This fact shows that periodontitis could represent a risk factor to trigger preterm birth. Saliva reflects cytokines level in pregnant women therefore could be a noninvasive method to monitor serum levels. Prevention of periodontitis is a very important strategy to avoid adverse events of pregnancy such as Preterm birth .

References:

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