

Streptococcus Mutans in the Oral Cavity as a Risk Factor for Threatened Miscarriage

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1. Letter to Editor

Dear Editor,

we have found that the presence of Streptococcus mutans in the oral cavity of a pregnant woman may be a risk factor for miscarriage. We observed that Streptococcus mutans is significantly more widespread in the oral cavity of women with threatened abortion than in those undergoing a healthy pregnancy.

We analyse the oral and vaginal bacterial flora of pregnant women in the Polish population during the first trimester of pregnancy. A total of 162 Caucasian women in their first trimester of pregnancy were qualified for the study. The study group was formed of 99 women in their first trimester of pregnancy, i.e. before the 15th week of pregnancy, with a potential miscarriage (bleeding, pains); they were referred from the Department of Fetal Medicine and Gynecology, Medical University of Lodz. In addition, a comparison group was formed of 63 pregnant women under the care of an Outpatient Clinic, who were experiencing a normal first-trimester pregnancy. For the examination, vaginal and oral swabs were collected. Using PCR analysis, the presence of the following bacteria was assessed: Streptococcus mutans, Enterococcus faecalis, Escherichia coli, Lactobacillus acidophilus, Prevotella intermedia, Gardnerella vaginalis, Streptococcus agalactiae. Table 1 shows the distribution of patients and test results.

Cases with threatened miscarriage and the control group presented a similar mean duration of pregnancy at the time of inclusion in the study: 9,4 weeks ($p = 0,86$). The examined groups were also comparable in terms of age and education. Pregnant women with

symptoms of threatened miscarriage tended to have a higher BMI (24,9 vs. 23,8 kg/m² $p = 0,03$). The patients with symptoms of threatened miscarriage were more likely to have experienced previous miscarriages and a greater number of pregnancies and were more likely to have used progesterone derivatives to a greater degree. However, the analysed population was comparable in terms of the number of multiple births, manner of completion of previous pregnancies, consumption of legal stimulants such as coffee and tobacco, and identified sources of infection. We found that the presence of Lactobacillus acidophilus in the vagina was observed significantly more frequently in the group of healthy pregnancies ($p = 0,041$). This has already been observed in previous studies. Jiao et al. demonstrated that Lactobacillus and Gardnerella were significantly decreased in recurrent miscarriage patients compared to healthy control [1]. In our study significantly higher incidence of Streptococcus mutans was found in the oral cavity in the group of patients with a risk of miscarriage ($p = 0,046$). The presence of Streptococcus mutans in oral cavity has not been described as a risk factor for miscarriage so far. The oral health condition of a pregnant woman can have a significant impact on the entire course of her pregnancy. Only a few researchers have compared the ecosystems of the oral cavity and vagina among pregnant women. An assessment of various caries risk factors in pregnant and non-pregnant women indicated that pregnant women are more prone to dental caries [2]. Streptococcus mutans, Lactobacillus acidophilus, and Prevotella intermedia are primarily responsible for the development of dental caries [3]. It has also been found that pregnant women with complications during pregnancy were more

likely to suffer from severe gingivitis and require more frequent dental treatment than those with a physiological pregnancy [4, 5].

To conclude, the occurrence of *Streptococcus mutans* in the oral

cavity may be a risk factor for threatened miscarriage, it is advisable to further study the association of this bacterial strain with the aetiology of miscarriages.

Table 1: Distribution of patients and test results.

ORAL CAVITY	Examined group n=99	Comparison group	p-value n=63
<i>Lactobacillus acidophilus</i>	39 (0,398)	25 (0,391)	0,926
<i>Gardnerella vaginalis</i>	11 (0,112)	5 (0,078)	0,480
<i>Escherichia coli</i>	3 (0,031)	0 (0,000)	0,160
<i>Enterococcus faecalis</i>	0 (0,000)	1 (0,016)	0,214
<i>Streptococcus mutans</i>	53 (0,535)	24 (0,375)	0,046
<i>Streptococcus agalactiae</i>	10 (0,101)	7 (0,111)	0,839
<i>Prevotella intermedia</i>	6 (0,061)	4 (0,063)	0,974
VAGINA	Examined group n=99	Comparison group	p-value n=63
<i>Lactobacillus acidophilus</i>	61 (0,629)	50 (0,781)	0,041
<i>Gardnerella vaginalis</i>	26 (0,265)	19 (0,297)	0,663
<i>Escherichia coli</i>	4 (0,412)	3 (0,469)	0,865
<i>Enterococcus faecalis</i>	13 (0,131)	13 (0,203)	0,224
<i>Streptococcus mutans</i>	0 (0,000)	1 (0,016)	0,215
<i>Streptococcus agalactiae</i>	8 (0,081)	7 (0,109)	0,541
<i>Prevotella intermedia</i>	0 (0,000)	0 (0,000)	

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