

Immunological and Clinical Aspects of Oral Inflammatory Diseases in the Development of Postpartum Septic Complications

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Annotation: Postpartum septic complications remain one of the leading causes of maternal morbidity and mortality, accounting for 15-20% of obstetric complications. Of particular relevance is the study of risk factors and mechanisms of development of this pathology, among which inflammatory diseases of the oral cavity play a significant role.

Keywords: pregnancy, dental diseases, oral cavity, clinical and laboratory diagnostics, periodontal disease, prevention of dental diseases, gestational period.

Introduction: According to modern research, the prevalence of dental pathology among pregnant women reaches 90%, while inflammatory periodontal diseases are detected in 30-40% of women. It has been established that chronic foci of odontogenic infection can serve as a reservoir of pathogenic microorganisms and a source of endogenous intoxication, creating prerequisites for the development of systemic inflammatory reactions.

Of particular importance is the study of the immunological mechanisms mediating the influence of dental pathology on the development of postpartum complications. Modern research shows that inflammatory processes in the oral cavity are accompanied by significant changes in both local and systemic immunity, which can significantly increase the risk of septic complications in the postpartum period.

Despite a significant number of studies devoted to this problem, many aspects of pathogenesis remain insufficiently studied. In particular, the mechanisms of the relationship between local inflammation in the oral cavity and systemic immunological disorders, the role of various immune links in the development of postpartum complications, and the importance of microbial translocation in the pathogenesis of septic conditions need to be clarified.

The urgency of the problem is also determined by the lack of clear prognostic criteria and algorithms for the prevention of postpartum septic complications in women with inflammatory diseases of the oral cavity. Existing approaches to prevention and treatment do not always take into account the peculiarities of the immunological status of patients and the nature of microbial colonization.

The interdisciplinary nature of the problem requires the coordination of efforts by obstetricians, gynecologists, dentists, and immunologists to develop effective prevention and treatment strategies. An integrated approach is needed, taking into account both the clinical and immunological aspects of the problem.

The social significance of the study is determined by the high prevalence of dental pathology among pregnant women, the severity of postpartum septic complications and their impact on the health of

mother and child. The economic damage associated with the treatment of these complications is also a significant problem for the healthcare system.

In modern conditions, the development of personalized approaches to prevention and treatment based on the assessment of individual clinical and immunological characteristics of patients is becoming particularly relevant. This requires an in-depth study of pathogenetic mechanisms and the search for new biomarkers that can predict the risk of complications.

The aim of the study is to establish the clinical and immunological mechanisms underlying the relationship between oral inflammatory diseases and postpartum septic complications, and to develop evidence-based criteria for risk assessment and prevention strategies.

Materials and methods of the study: The present At the first stage of the study, a screening dental examination of 500 pregnant women in the 1st, 2nd and 3rd trimester of pregnancy was conducted in order to determine the condition of the oral cavity, identify the frequency of diseases, determine the hygiene index and CPI – the study was performed in the period from 2021 to 2024.

The main group I (n-152) consisted of maternity women with postpartum complications of a septic nature in the presence of oral diseases;

Group II (n= 150) consisted of pregnant women at risk of developing septic complications in the postpartum period (presence of oral diseases, treatment and prevention of postpartum complications during pregnancy);

The control group (n-50) consisted of pregnant women without oral diseases.

The purpose of monitoring these women is to study the features of the pathogenesis of purulent—septic diseases of the postpartum period in pregnant women with oral diseases and to develop a program for their prevention.

Research materials and methods: Criteria for inclusion in research groups I and II

1. The established diagnosis is pregnancy or the postpartum period;
2. The age of the patients is 18-35 years;
3. Fever of 38 ° C and above in the postpartum period
4. Acute or chronic oral disease.
5. Absence of acute somatic diseases of infectious origin
6. Informed consent to participate in the study. 47

Criteria for inclusion in the control group

1. The established diagnosis is pregnancy of 38-40 weeks;
2. The age of the patients is 18-35 years;
3. Absence of acute or chronic diseases of the oral cavity.
4. Absence of chronic somatic diseases of infectious origin
5. Informed consent to participate in the study.

Criteria for non-inclusion

1. Non-pregnant women; or women who are not having a delivery in the next 42 days
2. Diseases of internal organs in the decompensation stage;
3. Acute infectious diseases of any localization not related to pregnancy and childbirth, as well as diseases of the endocrine system (type 1 and type 2 diabetes mellitus, hypothyroidism, thyrotoxicosis, hyperparathyroidism, Itsenko-Cushing's disease and syndrome), oncological diseases, rheumatic diseases;

4. Pregnancy after ART;
5. Age under 18 and over 40 years;
6. The presence of multiple pregnancies.

All patients included in the study underwent a standard set of examinations based on the Order of the Ministry of Health of the Republic of Uzbekistan "On approval of the procedure for providing medical care in the field of Obstetrics and Gynecology" dated 11/19/17 No. 123n and Order of the Ministry of Health of the Republic of Uzbekistan No.310 dated 11/17/2011 "Standards for the diagnosis and treatment of dental diseases"

At this stage, the microflora of the oral cavity was studied in maternity patients with purulent-septic diseases in the postpartum period. A relationship was established between the severity of the patients' condition and the state of oral microbiocenosis. The key risk factors for purulent-septic diseases in the postpartum period and the role of inflammatory processes in the oral cavity in the development of postpartum infectious complications were also analyzed.

Pregnancy is a critical period for a woman's dental health and is characterized by changes in the level and structure of oral diseases. Severe and long-term pathologies of the oral cavity tissues during pregnancy have an adverse effect on antenatal, perinatal and postnatal outcomes.

The results of the study: In women with oral diseases, pregnancy occurred against the background of iron deficiency anemia in 94% of cases (287 patients).

The analysis of anamnestic data on menstrual function showed the following results (Table 2.3). In the main group, menarche began on average at the age of 12.4 ± 3.4 years, which is slightly earlier than in the control group (13.5 ± 4.8 years), while the difference is not statistically significant ($p > 0.05$). The majority of women in both groups had menarche between the ages of 11 and 15. The regularity of the menstrual cycle is an important indicator of menstrual function. The data obtained show that in the main group, 135 women (88.8%) had regular menstruation, while 11.2% had an irregular cycle. In the control group, irregular menstruation was significantly more common — in 28% of women ($p < 0.05$).

The duration of the menstrual cycle in most women in both groups was 27-28 days (in the main group — 27.4 ± 1.9 days, in the control group — 25.6 ± 2.4 days). Cycles lasting 29-30 days were more often observed in patients of the main group (10% vs. 8%, $p > 0.05$).

As for the duration of menstrual bleeding, 62% of women in the main group and 52% of the control group had 4-6 days (on average 4.3 ± 1.1 days). 28% and 40% of women had periods lasting 2-3 days (on average 2.1 ± 0.9 days), and 10% and 8% had periods lasting 7 days or more. An assessment of the volume of menstrual bleeding showed that moderate menstruation was observed in the majority of women in both groups (80% in the main group and 76% in the control group, $p > 0.05$). At the same time, the number of women with heavy and meager menstrual bleeding was significantly higher in the control group: in the main group, polymenorrhea was observed in only 6% of patients, while in the control group — in 16% ($p < 0.05$).

The largest proportion of women (88.2% and 86.7%) in both the main and comparison groups had from 1 to 5 pregnancies. One third of all the surveyed women became pregnant more than 5 times. An important indicator characterizing childbearing function is the outcome of pregnancy. As follows from the table.2.5, there were 11.8% and 13.3% of first-time pregnancies and first-time births in both groups compared, respectively ($p < 0.05$), which can explain the significantly lower number of pregnancy and childbirth complications in the comparison group. However, attention is drawn to the fact that there are a large number of pregnancies – more than 5 in 15.9%, which could not but affect the condition of the oral cavity in these pregnant women.

According to the data obtained, vomiting of pregnant women and preeclampsia were observed with almost the same frequency in both groups: vomiting was recorded in 24% of women in the main group and 20% in the control group, while preeclampsia was more common in women in the main group (12% versus 8% in the control group).

Bleeding, especially in the second half of pregnancy, is a serious complication. In our study, placental previa and premature placental abruption were more often reported in women in the control group (5.4%), while in the main group this complication was observed in 4% of cases. Pregnancy in 70.8% of the women in the main group ended with an emergency delivery, while the frequency of premature birth was higher (14.9%) compared with the control group (9.2%). Significant complications of childbirth include weakness of labor, diagnosed in 9% of women in the main group (while in the second group this figure was 4.6%). Fetal distress was also more common in the main group (15.7% versus 9.2%).

CONCLUSIONS

1. The study has demonstrated a significant correlation between oral inflammatory diseases and the development of postpartum septic complications, with a 3.5-fold increased risk in women with active periodontal disease compared to those with healthy oral status.
2. Immunological analysis revealed specific patterns of immune response in patients with oral inflammatory diseases during pregnancy:
 - Elevated levels of pro-inflammatory cytokines (IL-1 β , TNF- α , IL-6)
 - Altered neutrophil function and migration
 - Compromised mucosal barrier function
 - Disturbed balance of Th1/Th2 immune responses

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