SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF APPLIED MEDICAL SCIENCES
ISSN(Online): 2984-6730
SJIF Impact Factor |(2024): 6.515|
Volume-7, Issue-12, Published |20-12-2024|

CLINICAL COURSE, PATHOGENETIC TREATMENT, AND PREVENTION OF TOOTH DEMINERALIZATION AGAINST THE BACKGROUND OF TOXICOSIS IN THE FIRST TRIMESTER OF PREGNANCY (LITERATURE REVIEW)

https://doi.org/10.5281/zenodo.14586206

Nilufar Akhrorovna Saidova
Doctoral Candidate at the Department of Hospital Therapeutic Dentistry of the Tashkent State Dental Institute
sai-nilufar@mail.ru
Kamilov Khaydar Pazilovich
Head of the Department of Hospital Therapeutic Dentistry at Tashkent State Dental Institute, Doctor of Medical Sciences, Professor

Relevance. Pregnancy is an important physiological condition accompanied by significant changes in a woman's body, including changes in the oral cavity, which can significantly negatively impact dental health. Toxicosis in the first trimester of pregnancy, accompanied by frequent episodes of vomiting, significantly increases the acid load on tooth enamel, which in turn increases the risk of its demineralization. The increased acidity in the oral cavity creates conditions conducive to the development of caries and inflammatory periodontal diseases, necessitating special attention and the development of effective prevention and treatment strategies.[1]

Existing studies demonstrate a significant increase in the frequency and intensity of caries in pregnant women, especially those suffering from toxicosis. It has been established that the DMF index (Decayed, Missing, Filled teeth) significantly increases during pregnancy, indicating a progressive deterioration in dental health.[2] These data underscore the need to implement effective preventive and therapeutic measures aimed at reducing the risk of tooth demineralization in pregnant women.

Clinical observations confirm that cervical caries and chalky spots are common dental problems in pregnant women, especially under conditions of toxicosis. The intensity of these lesions increases significantly during the first trimester of pregnancy, requiring the use of specialized prevention and treatment methods, such as remineralizing therapy and the use of fluoride-containing preparations. Changes in the mineral composition of saliva and its acid-base balance play a key

[1] Albrecht, M., Banoczy, J. The Impact of Pregnancy on Oral Health. Journal of Dental Research, 1995.
[2] Sklyar, V.E., Chumakova, Y.G. Gingivitis in Pregnant Women. Russian Dental Journal, 1997.

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF APPLIED MEDICAL SCIENCES
ISSN(Online): 2984-6730
SJIF Impact Factor |(2024): 6.515|
Volume-7, Issue-12, Published |20-12-2024|

role in the pathogenesis of tooth enamel demineralization in pregnant women. A shift in pH to the acidic side creates favorable conditions for enamel demineralization, increasing the risk of caries development. [3]Therefore, normalizing the acid-base state of saliva becomes an important element in preventing tooth demineralization and requires regular monitoring and correction.

Thus, there is a need to develop and implement individualized programs for the prevention and treatment of tooth demineralization in pregnant women suffering from toxicosis in the first trimester. These programs should include regular dental check-ups, professional oral hygiene, education on proper tooth brushing techniques, as well as the use of fluoride-containing preparations and remineralizing therapy. A comprehensive approach, taking into account the pathogenetic mechanisms of demineralization, will significantly reduce the risk of developing dental diseases and improve the quality of life of pregnant women.

The aim of this review article is to conduct a comprehensive analysis of the clinical course of tooth demineralization in pregnant women with toxicosis in the first trimester. The study will examine the pathogenetic mechanisms underlying tooth enamel demineralization, as well as analyze changes in the mineral composition of saliva and its acid-base balance that contribute to the development of this pathology.[4] Based on the analysis of the literature data, pathogenetically substantiated methods for the treatment and prevention of tooth demineralization in pregnant women with toxicosis will be proposed, which will improve the dental health and quality of life of this patient group.

Materials and Methods. In writing this review, a comprehensive analysis of the available scientific literature on this topic was conducted. The search for scientific articles and other publications was carried out in major medical and dental databases, such as PubMed, Scopus, Web of Science, and Google Scholar. Key words and phrases used included: "tooth demineralization," "toxicosis," "first trimester of pregnancy," "pathogenetic treatment," "prevention," "caries in pregnant women." Articles published in the last 25 years were included in the review to cover modern approaches and achievements in this field.

The inclusion criteria for the review were original research, meta-analyses, systematic reviews, clinical guidelines and recommendations, as well as articles containing statistical data on the clinical course, pathogenesis, treatment, and prevention of tooth demineralization in pregnant women with toxicosis in the first trimester. Publications not relevant to the research topic, non-peer-reviewed

[3] Romanova, Y.G. Changes in the Oral Cavity of Pregnant Women. Dentistry, 1996.

[4] Kuzmina, E.M., Doroshina, V.Yu. CPITN Index in Pregnant Women. Journal of Periodontology, 1998.

JOURNAL OF APPLIED MEDICAL SCIENCES
ISSN(Online): 2984-6730
SJIF Impact Factor |(2024): 6.515|
Volume-7, Issue-12, Published |20-12-2024|

articles, and materials lacking sufficient information for analysis were excluded.

The collected data were classified and systematized according to the following areas: clinical course of tooth demineralization in pregnant women with toxicosis in the first trimester, pathogenetic mechanisms of tooth enamel demineralization associated with changes in the mineral composition of saliva and its acid-base balance, as well as modern methods of treatment and prevention of tooth demineralization, including the use of fluoride-containing preparations, remineralizing therapy, and improved oral hygiene.

Each study was critically evaluated to identify the strengths and weaknesses of the methodology, results, and conclusions. Special attention was paid to studies with high levels of evidence and methodological rigor. Data on the clinical efficacy of various treatment and prevention methods, as well as their safety for pregnant women, were also considered.

Based on the analysis, data integration was performed, which allowed for the formation of a generalized understanding of the clinical course of tooth demineralization, its pathogenesis, as well as the most effective and safe methods of treatment and prevention for pregnant women with toxicosis in the first trimester. The results were presented in the form of summarized tables and diagrams, which facilitated the visual representation of the information.

The use of these methods and approaches allowed for a deep and comprehensive analysis of the problem of tooth demineralization in pregnant women with toxicosis, which is an important step in the development of effective strategies for its prevention and treatment.

Review of Literature Sources. Pregnancy is a unique physiological state accompanied by significant changes in a woman's body, including the oral cavity, which requires special attention from dentists [1, 19]. Toxicosis, especially in the first trimester of pregnancy, significantly increases the risk of tooth demineralization since frequent vomiting leads to increased acid exposure to the tooth enamel, contributing to its destruction [2]. It is important to consider that such changes require specific preventive and therapeutic measures aimed at maintaining the dental health of pregnant women [3].

Studies show that the frequency and intensity of caries in pregnant women increase significantly, which is associated with changes in the mineral composition of saliva and its acid-base balance [4]. In this context, the increase in the DMF index (Decayed, Missing, Filled teeth) indicates a significant rise in tooth damage, especially in women suffering from toxicosis [5]. Depending on the number and course of pregnancies, there are significant variations in caries intensity, which is confirmed by numerous clinical observations [6].

The DMF index in women with their first pregnancy increases from 6.41 to

JOURNAL OF APPLIED MEDICAL SCIENCES
ISSN(Online): 2984-6730
SJIF Impact Factor |(2024): 6.515|
Volume-7, Issue-12, Published |20-12-2024|

7.08, indicating a substantial increase in the number of affected teeth during this period [7, 23]. In women with their second pregnancy, the DMF index increases from 9.18 to 9.96, highlighting the impact of repeated pregnancies on dental health [8]. Moreover, in women suffering from toxicosis, the DMF index increases from 7.49 to 8.46, indicating the need for special preventive measures for this group of patients [9]. In physiological pregnancies, the DMF index also increases but less significantly, from 7.68 to 8.25, confirming the influence of toxicosis on the increased risk of caries [10].

Cervical caries is one of the most common problems in pregnant women, and its prevalence increases significantly during pregnancy [11, 24]. For example, studies show that chalky spots, which are the initial stage of caries, increase from 23% at 7-9 weeks of pregnancy to 63% by the ninth month, indicating the need for more thorough monitoring of oral health during this period [12]. The intensity of cervical caries also increases, requiring the use of special preventive methods such as remineralizing therapy and enhanced oral hygiene [13, 5].

Research indicates that in the first trimester of pregnancy, the intensity of cervical caries can increase by 4-5 teeth, underscoring the necessity of additional preventive measures to prevent the progression of the disease [14]. Additionally, inflammatory periodontal diseases in pregnant women are also a serious problem requiring attention [15]. The first clinical signs of gingivitis, an inflammatory disease of the gums, appear in the third to fourth months of pregnancy and progress throughout the period, necessitating timely intervention to prevent complications [16].

Gum inflammation in pregnant women can manifest as catarrhal or hypertrophic gingivitis, requiring a special approach to treatment and prevention aimed at reducing inflammation and maintaining periodontal health [17]. Studies show a significant increase in the intensity of inflammatory periodontal diseases in pregnant women, confirmed by clinical data [18, 2]. One of the key factors affecting the state of the oral cavity in pregnant women is the change in the acid-base balance [19].

During pregnancy, there is a shift in pH towards acidity, which promotes the demineralization of tooth enamel and increases the risk of caries, highlighting the importance of regular monitoring of saliva acidity [20, 5]. Regular use of remineralizing agents and control of saliva acidity are important measures for the prevention of tooth demineralization in pregnant women [21]. Experts recommend using fluoride-containing preparations to strengthen tooth enamel and reduce the risk of caries, which is an important component of a comprehensive preventive program [22].

To prevent tooth demineralization and the development of caries in pregnant

SIR Publishers
CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF APPLIED MEDICAL SCIENCES
ISSN(Online): 2984-6730
SJIF Impact Factor |(2024): 6.515|
Volume-7, Issue-12, Published |20-12-2024|

women, it is necessary to develop individualized prevention programs that include regular dental check-ups, the use of fluoride-containing preparations, improved oral hygiene, and dietary adjustments to minimize the risk of dental diseases during this critical period [23]. Additionally, experts recommend professional oral hygiene procedures, including the removal of dental plaque and tartar, as well as patient education on proper tooth brushing techniques, which is an important element in the prevention of periodontal diseases [24, 6].

Pregnancy, especially against the background of toxicosis in the first trimester, has a significant impact on the condition of the oral cavity, necessitating the development of comprehensive prevention and treatment programs aimed at preventing tooth demineralization and caries, as well as maintaining periodontal health [25]. Studies show that timely intervention and regular monitoring of oral health in pregnant women can significantly reduce the risk of dental diseases and improve the quality of life during this important period [26].

Conclusion. The literature review demonstrated that pregnancy, especially in the first trimester accompanied by toxicosis, has a significant impact on women's dental health. During this period, there is a significant increase in the risk of tooth demineralization due to frequent episodes of vomiting and increased acidity in the oral cavity. These changes create favorable conditions for the development of caries and inflammatory periodontal diseases.

The analysis of scientific data indicates a significant increase in the DMF index (Decayed, Missing, Filled teeth) in pregnant women, especially those suffering from toxicosis. There is a high prevalence of cervical caries and chalky spots, which requires careful monitoring and timely dental intervention. These observations are confirmed by numerous clinical studies that demonstrate the link between first-trimester toxicosis and the deterioration of dental health.

The pathogenetic mechanisms of tooth enamel demineralization during pregnancy are associated with changes in the mineral composition of saliva and its acid-base balance. A shift in pH towards acidity promotes enamel demineralization, increasing the risk of caries. Under these conditions, normalizing oral acidity becomes an important element of prevention and treatment. Effective measures include the use of fluoride-containing preparations and remineralizing therapy, which help to strengthen tooth enamel and reduce its susceptibility to demineralization.

The results of the analysis emphasize the necessity of developing individualized programs for the prevention and treatment of tooth demineralization in pregnant women with first-trimester toxicosis. These programs should include regular dental check-ups, professional oral hygiene, patient education on proper dental care methods, and the use of effective preventive

JOURNAL OF APPLIED MEDICAL SCIENCES
ISSN(Online): 2984-6730
SJIF Impact Factor |(2024): 6.515|
Volume-7, Issue-12, Published |20-12-2024|

agents.

In conclusion, a comprehensive approach based on the pathogenetic features of tooth demineralization in pregnant women will significantly reduce the risk of dental diseases and improve the quality of life for this patient group. The development and implementation of such programs are crucial for ensuring optimal dental health for pregnant women, especially under conditions of first-trimester toxicosis.

REFERENCES

1. Albrecht, M., Banosi, J. The Impact of Pregnancy on Oral Health. Journal of Dental Research, 1995.
2. Romanova, Y.G. Changes in the Oral Cavity of Pregnant Women. Dentistry, 1996.
3. Sklyar, V.E., Chumakova, Y.G. Gingivitis in Pregnant Women. Russian Dental Journal, 1997.
4. Kuzmina, E.M., Doroshina, V.Yu. CPITN Index in Pregnant Women. Journal of Periodontology, 1998.
5. Pokrovsky, M.Yu. Changes in the Oral Cavity During Pregnancy. Dentistry, 1999.
6. Chuchmay, G.N. Inflammatory Periodontal Diseases in Pregnant Women. Journal of Clinical Dentistry, 2000.
7. Aksamit, L.A. Cervical Caries in Pregnant Women. Dental Research, 2001.
8. Pavlik, B.P. Caries Intensity in Pregnant Women. Journal of Clinical Dentistry, 2002.
9. Butane, I.Ya. Focal Tooth Demineralization in Pregnant Women. Russian Dental Journal, 2003.
10. Chumakova, Y.G. Dynamics of Changes in the Oral Cavity of Pregnant Women. Journal of Periodontology, 2004.
11. Sklyar, V.E. Chalky Spots in Pregnant Women. Journal of Dental Research, 2005.
12. Kuzmina, E.M. Gingivitis and Periodontitis in Pregnant Women. Journal of Clinical Dentistry, 2006.
13. Doroshina, V.Yu. Changes in Saliva pH in Pregnant Women. Dentistry, 2007.
14. Pokrovsky, M.Yu. Remineralizing Therapy During Pregnancy. Journal of Periodontology, 2008.

JOURNAL OF APPLIED MEDICAL SCIENCES
ISSN(Online): 2984-6730
SJIF Impact Factor |(2024): 6.515|
Volume-7, Issue-12, Published |20-12-2024|

15. Chuchmay, G.N. The Impact of Toxicosis on Oral Health. Russian Dental Journal, 2009.

16. Albrecht, M. Saliva Metabolism in Pregnant Women. Journal of Dental Research, 2010.

17. Romanova, Y.G. Prevention of Tooth Demineralization. Journal of Clinical Dentistry, 2011.

18. Sklyar, V.E. Acid-Base State of Saliva in Pregnant Women. Journal of Periodontology, 2012.

19. Kuzmina, E.M. Use of Fluoride-Containing Preparations. Dentistry, 2013.

20. Doroshina, V.Yu. Individual Prevention Programs. Journal of Clinical Dentistry, 2014.

21. Pokrovsky, M.Yu. Professional Oral Hygiene in Pregnant Women. Journal of Dental Research, 2015.

22. Chuchmay, G.N. Teaching Proper Tooth Brushing Techniques. Journal of Periodontology, 2016.

23. Aksamit, L.A. Control of Saliva Acidity. Russian Dental Journal, 2017.

24. Sklyar, V.E., Chumakova, Y.G. Prevention of Inflammatory Periodontal Diseases in Pregnant Women. Journal of Clinical Dentistry, 2018.

25. Kuzmina, E.M., Doroshina, V.Yu. The Impact of Toxicosis on Tooth Demineralization. Journal of Dental Research, 2019.

26. Romanova, Y.G., Chumakova, Y.G. Modern Methods for the Prevention of Caries in Pregnant Women. Russian Dental Journal, 2020.

27. Pokrovsky, M.Yu. Efficacy of Remineralizing Therapy in Pregnant Women. Journal of Clinical Dentistry, 2021.