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Ethiopathogenetic Orientation in the Diagnosis and Treatment of Chronic Tonsillopharyngitis in Pregnant Women

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Abstract

BACKGROUND: The problem of chronic tonsillopharyngitis (CTP) treatment remains relevant, especially in pregnant women, due to the diversity of microflora and its influence on the development and outcome of pregnancy. Based on a comprehensive assessment of the results of clinical, laboratory, immunological studies, and the state of the microbiocenosis of the oropharynx in pregnant women, the possibilities of conservative treatment of this pathology without a negative effect on the growing fetus are shown.

AIM: The article touches on the problems of protecting the reproductive health of women.

METHODS: This article describes the results of a study of 71 pregnant women aged 18–40 years.

RESULTS: According to the results of the study, CTP, in our study, was detected in 69 pregnant women and exacerbated during gestation in 53.

CONCLUSION: It was concluded that pathology of CTP in pregnant women is a risk of complications of pregnancy and childbirth, and preventive measures and diagnostics should be carried out at the stage of pregnancy planning.

Introduction

Tonsillopharyngitis is an acute infectious inflammation of the pharynx and/or palatine tonsils. The main symptoms are sore throat, dysphagia, cervical lymphadenitis, and fever. The diagnosis is made based on clinical examination, culture for flora, and an express analysis for streptococcus (Strep test) which are also performed. The tonsils are involved in providing systemic immune surveillance. In addition, the local protective functions of the tonsils include the lining of the antigen-producing squamous epithelium, which is responsible for B-cell and T-cell immune responses. Tonsillopharyngitis usually has a viral etiology (most commonly adenovirus, rhinovirus, *Haemophilus influenzae*, coronavirus, and RS virus), but can also be caused by the Epstein–Barr virus, herpesvirus, and HIV. About 30% of tonsillopharyngitis is of bacterial origin. Group A beta-hemolytic streptococcus is most commonly detected, but *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Mycoplasma pneumoniae*, and *Chlamydia pneumoniae* are also occasionally found. Occasionally, the causes are whooping cough, infections with Fusobacterium, diphtheria, syphilis, and gonorrhea.

At present, the previously used terms "tonsillitis" (acute inflammation of the pharyngeal mucosa) and "pharyngitis" and "angina" (acute inflammation of the palatine tonsils) are usually combined into one – "acute tonsillopharyngitis," since inflammation of the tonsils rarely does without inflammation of the posterior pharyngeal wall and vice versa. With tonsillopharyngitis – an acute infectious inflammation of the mucous membrane of the oropharynx and palatine tonsils – doctors often encounter in the spring and summer. The disease ranks third in prevalence in the summer, yielding primacy to intestinal infections and allergies.

In the past 10 years, the diagnosis of tonsillopharyngitis has been widespread throughout the world. The inability to localize the process neither in the

oropharynx nor in the palatine tonsils – the reason for combining the terms – is due to changes in the reactivity of the mucous membrane and a decrease in local immunity.

Protection of women's reproductive health and prevention of healthy childbearing are a priority in shaping the health of women of reproductive age, which are undoubtedly fundamental in developed countries and, of course, relevant in our country. The study of the incidence and prevalence of chronic diseases in women who want to have offspring has been steadily growing in recent decades.

The study aimed to assess the features of the course of chronic tonsillopharyngitis (CTP), its relationship with nearby and distant organs, and the possibility of developing tonsillogenic complications, which undoubtedly affect the formation and development of the fetus. A retrospective analysis, obtained from the data of domestic and foreign literature, shows that, of course, chronic decompensated tonsillopharyngitis can be the cause of the unsuccessful state of the child in the womb, miscarriage.

The trigger mechanism in the development of CTP is dysbiosis of the mucous membrane of the tonsils due to unfavorable factors, the development of repeated inflammatory processes with local immunosuppression [1], [2]. The effect of CTP on the body of a pregnant woman is manifested by inhibition of nonspecific factors of the natural resistance of the body. As well as, violation of humoral and cellular immunity, with periodic exacerbations in the form of tonsillitis usually occurs in 17.4% [3], [4]. According to the authors, a possible cause of miscarriage can also be chronic tonsillitis, which contributes to the development of toxicosis [5], with a high (20%) risk of the threat of termination of pregnancy [6], [7].

The response to inflammation primarily depends on the genetic and congenital characteristics of the organism, however, each subsequent exacerbation of chronic infection leads to the activation of innate immunity, the formation of immunocomplex diseases, which aggravates the state of immunodeficiency during gestation and increases the frequency of various complications of pregnancy and premature birth (47.8%), especially at 33–37 weeks of gestation, when there is a low titer of anti-streptococcal antibodies in the mother's blood serum and a high incidence of septic diseases in newborns [8], [9]. It should be noted that our study did not include pregnant women aged 33–37 weeks.

Materials and Methods

This article describes the results of a study of 71 pregnant women aged 18–40 years. Patients issued informed consent to participate in the study and data processing. All subjects were divided into two comparable groups: Main and control. In case of refusal from the proposed treatment regimen, the patients were treated according to the current clinical protocol of chemotherapy and chemotherapy of the authorized body. This study was approved at a meeting of the Local Ethics Commission of the NJSC "KazNMU named after S.D. Asfendiyarov" protocol No. 3 (94) dated 25.03.2020.

Inclusion criteria

The following criteria were included in the study:

1. Pregnant women attached to the antenatal clinic of State Enterprise No. 17 of Almaty, the Republic of Kazakhstan
2. Gestational period from 1 or 2 trimester of pregnancy
3. Lack of local therapy for diseases of the oropharynx before starting the study
4. Lack of general antibiotic therapy before the start of the study
5. Patients who signed consent to the study.

Exclusion criteria

The following criteria were excluded from the study:

1. Patients under the age of 18 and over 40
2. Pregnant women with oncological, mental, allergic diseases and blood diseases
3. Patients participating in other studies.

Applied research methods to identify CTP in pregnant women:

1. Clinical examination
2. Conducting anterior rhinoscopy, otoscopy, and pharyngoscopy
3. Palpation examination of the submandibular, chin, and cervical lymph nodes: Exclusion of other foci of infection in this region
4. Taking a smear from the palatine tonsils and posterior pharyngeal wall examined for bacteriological culture, taking saliva and blood to study the local and systemic immune response of the body
5. Laboratory and instrumental studies: General blood test, general urine analysis, feces for eggs, worms, coagulogram, biochemical blood test, ELISA for markers of hepatitis B, C, HIV, and electrocardiography.

Results and Discussion

The control group consisted of 71 pregnant women with an average age of 26.7 ± 10.1 years. The

main group also included 71 patients; whose average age was 28.8 ± 11.3 years (Table 1).

Table 1: The number of patients covered by the study

The age	Quantity (%)	
	Control group (*n* = 71)	Main group (*n* = 71)
18–25	13 (19)	15 (21)
26–35	50 (70)	45 (63)
36–40	8 (11)	11 (16)
Total	71 (100)	71 (100)

Thus, both groups were homogeneous in number, age, and sex. Patients of both groups were under dynamic observation throughout the study. The timing of the visit of pregnant women to the otorhinolaryngologist was 18.2 ± 0.1 weeks of gestation in the main and 19.0 ± 0.3 weeks in control ($p < 0.05$). Decompensating stage of chronic tonsillitis was observed in 69 (97%) patients. The mean follow-up time between the initial first visit and the intermediate second visit was 3 days, and between the intermediate second and third final visit was 7 days.

At each visit, complaints were assessed and submandibular lymph nodes were palpated for the presence and extent of the enlargement. Laboratory parameters were assessed at baseline and the end of the study. The data obtained confirmed the condition of the patients in both groups and met the criteria for including the patient in the group. Statistical data processing was carried out using the SPSS program.

It should be noted that in most cases, patients presented non-specific complaints such as weakness, periodic episodes of low-grade fever, decreased ability to work and appetite, fatigue, or a feeling of "interruptions" in the heart area during exercise, malaise, and pain in the joints. During pregnancy, the patients of the main group had anemia (26.3%).

Complaints of nasal congestion and (or) nasal discharge predominated – in 49 (69%) of the surveyed; in addition, 6 (9%) women were diagnosed with vasomotor rhinitis, 2 (3%) – soreness in the ears. Eight (11.3%) of the examined main and 4 (5.6%) of the control groups had recurrent joint pain in the anamnesis. A history of angina was found in 21 (29.6%) of the main pregnant women and 19 (26.7%) of the control group. In three examined patients of the main group, angina was noted during pregnancy, and surgical treatment was recommended. Of the concomitant pathologies in the main group, complaints characteristic of an exacerbation of chronic pyelonephritis were more often manifested, so in two patients, pyelonephritis developed during pregnancy, as evidenced by the data in the general analysis of urine. They are advised to consult and follow up with a nephrologist. The results of other laboratory tests investigated from the previously listed research methods were within the permissible limits.

All pregnant women underwent a routine examination of the ENT organs. The severity of changes in the nasal cavity during the examination was assessed in points: Edema of the nasal mucosa – from 1 to 3 points, changes in the color of the mucous membrane (pallor, cyanosis, and hyperemia) – 1 point, and erosion – 1 point. Changes in the laryngopharynx were assessed according to the sum of points: The degree of hyperemia and folding of the inter arytenoid space (each sign – from 0 to 3 points), diffuse hyperemia of the laryngopharynx – 1 point, with mucous membrane maceration – 2 points, thickening of the vocal folds – 1 point, and hyperemia of the vocal folds – 1 point. The posterior pharyngeal wall: Injection of the mucous membrane – 1 point, hyperemia – 1 point, hyperemia of the posterior pharyngeal wall extending to the soft palate – 2 points, and enlargement of granules – 1 point. Changes in the palatine tonsils were also analyzed in points: Hyperemia of palatine arches – 1 point, thickening – 1 point, adhesions of the palatine arches with tonsils – 1 point, caseous plugs in the lacunae – 1 point, liquid pus – 2 points, the presence of papillomas – 1 point, and purulent cysts – 1 point. The degree of nasal congestion of the patient was assessed in points – from 0 to 5. The possible regular use of local vasoconstrictor drugs was taken into account, in this case, the degree of nasal congestion was 5 points. Differences in the nature of nasal discharge, namely, mucus and purulent crusts, compared with patients from Group 2, were significant: 1.6 ± 0.1 and 1.2 ± 0.2 points, respectively ($p < 0.05$), which correspond to the literature data [10], [11], [12].

Control examination was carried out on the 3rd and 10th days. In general, out of 71 pregnant women, certain signs of CTP (changes – ≥2 points) were detected in 18 (25%) patients on the 3rd day and in 4 (5.6%) – on the 10th day. At the same time, a prolonged course of CTP, accompanied by the appearance of caseous plugs or liquid pus in the lacunae of the palatine tonsils, was established in 2 (2.8%) women, they were prescribed antibiotic therapy, taking into account the data of bacterial sowing from the pharynx. The degree of changes in the palatine tonsils averaged 2.20 ± 0.01 points in the main group and 0.60 ± 0.01 in the control group.

A low correlation was established between the degree of changes in the palatine tonsils with changes in the nasal cavity, pharynx, and larynx, as well as the degree of nasal congestion in the two groups; no differences were found depending on the form of CTP.

Thus, in pregnant women with CTP, inflammatory changes in the posterior wall of the pharynx and larynx are revealed, which are also characteristic of gastroesophageal reflux. However, when collecting the anamnesis, all possible causes were taken into account, and such cases were excluded from the study. The study of sowing from the surface of the palatine tonsils on flora in 23 patients was identified *Staphylococcus aureus*, in 16 – *Streptococcus viridans*, in 21 cases – *Staphylococcus epidermidis*, in 2 – *Staphylococcus saprophyticus,* and in 1 – *Pseudomonas aeruginosa*, the latter was treated in a hospital on preservation with a short pregnancy period (6 weeks) (Figure 1).

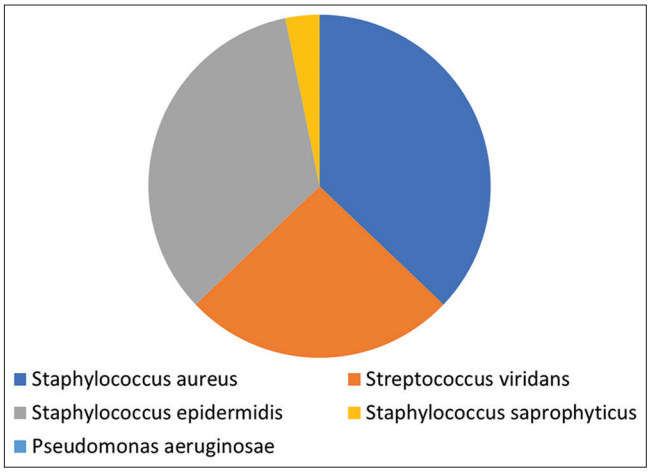

Figure 1: Microbiological scenery before starting treatment for pregnant women

According to the results of a clinical blood test in groups in the level of: leukocytes (8.6 ± 2.3 and 8.7 ± 0.3 g/l, respectively); erythrocyte sedimentation rate (16.5 ± 0.7 and 15.1 ± 0.6 mm/h); the frequency of a shift in the leukocyte formula toward an increase in the production of young forms ($p > 0.05$) - significant differences were not revealed.

At the time of our study, pregnant women with CTP of the main group were equally in the first trimester – 23 (32.8%), in the second trimester – 24 (34.4%), and in the third trimester – 23 (32.8%). We have established four most common complications in pregnant women of the main group: Preeclampsia, which takes 1st place in terms of risk, the 2nd place is the threat of termination of pregnancy, the 3rd place is reserved for early delivery or childbirth at 35–37 weeks with low birth weight and fetus, and in 4th place – chronic insufficiency of the placental complex (Table 2).

Table 2: Features of the health status of the main women under study

Features of the health status of pregnant women with CTP	The main group (*n* = 71)
Pre-eclampsia	6.2 ± 4.0
The threat of termination of pregnancy	24.2 ± 3.9
Childbirth at 35–37 weeks	15.1 ± 3.7
Childbirth at 38–40 weeks	40.4 ± 3.7
Prolonged labor	7.0 ± 1.3
Caesarean section operation	7.1 ± 2.0
Obstetric forceps	-
Complications of the postpartum period	7.4 ± 0.2
Placental insufficiency	58.0 ± 1.3
Medical abortion	1.0 ± 1.0

CTP: Chronic tonsillopharyngitis.

`The threat of termination of pregnancy was registered in nine women of the 1st group and 6 of the 2nd group, and in the presence of CTP, the threat arose at an earlier stage (respectively, at 6.2 ± 0.6 weeks and 8.9 ± 1.8 weeks; $p < 0.05$).

Investigating the course of labor and the postpartum period in pregnant women with CTP of the main group revealed the following features: 22% of them delivered at 35–37 weeks, while pregnant women in the control group – only 2% ($p < 0.05$), as well as in pregnant women of the main group, delivery was carried out in 7 cases (10%) by cesarean section, while in the control group, there was only one case (1.0 ± 1.4, $p < 0.05$).

At the same time, there is a fairly high proportion of pathology in newborns of the main group, compared with practically healthy newborns in the control group.

A characteristic sign of fetal hypoxia is the histological picture of the biostructure of their placentas, where structural damage, tissue thinning, impaired vascular pattern, characteristic damage to deciduitis, and membranitis are noted, which, possibly, due to chronic endotoxicosis 58.2 ± 3.9 versus 17.7 ± 1, 5%, or infection of the mother's body 56.5 ± 3.1% versus 12.2 ± 1.1% in the control group ($p < 0.05$).

It should be noted that a history of miscarriage was noted in 2 (2.8%) of the examined 1st and 1 (1.4%) of the 2nd group, but the death of the fetus was not recorded. In the course of this study, the microbiological picture of the disease was assessed twice. The sampling of material from the pharynx followed by inoculation was performed before the start of therapy and on the 10th day after its end.

The treatment was prescribed taking into account the individual characteristics of the microbiocenosis, as well as the immune status of the subjects, consisting of: Hexalysis (HEXALYSE, 1 table. every 4 h 10 days (dissolve), Hexaspray 2 injections 3 times a day for 10 days, chlorophyllipt 3 times a day for 10 days, and taking ascorbic acid 3 times a day for 10 days. In the presence of purulent contents in the tonsils' lacunae, the treatment of patients included the use of local antimicrobial agents (for rinsing the oropharynx) and courses of washing the tonsils' lacunae with solutions of antimicrobial drugs. Washing was carried out with a Tonsilor apparatus, alternating chlorophyllipt, and dioxidine. Local antiseptics act only on the surface of the mucous membranes. However, it is known that a chronic infectious and inflammatory process involves the deeper layers of the tonsils [13], [14], [15]. The solutions, being absorbed from the surface of the epithelium, also enter the submucosal layer, but they do not have a systemic effect on the body. Four (5.6%) patients had subfebrile condition; a decrease in temperature occurred against the background of courses of washing the lacunae of the palatine tonsils, which was revealed during repeated examinations. It should be noted that in all cases, the use of antibacterial drugs due to the teratogenic effect [16], [17], [18] was excluded by us, except for one case, which was treated in a hospital and further management was discontinued. It should be noted that in three patients who did not undergo regular tonsil debridement according to our proposed scheme from the main group, inflammatory changes in the oropharynx persisted for sometimes, which indicates the need for dynamic monitoring by an otorhinolaryngologist of pregnant women with this pathology.

The effectiveness of treatment in groups was assessed by the clinical, laboratory, immunological, and bacteriological data, as well as by the duration of remission of the pathological process. At the final examination, that is, on the 10th day, the patients of the main group showed complete disappearance of complaints after the treatment

we used, pharyngoscopically: The swelling and loosening of the tonsil tissue decreased, the pathological contents in the lacunae completely disappeared, and the signs of CTP, such as hyperemia and roller-like thickening of the edges of the palatine arches, significantly decreased. When re-analyzing the results of microbiological examination of smears from tonsil lacunae, there is a decrease in colony-forming microorganisms up to their absence. After the treatment was received, the patients did not show any complaints regarding unwanted side effects. Based on all our data, we can conclude that the pathology of the upper respiratory tract in pregnant women with CTP can cause infection of the placenta and miscarriage [19], [20]. Consequently, preventive measures, such as sanitation of the palatine tonsils, should be carried out even at the stage of pregnancy planning, thereby preventing complications during gestation.

Conclusion

1. According to the results of the study, it was found that diseases of the ENT organs occupy the third place in the structure of extragenital pathology (after anemia of pregnant women and diseases of the urinary system), and CTP, in our study, was detected in 69 pregnant women and exacerbated during gestation in 53
2. The use of drugs for local sanitation: Chlorophyllipt 3 times a day, ascorbic acid 3 times a day, and hexalysis, 1 table, 4 times a day and Hexaspray 2 injections 3 times a day for a general course of 10 days for the treatment of CTP are effective since the subjective improvement was noted already at earlier stages of treatment
3. The complex treatment of CTP used by us in pregnant women can be recommended as the first-choice drug for local empiric therapy of CTP in adults and children
4. Pregnant women with CTP form a risk group in the course of pregnancy and many somatic disorders and require increased attention from doctors of all specialties
5. It is necessary to consider the pathology of CTP in pregnant women as a risk of complications of pregnancy and childbirth, and preventive measures and diagnostics should be carried out at the stage of pregnancy planning.

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