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CHORIOAMNIONITIS AS A CONSEQUENCE OF THE PREMATURE PRENATAL RUPTURE OF THE FETAL MEMBRANES

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Abstract. Premature prenatal rupture of the fetal membranes (PPRFM) is a spontaneous rupture of the amniotic membranes before the onset of regular uterine contractions in a period of 22 to 37 weeks. Today they are the most important problem in obstetrics. Premature rupture of the membranes, followed by rupture of the amniotic fluid may be complicated by the development of chorioamnionitis in women and an increase in the frequency of operative delivery.

Purpose of the research is to clarify the features of the course of pregnancy and preterm labor; to study the effect of premature rupture of amniotic fluid on the clinical course of preterm labor; to determine the dependence of the occurrence of infection at different durations of the anhydrous period; to assess the condition of newborns; to analyze the relationship of the pathologies of newborns with the duration of the anhydrous period.

Methods of the research. A retrospective analysis of diseases history of 114 women in labor with premature prenatal rupture of the fetal membranes, who were in labor in Aktobe Regional Perinatal Center for 2018, was carried out. Patients from 20 to 37 weeks of gestation were included in the analysis.

Results. In 2018, 5735 deliveries were carried out in Regional Perinatal Center. Preterm delivery accounted for 330 cases (5.7%). Of these, 114 genera were complicated by premature rupture of amniotic fluid (2% of the total number of births). Chart 1 shows that, over the length of the anhydrous period, the parturient women were divided as follows: half of them were in the group where the anhydrous period was less than 1 day (54%), the other half was more than 1 day (46%).

Conclusion. After the study, the following patterns were identified: in primiparous births with premature rupture of the amniotic fluid, most often fast and swift; prescription of antibiotic therapy with a prophylactic purpose for a prolonged anhydrous period slightly reduced the risk of chorioamnionitis in women in childbirth. Thus, it can be concluded that a thorough examination of women during pregnancy, the timely identification of risk factors for premature antenatal and intrauterine infection are necessary.

Keywords: *chorioamnionitis, woman, Premature prenatal rupture of the fetal membranes.*

Introduction. Premature rupture of membranes is still a significant problem in obstetrics and gynecology needing proper management and investigation. Preterm PPRFM occurs in three percent of pregnancies and is the main cause of at least one-third of premature births. Premature prenatal rupture of the fetal membranes (PPRFM) is a spontaneous rupture of the amniotic membranes before the onset of regular uterine contractions in a period of 22 to 37 weeks. Today it is the most important problem in obstetrics. Premature rupture of the membranes, followed by rupture of the amniotic fluid may be complicated by the development of chorioamnionitis in women and an increase in the frequency of operative delivery.

Acute chorioamnionitis is the most frequent diagnosis in placental pathology reports, and is generally considered to represent the presence of intra-amniotic infection or "amniotic fluid infection syndrome [1-3]. Up to 50% of premature rupture of membranes could be attributed to an infectious cause [4]. Chorioamnionitis can be considered as unwanted aftermath of PPRFM and is capable of causing considerable perinatal morbidity and mortality. It is not much recent that a strong association between the existence of the histopathologic chorioamnionitis and preterm delivery is reported suggesting that occult antepartum infection of the genital tract is an important cause of preterm delivery. Recent systematic reviews have shown that cho-

riooamnionitis is a risk factor of cerebral palsy. Acute chorioamnionitis has also been recognized as a major threat to both mother and fetus. A major challenge will be to distinguish reliable diagnostic methods for timely identification and treatment of the problem.

Chorioamnionitis is an important clinical factor that leads to premature rupture of the fetal membrane and can be classified as subclinical or histological chorioamnionitis. During pregnancy, immune function is relatively low; thus, various pathogens from the vulva and cervix invade the uterus, which commonly results in subclinical chorioamnionitis [5]. Subclinical chorioamnionitis may lead to inflammatory cell exudation, leucocyte infiltration edema, fibrous tissue proliferation and reduced elasticity/increased brittleness of fetal membrane, ultimately leading to premature rupture [6]. Following the PPRFM, the environment of the uterus and vagina is altered in response, promoting bacterial proliferation and exacerbating the subclinical chorioamnionitis [7]. Chorioamnionitis is an easily overlooked condition, as the early clinical symptoms are not evident in the majority of pregnant patients and it is difficult to establish an accurate prenatal diagnosis [8]. There is no accurate method or index for predicting PPRFM in cases of subclinical chorioamnionitis, although there are a number of studies concerning the disease [9-13]. Chorioamnionitis is an infection that can occur before labor, during labor, or af-

ter delivery. It can be acute, subacute, or chronic. Subacute chorioamnionitis is associated with chronic lung disease in the infant [14]. Chronic chorioamnionitis is associated with retinopathy of prematurity, very low birth weight, and impaired brain development in the premature infant. Chronic chorioamnionitis is common [15-17]. This terminology refers to histologic chorioamnionitis. Histologic chorioamnionitis at term is rarely infectious. In general, the clinical presentation of chorioamnionitis is defined as acute chorioamnionitis. Further description denotes chorioamnionitis includes the amniotic fluid. Chorioamnionitis may be identified as post-delivery or postmortem on a pathologic review of the placenta and cord. In histologic chorioamnionitis, symptoms may be absent, and the placenta or cultures may not show evidence of chorioamnionitis. Most commonly, chorioamnionitis is associated with preterm labor, prolonged rupture of membranes, prolonged labor, tobacco use, nulliparous pregnancy, meconium stained fluid, multiple vaginal exams post rupture of membranes, and in women with known bacterial or viral infections. However, it can occur at term and in women without prior infections. Left untreated, chorioamnionitis can lead to morbidity and mortality for the mother and neonate. Neonatal morbidity and mortality increase in severity and occurrence with earlier gestations. Antibiotic therapy has been shown to reduce the incidence and severity of the infection in both the mother and neonate. However, antibiotics do not eradicate the infection in all cases.

Purpose is to study pregnancy course features and preterm labor, complicated by premature rupture of amniotic fluid, leading to chorioamnionitis. to determine the dependence of the occurrence of infection at different durations of the anhydrous period.

Materials and methods. Retrospective analysis of 114 women history diseases in labor with premature prenatal rupture of the fetal membranes, who were in labor in the OPTs of the Aktobe region for 2018 was carried out. Patients from 20 to 37 weeks of gestation were included in the analysis. To analyze the data a statistical method was used, the following indicators were evaluated: the length of the anhydrous period, the presence of chorioamnionitis in women and the tactics of its treatment, the mode of delivery, anomalies of labor activity, assessment of the a condition of newborns on the Apgar scale and incidence of newborns. Statistical treatment was done by MC Excel using descriptive statistics.

The results of the research. In 2018, 5735 deliveries were carried out in the Regional Perinatal Center. Preterm delivery accounted for 330 cases (5.7%). Of these, 114 genera were complicated by premature rupture of amniotic fluid (2% of the total number of births).

It shows that, over the length of the anhydrous period, the parturient women were divided as follows: half of them were in the group where the anhydrous period was less than 1 day (54%), the other half was more than 1 day (46%). [Figure1]

As can be seen with a length of the anhydrous period of more than 1 day, the risk of chorioamnionitis in a woman increases significantly. [Figure2]

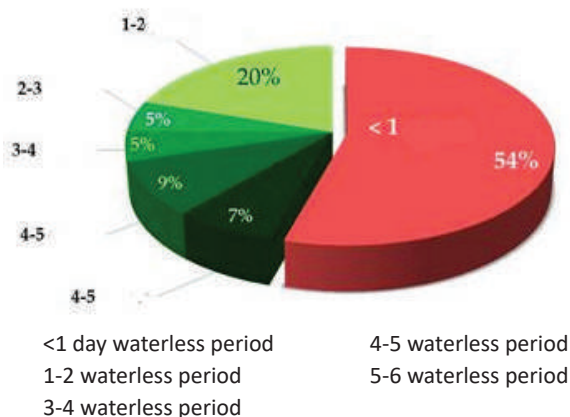


Figure 1. The duration of the waterless period

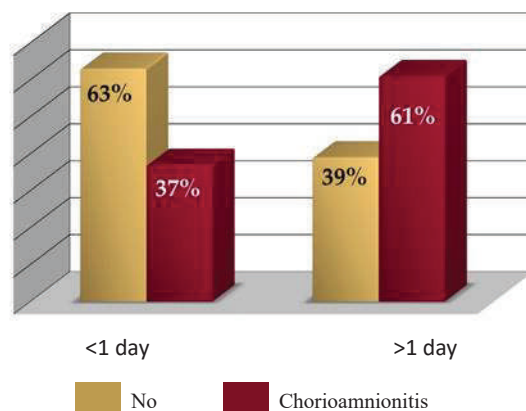


Figure 2. The occurrence of chorioamnionitis, depending on the duration of the anhydrous period

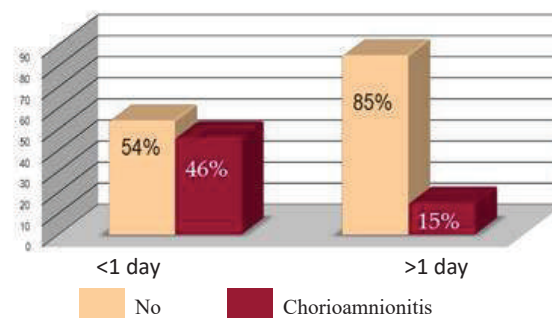


Figure 3. Antibiotic treatment

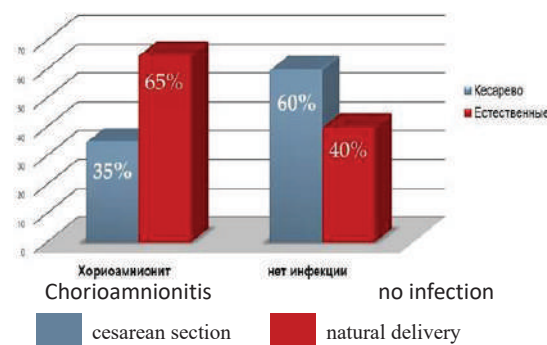


Figure 4. Mode of delivery

It shows that an anhydrous period of less than 1 day, only half of the parturient women were prescribed antibiotics, and with an anhydrous period of more than one day, almost everyone was prescribed antibiotics, including for preventive purposes. [Figure3]

The primary management of chorioamnionitis is antibiotic therapy. The most common antibiotics used are ampicillin and gentamicin. Alternative antibiotics include clindamycin, cefazolin, and vancomycin in women allergic to penicillin. After delivery, the current recommendation is to administer one additional dose with a cesarean section but no additional antibiotics for vaginal deliveries. Additional broad-spectrum antibiotics may be required, depending on the clinical status. Conducting antibiotic therapy with an anhydrous period of less than a day reduced the risk of developing chorioamnionitis, and as a result, only half of the women were infected. At the same time, in women from the second group, even after antibiotic therapy, chorioamnionitis was diagnosed in 70%.

Chorioamnionitis is not infection

In the presence of chorioamnionitis, natural delivery was more often used (65%), and in the absence of infection, cesarean section was performed more often (60%). [Figure4]

Primiparous Multiparous

The analysis of labor activity revealed the following patterns: among primiparous women in 46% of women, childbirth was completed faster than normal, and in 8% of women, labor was rapid. Among the multiparous, the frequency of occurrence of this pathology was much less. [Figure5]

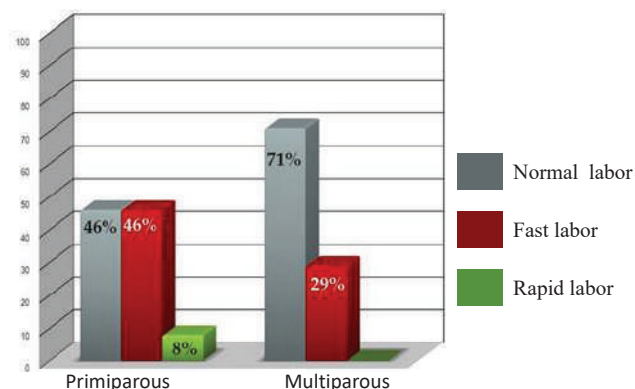


Figure 5. Analysis of labor activity

Apgar scale shows that in almost all newborns by the 5th minute, the condition has improved, compared to the 1st minute.

The damage to children of the central nervous system occurred more than 1 day (40%); prolongation of pregnancy should lead to a reduction in the incidence of intraventricular hemorrhage and hemorrhagic syndrome was approximately the same, regardless of the length of the anhydrous period. After the analysis, we found that almost everyone has a cause of maternal chorioamnionitis.

Discussion. The clinical symptoms of subclinical chorioamnionitis may lead to long-term intrauterine infection that can increase the possibility of fetal distress or still-

birth, in addition to the rates of maternal placenta accreta, preterm birth and cesarean section [18]. Many factors that contribute to the development of chorioamnionitis and its potentially devastating consequences can be minimized or eliminated. Investigation of intrapartum care practices is also needed with emphasis on the impact of invasive vaginal procedures when accurately recorded, and the influence of perineal hygiene protocols. Interventions that are known to interfere with normal birth processes such as epidural administration and internal monitoring are in particular need of rigorous examination. In the present study, the Apgar scores and body weights of the experimental group of newborns were lower than those in the control group. Furthermore, the rates of neonatal mortality, respiratory distress syndrome, jaundice and infection were higher in the experimental group than in the control group [19]. These results demonstrate that subclinical chorioamnionitis produces a negative impact on the clinical outcomes of newborns. The understanding on chorioamnionitis is controversial as it refers to a heterogeneous group of risk factors, clinical pathways and presentations. In a systematic review by Van der Ham [20] articles that had enrolled 610 pregnant women diagnosed with chorioamnionitis were considered. In three of these articles it was concluded that CRP can be useful for the diagnosis of chorioamnionitis while 5 articles did not achieve this result. Considering the controversial findings of the studies, it seems that CRP is not beneficial in as an indicator of clinical or histological chorioamnionitis. The differences in clinical definitions, research projects, gestational age at the time of marker measurement, research methodology and reference values, as well as differences in the relationship between the clinical, histological and microbiological findings in study populations must be considered. On the other hand, it is questioned if histological chorioamnionitis can be considered as a criterion of infection, because the researchers have identified this kind of chorioamnionitis in 20-30% of normal deliveries. Histological chorioamnionitis was intended in the present study as well. Some researchers have recommended CRP to be measured along with other parameters, not as a pathogenomic test, to prove infection, as it is obvious that CRP is a non-specific acute phase reactant. Increasing numbers of digital vaginal examinations, longer duration of active labor, and meconium staining of the amniotic fluid were the most important risk factors for the development of clinical chorioamnionitis in women with prelabor rupture of membranes at term. The most important risk factors for the development of postpartum fever were clinical chorioamnionitis, increasing duration of active labor, and cesarean section delivery.[21]

Conclusion. Analyzing the results of pregnant women with a period of 22 to 37 weeks, it can be concluded that in 46% of primiparous births with premature rupture of amniotic fluid most often fast and swift. For an anhydrous period of more than 1 day, the risk of chorioamnionitis in women was 61%. The purpose of antibiotic therapy for prophylactic purposes with a prolonged anhydrous period slightly reduced the risk of chorioamnionitis in women in

childbirth. Thus, it can be concluded that careful examination of women during pregnancy, timely identification of factors affecting the occurrence of complications caused by the presence of amniotic fluid and intrauterine infection, which can reduce complications after childbirth, such as chorioamnionitis are necessary.

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