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Complications Of Severe and Very Severe Variants of Covid-19 Infection in Pregnant Women

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ABSTRACT

Introduction: The causative agent of COVID - 19 coronavirus infection is the new SARS-CoV-2 virus. In March 2020, the World Health Organization announced a pandemic of coronavirus infection (SARS-CoV-2). By mid-March 2021, 119 million people worldwide had contracted this infection, 94.7 million had recovered and 2.6 million had died. In Kazakhstan, 1.39 million people fell ill with this infection, 1.29 million people recovered, and 19 thousand people died. Physiological changes in the immune, cardiovascular and respiratory systems during pregnancy make it possible to make an assumption that pregnant women are especially vulnerable to the effects of pathogenic infectious agents and the development of a serious infection, which, in turn, can lead to increased morbidity and mortality of the mother and fetus. Premature birth is more common in pregnant women with pneumonia, premature babies with low body weight are born, and the frequency of cesarean sections is high.

Materials and Methods: The work with the subjects was carried out in accordance with the clinical protocol" coronavirus infection in pregnant, giving birth and giving birth women (Covid-19)", which is the Helsinki Declaration of the World Medical Association (World Medical Association Declaration of Helsinki 1964, edited 2013) and approved by the Joint Commission on the quality of medical services of the Ministry of health of the Republic of Kazakhstan on August 5, 2021. Clinical observations and studies were carried out in the period from April 2020 to May 2022 for pregnant and postpartum women in the"City Infectious Diseases Hospital"(Symkent, Kazkhstan), "Perinatal centers" of the Turkestan region and the cities of Shymkent. In order to implement the 1st stage of the study, a total of 120 pregnant women were subjected to comprehensive examinations. The diagnosis of COVID-19 in pregnant women was made based on epidemiological Anamnesis, complexes of clinical symptoms characteristic of this disease, and the results of laboratory and instrumental examinations. Pregnant healthy and with coronavirus

Results: For complicated forms of COVID-19 in pregnant women, primary clinical signs are characteristic (in order of differentiation) compared to mild forms: shortness of breath (82.1%), unproductive cough (83.4%), hemorrhagic syndrome (20%), myalgia (44.6%) ($p<0.05$). La-borator

criteria for severe course of COVID-19 in pregnant women are: anemia (77.8%), leukopenia (21.4%) or leukocytosis (27.1%), thrombocytopenia (24.2%), hypercoagulation (29.2%), increased AST activity (34.2%), increased CFC (7.8%) ($p<0.05$). The most important confaunders of the severe course of COVID-19 in pregnant women who have survived severe conditions are: lack of preventive measures (Di 3,2-25,4), second Di 1,5-125) and Third (Di 1,8-156) gestational trimester, excess body weight and obesity (Di 1,0 -7,5), smoking (Di 1,1-8,9), comorbidities of the respiratory organs (Di: 2,5-35,9), the presence of sexually transmitted infections (Di 4,6 - 91,2). The most important factors of maternal mortality in COVID-19 are: late seeking medical help and etiotropic therapy.

Conclusion: Pregnant women with pandemic flu are at risk of premature birth, regardless of the severity of COVID-19 and gestational age with the flu. A characteristic complication of childbirth in patients with influenza in the III trimester of pregnancy is untimely discharge of amniotic fluid. The largest number of complications in the postpartum period was observed in women in labor, complicated by influenza in the acute phase of the disease

Keywords: *Severe, Variants, Infection, COVID-19*

INTRODUCTION

In the literature, a sudden and very rapid deterioration of the clinical condition in about 5% of COVID-19 patients is usually observed on the 5th or 6th day after the appearance of symptoms of COVID-19. It is not always possible to reliably predict the development of a severe form of COVID-19, since from a third to half of all cases of severe and fatal infection occurred among healthy people without risk factors [1-5].

The causative agent of covid - 19 coronavirus infection is the new SARS-CoV-2 virus. In March 2020, the World Health Organization announced a pandemic of coronavirus infection (SARS-CoV-2). By mid-March 2021, 119 million people worldwide had contracted this infection, 94.7 million had recovered and 2.6 million had died. In Kazakhstan, 1.39 million people fell ill with this infection, 1.29 million people recovered, and 19 thousand people died[6-8]. Physiological changes in the immune, cardiovascular and respiratory systems during pregnancy make it possible to make an assumption that pregnant women are especially vulnerable to the effects of pathogenic infectious agents and the development of a serious infection, which, in turn, can lead to increased morbidity and mortality of the mother and fetus. Premature birth is more common in pregnant women with pneumonia, premature babies with low body weight are born, and the frequency of cesarean sections is high [9].

The development of acute respiratory stress syndrome is possible. Ords was described as Ashbaugh D. G. AVT. As a clinical syndrome developed in 2020 in the form of an uncharacteristic phase reaction in response to a pronounced or prolonged disturbance of peripheral microcirculation of initially intact lungs [10-14]. When diagnosing ords, the indicators of the analysis of blood gases (PaO_2/FiO_2 200 mm Hg. St.) is a determinant. and $SpO_2< 90\%$), and the main symptoms are pronounced shortness of breath and cyanosis; pulmonary sweating; tachycardia, deafness of heart sounds, frequent arrhythmias; sharp decline in white; cough with the release of foamy sputum of red color; a large number of wet wheezing of different calibers in the lungs, abundant crepitation; the development of symptoms of increasing pulmonary hypertension and acute pulmonary heart syndrome [15].

MATERIALS AND METHODS

The work with the subjects was carried out in accordance with the clinical protocol" coronavirus infection in pregnant, giving birth and giving birth women (Covid-19)", which is the Helsinki Declaration of the World Medical Association (World Medical Association Declaration of Helsinki 1964, edited 2013) and approved by the Joint Commission on the quality of medical services of the Ministry of health of the Republic of Kazakhstan on August 5, 2021. Clinical observations and studies were carried

out in the period from April 2020 to May 2022 for pregnant and postpartum women in the "City Infectious Diseases Hospital"(Symkent, Kazkhstan), "Perinatal centers" of the Turkestan region and the cities of Shymkent(Kazakhstan). In order to implement the 1st stage of the study, a total of 120 pregnant women were subjected to comprehensive examinations. The diagnosis of COVID-19 in pregnant women was made based on epidemiological Anamnesis, complexes of clinical symptoms characteristic of this disease, and the results of laboratory and instrumental examinations. Pregnant healthy and with coronavirus

RESULTS

In our study, intensive deterioration was observed in 21 pregnant women with viral-bacterial pneumonia who were admitted to the intensive care unit. Intoxication syndrome was characterized by its extreme manifestations, for example, symptoms of meningitis, agitation, convulsions, drowsiness, confused consciousness. As the damage to the lung tissue developed, the phenomena of respiratory failure intensified: shortness of breath, cyanosis of the skin and mucous membranes intensified, the saturation of blood with oxygen during pulse oximetry decreased by 90%.

In all the women we studied, we noticed the features of the act of childbirth. Pregnancy after the COVID-19 pandemic 88.1% of women (53/60), 96% (58/60) of pregnant women in the comparison group ($\chi2$=4.695, p=0.030) ended in timely delivery. Premature birth is more common in pregnant women with pandemic flu (table. 1). The frequency of development of premature birth directly depended on the severity of the infection and the gestational period (Tables 2 and 3).

TABLE 1: The course of childbirth among women who have not and have not had COVID-19

Complications in Childbirth	Total n=60	Relative Group n=60	Kramer Dimensions according to the V-criterion	$\chi2$	P
Premature birth	7 11,9%	2 4%	0,106	4,695	0,030*
Operative abdominal delivery	12 20%	11 18%	0,126	0,285	0,594
Premature discharge of fetal bladder water	12 20%	15 14,8%	-	1,210	0,271
Labor activityskin disorders	8 14,2%	12 20%	-	2,923	0,087
Pathological preliminary period	1 2,8%	1 2,8%	-	0,058	0,810
Discoordinated childbirth attempts	1 2,8%	2 5,9%	-	2,519	0,112
Weak excitation	3 8,4%	3 8,4%	-	1,277	0,258
Acute childbirth	1 2,8%	3 8,4%	-	0,589	0,443
Mold of child comrade parts	1 2,8%	2 5,6%	-	0,005	0,944
Note: * - difference in statistical accuracy ($p\chi2<0,05$)					

TABLE 2: Complications of childbirth due to the severity of COVID-19

Complications in Childbirth	Light n=12	Medium n=23	Heavy n=15	$\chi2$	P
Premature birth	1 7,9%	2 8,4%	1 8,5%	9,135	0,010 *

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Operative abdominal delivery	4 33,3%	7 29,4%	5 33,5%	4,975	0,083
Premature discharge of fetal bladder water	1 7,9%	4 18%	2 17%	2,984	0,225
Labor activityskin disorders	2 17,1%	2 8,4%	1 8,5%	4,653	0,098
Pathological preliminary period	1 7,9%	1 4,2%	1 8,5%	0,010	0,995
Discoordinated childbirth attempts	1 7,9%	1 4,2%	2 17%	2,155	0,341
Weak excitation	0 0%	2 8,4%	1 8,5%	1,992	0,369
Acute childbirth	1 7,9%	3 12,6%	1 8,5%	5,605	0,061
Mold of child comrade parts	1 7,9%	1 4,2%	1 8,5%	0,444	0,801
Note: * - difference in statistical accuracy (pχ2<0,05)					

TABLE 3: Covid-19 flu is a complication of childbirth depending on which trimester

Complications in Childbirth	I Trimester n =16	II Trimester n =24	III Trimester n =20	χ2	P
Premature birth	0	6 25%	2 10%	7,965	0,019 *
Operative abdominal delivery	3 18,7%	4 16,6%	1 5%	0,994	0,608
Premature discharge of fetal bladder water	1 6,2%	2 8,3%	3 15%	25,987	0,000 *
Labor activityskin disorders	2 12,4%	1 4,1%	2 10%	2,167	0,338
Pathological preliminary period	0	1 4,1%	0 0%	2,030	0,362
Discoordinated childbirth attempts	2 12,4%	4 16,6%	3 15%	1,105	0,575
Weak excitation	3 18,7%	2 8,3%	4 20%	0,393	0,822
Acute childbirth	3 18,7%	2 8,3%	3 15%	1,841	0,398
Mold of child comrade parts	2 12,4%	2 8,3%	2 10%	3,410	0,182
Note: * - difference in statistical accuracy (pχ2<0,05)					

The rate of rapid delivery in groups of pregnant women with pandemic influenza did not differ much from the rate in the control group: 20% and 16.8%, respectively (table.1). In a very severe course of pneumonia, both pulmonary and extrapulmonary complications developed. Septic shock complicated the course of pneumonia with 19.1% (4/21) control. Arvi was identified as the most serious complication of influenza-related pneumonia in 80.9% (17/21) of patients and developed 7.2±4.6 days after the first symptoms of the COVID-19 pandemic appeared. In the clinic, there is a rapid increase in symptoms of acute respiratory failure (tachypnea with more than 20 respiratory movements per minute, saturation of blood with oxygen with pulse oximetry is less than 90%), tachycardia and arterial hypotension. The saturation of blood with oxygen was on average 84.4±5.1%, which indicates the development of progressive

hypoxemia and acute respiratory failure. Radiologically in the lungs 52.9% (9/17) bilateral foci of infiltration; 47.1% (8/17) subtotal in patients.

In patients with acute respiratory distress syndrome, the most common background pathology was malformation - constitutional obesity, which accounted for 58.8% (10/17) of patients in this group. Diseases of the respiratory system in 35.2% (6/17), cardiovascular system-in 11.7% (2/17), kidney pathology - in 29.4%, thyroid pathology - in 17.6%, diseases of the gastrointestinal tract - in 29.4%. A bad smoking habit was detected in 70.5% of women with acute respiratory viral infections. A third (35.2%) of patients with acute respiratory viral infections did not have background chronic diseases.

Pandemic COVID-19 was combined with other complications of H1N12009: ICE syndrome, infectious toxic shock, myocarditis. In 11 out of 17 (64.7%) women in this group, generalized manifestations of respiratory distress syndrome were observed in acute respiratory viral infection. In 52.9% of cases (9 out of 17 patients), acute respiratory viral infection was accompanied by infectious and toxic shock. Myocarditis was detected only in 7/17 (41.1%) patients with ARD.

In the presented group, coronavirus was the main cause of death of 3 mothers. In the rest of the patients, clinical and Radiological improvement decreased by an average of 17.03 (95% Di 16.2-17.9) days from the moment of diagnosis of pneumonia. In the final X - ray examination, changes after pneumonia were recorded in 50% (9/18) of women who died in the form of diffuse pneumosclerosis.

Severe disorders of Hemostasis and microcirculation in patients with severe influenza led to the formation of hematomas of the small pelvis (after a caesarean section) and soft tissues of the birth canal (after independent childbirth) in 7.9% of women in the postpartum period, while in no case have uncomplicated forms of COVID - 19 and non-severe Women been recorded. In addition, hematomas of the birth canal often appeared after emergency independent childbirth. A characteristic feature of puerperium in women with pandemic influenza was the appearance of a chronic hematometer, the postpartum period in 6.3% of cases, in the group of unforgettable maternity hospitals – 0% (p=0.019) (table. 4). In addition, this complication only developed in women with a severe course of COVID-19. Acute endometritis complicated the postpartum period only in women with a severe course of COVID-19 – 1.3% , in no case were registered in the comparison group – 0% .Remains of placental tissue were found in only 1.3% of women who had the flu (table. 4).

TABLE 4: Complications in the postpartum period

Complications in childbirth	Sick group n=60	Relative group n=60	Kramer Dimensions according to the V-criterion	$\chi 2$	p
Premature birth	1 1,6%	0	-	0,337	0,562
Operative abdominal delivery	3 4,8%	0	-	0,545	0,460
Premature discharge of fetal bladder water	5 8%	0	0,167	5,491	0,019*
Labor activityskin disorders	2 3,2%	0	-	0,337	0,562
Pathological preliminary period	5 8%	0	-	0,079	0,779
Discoordinated childbirth attempts	5 8%	2 3,2%	-	0,005	0,946
Note: * - difference in statistical accuracy ($p\chi 2<0,05$)					

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In the acute phase of the disease, emergency caesarean sections were performed only in patients with a severe course of COVID-19 in 6% due to complications caused against the background of severe multi - organ failure . In 25% (6/24) cases, the indication for emergency operative delivery was premature detachment of the normally located placenta at the 26th (1), 31st (1), 32nd (1) and 39th (2) weeks. In 44.4% of cases (4/9) of caesarean sections were performed within 23-27 weeks due to intrauterine fetal death against the background of severe polyorgan insufficiency, while in one of them the caesarean section was performed against the background of the mother's agonal state. In two out of nine cases (22.2%) of acute labor in the middle of a serious illness, extirpation of the uterus was performed for the cause of coagulopathic uterine bleeding against the background of acute respiratory distress syndrome.

DISCUSSION

In the post-epidemic period, the frequency of emergency caesarean sections was higher in patients with a moderate to mild course of covid-19 than in outbreaks of the disease. Indications for emergency childbirth after suffering from the COVID-19 pandemic were fetal hypoxia, weak labor activity, coordinated labor activity, PONRP, clinically narrow pelvis.

It should be noted that in patients with severe influenza, the main indicator of cesarean section was acute fetal disorder (progressive fetal hypoxia) during childbirth in 75% (12/16); a similar indicator for acute abdominal Labor was found in 12.9% of moderately severe mothers, covid – 19 in 22.7% ($\chi 2$ =22.289, P=0.000).Childbirth through natural birth routes occurred in 80.2% of women with pandemic influenza, in the group of sufferers - in 92.1% of pregnant women ($\chi 2$ =7.093, p=0.008).

During the development of spontaneous labor against the background of COVID-19 and pneumonia, childbirth was carried out through natural birth routes, monitoring the condition of the mother and fetus. Detoxification and antibacterial therapy, respiratory support were carried out. In the postpartum period, in accordance with the clinical protocol (2021) approved by the Ministry of health of the Republic of Kazakhstan, covid-19 and Pneumology therapy initiated before childbirth were prescribed and continued .

The frequency of untimely discharge of amniotic fluid did not differ much in the group of women suffering from pandemic influenza and forgotten (table. 1). Also, no intragroup differences were found in the prevalence of this complication in women with different degrees of severity of COVID-19 (table. 2). However, after covid-19, given in the III trimester of pregnancy, childbirth was often complicated by untimely shedding of water (P=0.000).

Anomalies of the Labor service complicated the course of labor in 14.2% of women in labor with a history of COVID-19, in the comparison group – in 21.8% (p=0.087).

No significant differences were found in the frequency of development of the pathological prelimitary period, coordinated labor activity, weakness of labor activity, rapid and rapid childbirth between groups of pregnant women with influenza and women with inactivity . No significant difference was found when looking for differences within the group in the frequency of Labor anomalies related to the severity of COVID-19 and the timing of gestation.

In the third stage of childbirth, strict accounting of blood loss and Prevention of bleeding by intravenous administration of uterotonics were carried out. Significant differences in the frequency of complications in the third stage of Labor (delay of parts of the placenta, tight fixation of the placenta) were not detected among women who had pandemic flu and were not forgotten during the epidemic period. Also, no difference was found in the prevalence of this complication, depending on the trimester of pregnancy and the degree of severity experienced by COVID-19.

In women in labor who had different forms of COVID-19, complications of the postpartum period were detected 6 times more often - 2% compared to 12.9% in the control group . It should be noted that puerperal complications were recorded in women with the manifestation of COVID-19 on the eve of childbirth in the third

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trimester of pregnancy, that is, in the acute phase of the disease.

CONCLUSION

Thus, pregnant women with pandemic flu are at risk of premature birth, regardless of the severity of COVID-19 and the gestational age with the flu. A characteristic complication of childbirth in patients with influenza in the III trimester of pregnancy is untimely discharge of amniotic fluid. The largest number of complications in the postpartum period was observed in women in labor complicated by influenza in the acute phase of the disease (the formation of hematomas of the small pelvis after a caesarean section and soft tissues of the birth canal after independent childbirth, the development of acute endometritis and chronic hematometer)

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