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COVID-19, PREGNANT AND FEATURES OF THE STATE OF HYPERCOAGULABILITY

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Abstract:

COVID-19 is a global health emergency that can cause serious health problems during pregnancy. **The aim of the study** was: to assess the state of the hemostasis system in pregnant women with COVID-19. **The research materials** selected 49 pregnant women hospitalized in medical institutions of the Samarkand region due to COVID-19. In **the results of the study**, we mainly paid attention to the general condition of women depending on the trimester of pregnancy, the reasons for hospitalization, comorbid conditions, changes in general tests, coagulogram, in the blood coagulation system, as well as the outcomes of pregnancy and childbirth. **Conclusion.** As the burden and magnitude of COVID-19 continues to grow globally, there is still much to be learned about the impact of COVID-19 on pregnancy and perinatal and neonatal outcomes.

Keywords: COVID-19, pregnancy, SARS-CoV-2, coronavirus infection, gemostasis, newborns, trombosis.

COVID-19 is SARS-CoV-2 caused by a novel coronavirus infection, severe forms of which can lead to acute respiratory distress syndrome and may require continued treatment in intensive care units [1, 4]. Severe forms are associated with changes in coagulation, mainly characterized by an increase in the level of D-dimer and fibrinogen, which further increases the risk of thrombosis, especially pulmonary embolism.

We know very little about the impact of the virus on pregnant women, even in the presence of other strains of the virus such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) [2, 5].

Natural physiological changes in a woman's body during pregnancy cause a hypercoagulable state. This is due to a number of factors such as an increase in clotting factors (factors VII, VIII and X, von Willebrand factor (vWF), D-dimer, C-reactive protein and fibrinogen). At the same time, the number of fibrinolytic road inhibitors also increases. Anatomical changes also play an important role, leading to a slowdown in blood circulation in the legs as a result of compression of the pelvic veins by the pregnant uterus. This can lead to stagnation of blood and the formation of blood clots [2, 3].

Invasion of the SARS-CoV-2 virus into endothelial cells leads to damage to endothelial cells, impaired fibrinolytic function and subsequent thrombus formation and release of large amounts of vWF. The loss of protective endothelium and subsequent weakening of the blood coagulation system leads to a hypercoagulable state. It has also been found that COVID-19 is directly associated with increased accumulation of intravascular fibrin and therefore an increase in blood viscosity. These data confirm that COVID-19 is a risk factor for thromboembolism [1, 3, 4].

PURPOSE OF THE STUDY.

Assessment of the state of the hemostasis system in pregnant women with COVID-19.

RESEARCH MATERIALS AND METHODS OF EXAMINATION.

49 pregnant women hospitalized for COVID-19 in special medical institutions of the Samarkand region were examined. General examinations, special obstetric and additional examination methods were used (general blood count, PCR, coagulogram, C-reactive protein, prothrombin time, D-dimer, fibrinogen, ultrasound of the pelvic organs and, based on the instructions, MSCT of the chest organs).

RESEARCH RESULTS.

Of the 49 pregnancies, 4 (8.2%) were in the first trimester of pregnancy, 11 (22.4%) in the second trimester, and 34 (69.4%) in the third trimester of pregnancy. It should be noted that the main reasons for hospitalization in the first two trimesters of pregnancy were related to COVID-19. The most common symptoms were fever, chills (55.1%) and cough (59.2%). In the third trimester of pregnancy, the reasons for hospitalization were obstetric indications and complications. The following comorbid events occurred during hospitalization in 11/49 (16.3%)

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patients in this study. The most common were anemia (96%), arterial hypertension (6.1%) and pyelonephritis (16.3%). The study found that 65.3% of pregnant women developed community-acquired pneumonia, but 28.6% of them had no clinical signs of pneumonia, and pneumonia was diagnosed in these women using ultrasound or MSCT tests. In the remaining 36.7% of pregnancies, the most common symptoms of community-acquired pneumonia were fever accompanied by cough and shortness of breath.

In the general blood test, lymphopenia, severe thrombocytopenia and mild leukopenia were noted in 41 (83.7%) of 49 pregnant women. Thrombocytopenia and significant leukocytosis were observed in 2 (4.1%) pregnant women, which indicated the presence of an additional inflammatory process in the female body. An increase in prothrombin time was noted in 38 (77.5%) women (12.5-14.8 seconds), and a decrease in prothrombin time (8.3-9.0 seconds) in 3 (6.1%) women.

The D-dimer index was 0.55±0.03 μg/ml in 4 women in the 1st trimester of pregnancy, 1.4±0.04 μg/ml in 7 (14.3%) of 11 women in the 2nd trimester of pregnancy and 1.7 ± 0.02 μg/ml in 2 in the II trimester of pregnancy, and in 13 (26.5%) of 34 pregnant women in the III trimester of pregnancy, the D-dimer index was 3.3 ± 0.5 μg/ml, and in the remaining 11 (22.4%) observed that the D-dimer value was within the normal range in accordance with gestational age. In all our pregnant women in the first trimester of pregnancy, the fibrinogen index was 7±0.6 g/l. In our women in the II and III trimesters of pregnancy, the fibrinogen index (8±0.5 g/l) did not differ significantly. In 65.3% of our patients with community-acquired pneumonia, the APTT was from 18 to 20 seconds, and in the remaining women, the APTT was normal (23-38 seconds).

Treatment of hypercoagulability in all hospitalized pregnant women was carried out with appropriate doses of low molecular weight heparins (LMWH).

It should be noted that the results obtained during the study were not positive. In 2 out of 4 of our patients in the first trimester of pregnancy, spontaneous miscarriage was observed. Among the most unsatisfactory outcomes were preterm births (<37 weeks), which occurred in 3 pregnant women at 24–25 weeks and in 5 pregnant women at 34–35 weeks, with 3 newborns born with intrauterine pneumonia, and born at 24–25 weeks 2 of the premature babies died 2-3 days after delivery. In patients with symptoms of community-acquired pneumonia, the rate of preterm birth was higher than in pregnant women without symptoms of pneumonia. 4 (8.2%) patients were transferred to the intensive care unit, 2 of whom were delivered by caesarean section, as they were in the third trimester of pregnancy, and symptoms of fever, cough, and respiratory failure persisted in the postpartum period. In this study of 49 pregnant women, no maternal deaths were observed.

CONCLUSION.

As the scale of COVID-19 infection and its devastating effects persist around the world, we need to explore the many unknowns about the impact of COVID-19 on pregnancy. The results of the above study also show that COVID-19 infection causes many complications during pregnancy and after childbirth, with most of these complications associated with changes in the blood hemostasis system.

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