

CLINICAL AND LABORATORY FEATURES CORONAVIRUS INFECTION IN PREGNANT WOMEN

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Abstract. A new viral infection, called "COVID-19" in the spring of 2020, took on a pandemic character. Data on the impact of Covid-19 on a pregnant woman and fetus are few and contradictory. The aim of the study was to study the clinical and laboratory features of coronavirus infection in pregnant women. An analysis was made of 222 birth histories of women with laboratory-confirmed PCR for COVID-19, sent for delivery to a specialized obstetric department in October-December 2020. The results of our studies showed that 70.2% had a mild form of infection, 21.2% had a moderate form, and 8.1% had a severe form. The frequency and nature of lesions of the upper and lower respiratory tract, SPO2 parameters and lung lesions, as well as the age of pregnant women, parity, and the presence of somatic pathology are presented. Conclusions. In most pregnant women, a severe form of COVID-19 is characterized by bilateral pneumonia with ARS against the background of anemia in 100% of cases. Severe COVID-19 infection was more common in pregnant women aged 35 years and older. The condition of pregnant women with COVID-19 aggravated the development of severe preeclampsia, premature detachment of the placenta, and multiple pregnancies.

Keywords: COVID-19 infection, pandemic, pregnancy, childbirth, women.

Relevance. The spread of a new viral infection COVID-19 in 2020 has assumed a pandemic character [3, 5, 6]. According to statistics, pregnant women, people over the age of 60, patients with severe somatic diseases (lungs, heart, diabetes mellitus) turned out to be the most sensitive to this virus [13, 17]. Publications on the impact of Covid-19 on the gestational period, fetus and newborn are few [2, 8, 12]. However, in the leading countries of the world, a number of protocols have been developed for the management and treatment of pregnant women with COVID-19 [1, 4, 9, 10]. Despite the existence of works devoted to this problem, the issues of adverse effects of the COVID-19 virus infection on the course of pregnancy remain poorly studied in our region. In this aspect, it is of scientific and practical interest to study the impact of COVID-19 on the body of a pregnant woman.

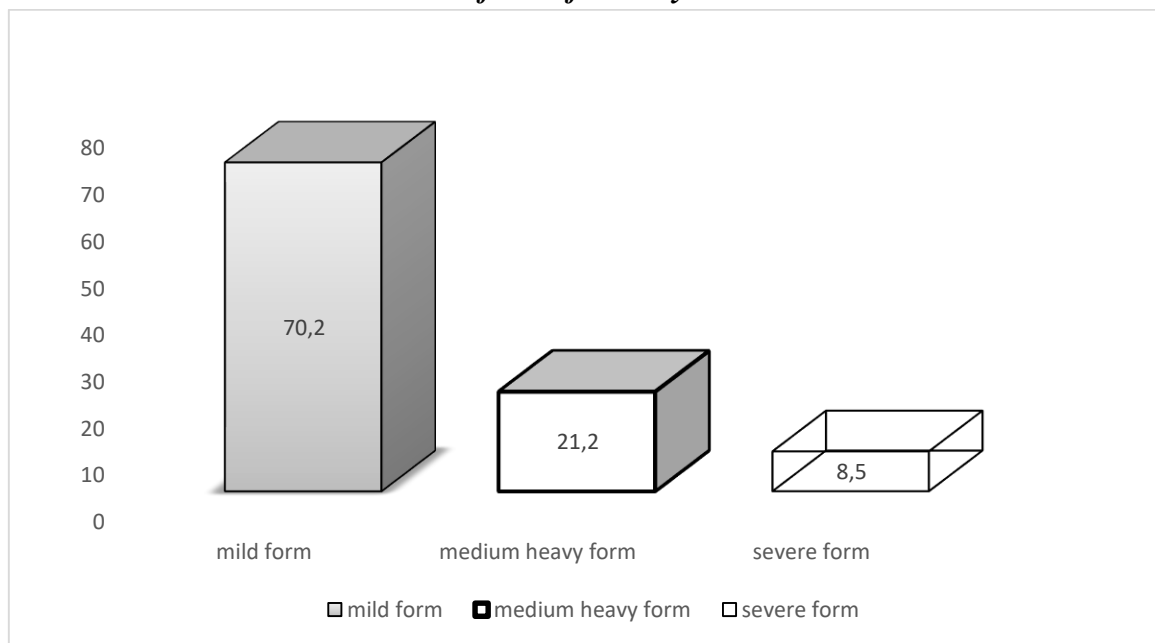
The purpose of the study: to study clinical and laboratory diseases of coronavirus infection in pregnant women.

Material and research methods. We conducted a clinical analysis of 222 pregnant women with COVID-19 hospitalized in a specialized obstetric department for the period October-December 2020. COVID-19 was diagnosed using the polymerase chain reaction (PCR) [7, 11, 16]. Conducted clinical and laboratory research, radiography of the lungs, consultations of an infectious disease specialist, pulmonologist, resuscitator and, if necessary, other specialists. The data obtained were processed by the method of variation statistics with the determination of Student's criteria and the values are $p < 0.05$.

Results and its discussion. The distribution of patients with coronavirus infection in pregnant women according to the severity was recommended: Of the 222 pregnant women

admitted, coronavirus infection proceeded in most of them in a rapid form - 70.2% (156), in moderate form - in 21.2% (47), on average - in 8.6% (19) (Fig. 1). Our data are similar to those of other researchers. Thus, according to WHO-[China14], 92% are mild and moderate, 8% of pregnant infected are severe, 1% are critical for infection, and according to RCOG, in 86% of cases of SARS-CoV-2 infection in pregnant women, further and moderate diseases form, 9% - in the government, 5% - in critical [15].

Fig. 1 Distribution of patients with coronavirus infection in pregnant women according to the form of severity.



We analyzed the clinical and laboratory parameters of coronavirus infection in pregnant women depending on the severity of the course. Mild course of COVID-19 was characterized by signs of rhinitis and nasopharyngitis ($2.6 \pm 0.9\%$), bronchitis ($3.2 \pm 1.4\%$). With a moderate course of infection, tracheobronchitis ($27.7 \pm 6.5\%$), bronchitis ($14.9 \pm 5.2\%$) and pneumonia were more often diagnosed, SARS - in $2.0 \pm 2.0\%$. In severe form, bilateral pneumonia was detected in 94.7% of pregnant women and SARS in 63.2%.

Oxygen saturation (SPO₂) with mild infection averaged 97.2 (90-99), with moderate infection - 94.1 (88-98) and with severe infection - 88.9 (50-97) (Fig. 2). Radiological damage to the lungs in mild course averaged 6.7% (5-10%), in moderate course - 26.2% (5-35%) and in severe - 46.3% (30-65%). In the moderate form of COVID-19, oxygen support was carried out through a nasal cannula mask at a rate of 5-10 l/min in 42.6% of pregnant women, non-invasive CPAP (constant positive airway pressure) - in 2.1% of pregnant women. In severe form, oxygen support up to 10 l/min with the transition to non-invasive CPAP was received by 81.8%, mechanical ventilation - by 18.2% of pregnant women with 65% of the lungs affected.

We also carried out a comparative assessment of the detection of coronavirus infection in pregnant women in terms of age (Fig. 3). Pregnant women were aged 19 to 38 years, mostly in the range of 20-29 years old and accounted for 2/3 ($62.6 \pm 3.3\%$) of all admitted, over 30 years old made up 1/3 ($33.4 \pm 3.2\%$). Analysis of the age composition of pregnant women depending on the severity of the course of COVID-19 revealed a significant increase in the number of pregnant women over 35 years old with severe form up to $31.6 \pm 10.7\%$ compared with the indicator for mild ($10.3 \pm 2.4\%$, $p = 0.05$) and moderate form ($19.2 \pm 5.7\%$, $p > 0.05$).

Fig. 2 Indicators of the level of saturation in patients with coronavirus infection in pregnant women, depending on the severity.

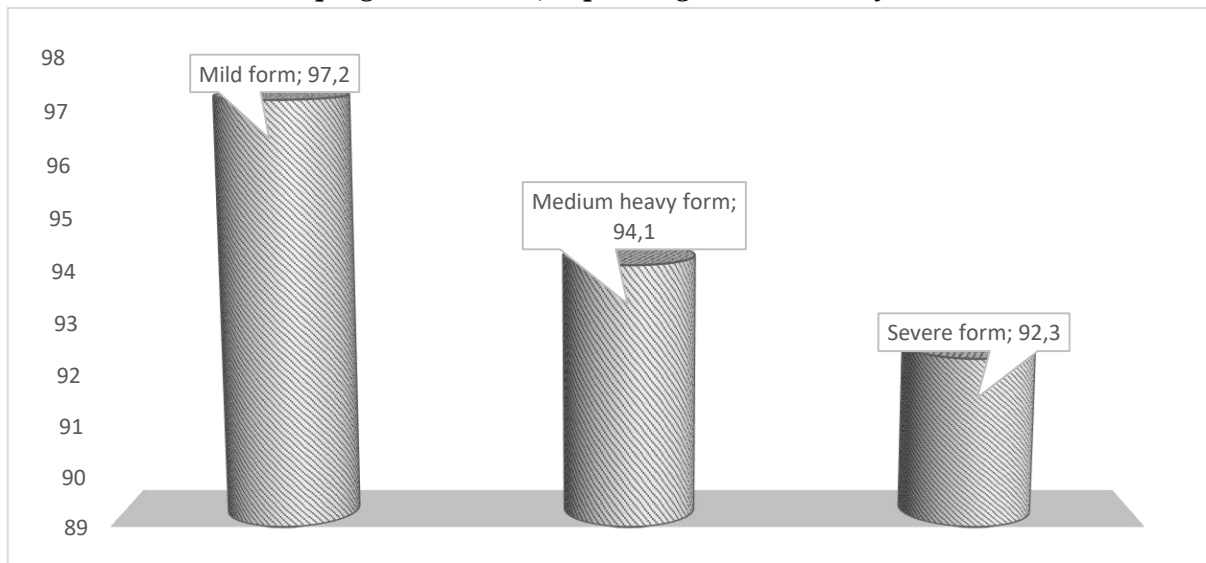
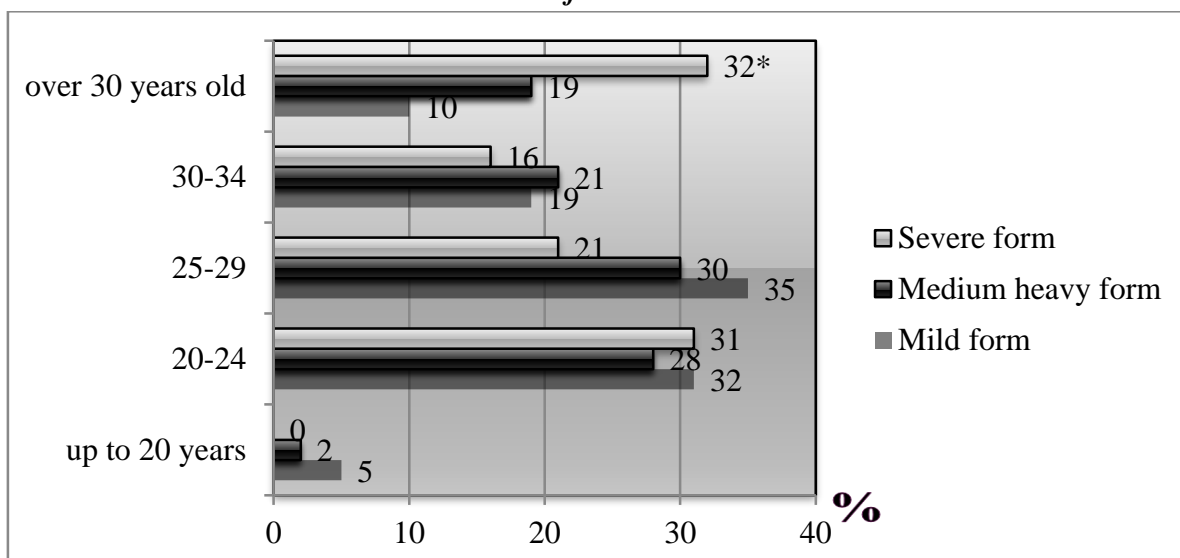


Fig. 3 Distribution of the age composition of pregnant women depending on the severity of the course of COVID-19.



Analysis of the sequence of births revealed a similar trend: women with III-IV and more in the group with a mild form of infection were $29.5 \pm 3.7\%$, with a moderate degree of severity - $48.9 \pm 7.3\%$ ($p < 0.05$), and with a severe form - $57.9 \pm 11.3\%$ ($p < 0.05$).

From somatic pathology, IDA was most often diagnosed - 98.7%, which was before pregnancy, varicose disease was noted in 5.9%, obesity - in 3.6%, bronchial asthma, BMI, diabetes mellitus and endemic goiter - in 1.4 % of cases.

Of the complications of pregnancy, the frequency of severe preeclampsia - 14.9% (33), the scar on the uterus after a cesarean section - 14.9% (33), prenatal rupture of the membranes - 12.2% (27), large fetus - 5.9% (13), placental abruption - 1.4% (3), twins - 2.3% (5), etc. At the same time, there was a tendency to increase the frequency of severe preeclampsia with an increase in the severity of the course of COVID-19. Thus, this complication developed 2.4 times more often with a severe course of infection and 2.2 times more often with a moderate form in relation to a mild form of the disease ($26.3 \pm 10.0\%$, $23.4 \pm 6.1\%$ and $10.9 \pm 2.5\%$, respectively, $p > 0.05$).

In a mild form, pregnancy was more often complicated by prenatal rupture of the membranes (14.1%), multiple pregnancies - (3.2%), placenta previa - 1.9%. At the same time, premature detachment of a normally located placenta was observed only in moderate and severe forms (4.3% and 5.3%, respectively).

Thus, as a result of our research, we have established the following conclusions:

- In most pregnant women, the clinically severe form of COVID-19 is characterized by bilateral pneumonia with acute respiratory syndrome against the background of hypochromic anemia in 100% of cases.

- Severe COVID-19 infection was more common in pregnant women aged 35 years and older with third births or more. The frequency of preterm birth significantly increased with the severity of the infection.

- With COVID-19, the condition of pregnant women aggravated the development of severe preeclampsia, premature placental abruption, multiple pregnancies, which were often an indication for abdominal delivery.

- Early detection of COVID-19, hospitalization and treatment can help improve pregnancy outcomes and reduce potential obstetric complications such as preterm birth, preeclampsia, etc., which was consistent with the opinion of foreign researchers [5].

REFERENCES

1. Временный национальный стандарт РУз по ведению больных с COVID-19. Восьмая версия. 21.09.2020. Ташкент.
2. Джумаев К.Ч., Ешимбетова Г.З., Дроненко Л.М. Течение беременности, родов и послеродового периода у женщин с подтвержденным COVID-19. // Международная научно-практическая конференция. «Здоровье женщины – здоровье нации» Самарканд, 21 января 2021. Биология ва тиббиёт муаммолари 2021, №1.1 (126) 83-85.
3. Львов Д.К., Альховский С.В., Колобухина Л.В., Бурцева Е.И. Этиология эпидемической вспышки COVID-19 в г. Ухань (провинция Хубэй, Китайская Народная Республика), ассоциированной с вирусом 2019-CoV (Nidovirales, Coronaviridae, Coronavirinae, Betacoronavirus, подрод Sarbecovirus): уроки эпидемии SARS-CoV . // Вопросы вирусологии. 2020; 65(1): 6-15. DOI: <https://doi.org/10.36233/0507-4088-2020-65-1-6-15>
4. Организация оказания медицинской помощи беременным, роженицам, родильницам и новорожденным при новой корона-вирусной инфекции COVID-19. Методические рекомендации. Версия 1 (24.04.2020). Министерство здравоохранения Российской Федерации, 2020. 61 с. Режим доступа: https://static-1.rosminzdrav.ru/system/attachments/attaches/000/050/093/original/23042020_Preg_COVID-19_1_Final.pdf. [Дата доступа: 30.04.2020].
5. Романов Б. К. Коронавирусная инфекция COVID-2019. // Безопасность и риск фармакотерапии. 2020; 8(1): 3–8. <https://doi.org/10.30895/2312-7821-2020-8-1-3-8>.
6. Юпатов Е.Ю., Мальцева Л.И., Замалева Р.С., Зефирова Т.П., Чечулина О.В., Мазитова М.И., Курманбаев Т. Новая коронавирусная инфекция COVID-19 в практике акушера-гинеколога: обзор современных данных и рекомендаций//

- Акушерство, Гинекология и Репродукция 148 <http://www.gynecology.su> Научный обзор Review article 2020 • Том 14 • № 2.С 147-158.
7. Abbasi-Oshaghi E., Mirzaei F., Farahani F., Khodadadi I., Tayebinia H. Diagnosis and Treatment of Coronavirus Disease 2019 (COVID-19): Laboratory, PCR, and Chest CT Imaging Findings // International Journal of Surgery. 2020. URL: <https://doi.org/10.1016/j.ijssu.2020.05.018> (дата обращения: 15.05.2020).
 8. Chen H., Guo J., Wang C. et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*. 2020;395(10226):P809–15. DOI: 10.1016/ S0140-6736(20)30360-3
 9. Coronavirus (COVID-19) infection in pregnancy. Royal College of Obstetricians and Gynaecologists: London, 2020. 61 p. Available at: <https://www.rcog.org.uk/globalassets/documents/guidelines/2020-04-17-coronavirus-covid-19-infection-in-pregnancy.pdf>. [Accessed: 30.04.2020]
 10. Guidance for management of pregnant women in COVID-19 pandemic.
 11. ICMR–National Institute for Research in Reproductive Health, 2020.17p. Available at: <http://www.nirrh.res.in/wp-content/uploads/2020/04/Guidance-for-Management-of-Pregnant-Women-in-COVID-19-Pandemic.pdf>. [Accessed: 30.04.2020]
 12. Lippi G., Plebani M. Laboratory Abnormalities in Patients with COVID-2019 Infection // Clin Chem Lab Med. 2020. URL: <https://doi.org/10.1515/cclm-2020-0198> (дата обращения: 17.05.2020).
 13. Liu W., Wang Q., Zhang Q. et al. Coronavirus disease 2019 (COVID-19) during pregnancy: A case series. *Virology Articles. Preprints* 2020; 2020020373. Available at: <https://www.preprints.org/manuscript/202002.0373/v1>. [Accessed: 30.04.2020].
 14. Lou J., Tian S.-J., Niu S.-M. et al. Coronavirus disease 2019: a
 15. bibliometric analysis and review. *Eur Rev Med Pharmacol Sci*. 2020; 24 (6): 3411–21. DOI: 10.26355/eurrev_202003_20712.
 16. Report of the WHO-China joint mission on Coronavirus disease-2019
 17. (COVID-19). World Health Organization. 16-24 February 2020. 40 p.
 18. Available at: <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>. [Accessed: 30.04.2020]].
 19. who-china-joint-mission-on-covid-19-final-report.pdf. [Accessed: 30.04.2020]].
 20. Royal College of Obstetricians and Gynaecologists: London, 2020. 61 p. Available at: <https://www.rcog.org.uk/globalassets/documents/guidelines/2020-04-17-coronavirus-covid-19-infection-in-pregnancy.pdf>. [Accessed: 30.04.2020]].
 21. Zhai P., Ding Y., Wu X., Long J., Zhong Y., Li Y. The Epidemiology, Diagnosis and Treatment of COVID-19 // International Journal of Antimicrobial Agents. 2020. URL: <https://doi.org/10.1016/j.ijantimicag.2020.105955> (дата обращения: 16.05.2020)
 22. Zheng F., Tang W., Li H. et al. Clinical characteristics of 161 cases of corona virus disease 2019 (COVID-19) in Changsha. *Eur Rev Med Pharmacol Sci*. 2020;24(6):3404–10. DOI: 10.26355/eurrev_202003_20711.