PATHOMORPHOLOGICAL CHANGES IN THE PLACENTA OF PREGNANT WOMEN INFECTED WITH CORONAVIRUS INFECTION COVID-19

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Abstract*. The mechanism and pathomorphological picture of the disease in pregnant women infected with coronavirus and their pathological processes during pregnancy are the focus and main attention of attending physicians and pathologists. It is known that in addition to the internal influences of the body during pregnancy, various pathological processes develop in the placenta, which maintains the balance between mother and fetus, as a result of external influences, especially viral and bacterial infections, as a result of which the stability of the normal physiological state is disrupted. This situation is especially evident in the SARS-CoV-2 (COVID-19) viruses with varying degrees of fetoplacental insufficiency in the pregnant woman. It may even result in the death of both mother and fetus. Any changes observed in the body of a pregnant mother and fetus during the COVID-19 pandemic can be explained by the pathological condition of the placenta. This, in turn, gives rise to a number of questions that await solutions. The course of COVID-19 with systemic inflammatory reactions and hypercoagulation in the body directly affects the structural activity of the placenta. It is known from the literature that changes in the placenta of pregnant women infected with COVID-19 were manifested by the following pathomorphological changes: the absence of blood vessels and fibrinoid swelling in the nipples, an increase in the size of the syncytiotrophoblast area in the nipples. terminal nipples of the placenta, chronic histocytic intervilulitis, causing fetal hypoxia and different from other viral infections. Information about pathomorphological changes in the placenta is important for predicting the course of pregnancy and applying treatment tactics. If you look at the clinical course of COVID-19, it is characterized by a high frequency of various complications and deaths in pregnant women. The study of pathomorphological changes in the placenta of pregnant women is considered important for the fetus and the mother's body and can be considered particularly important due to its cost.*

Keywords*: syncytiotrophoblast, intervilulitis, gestational age, paraffin blocks.*

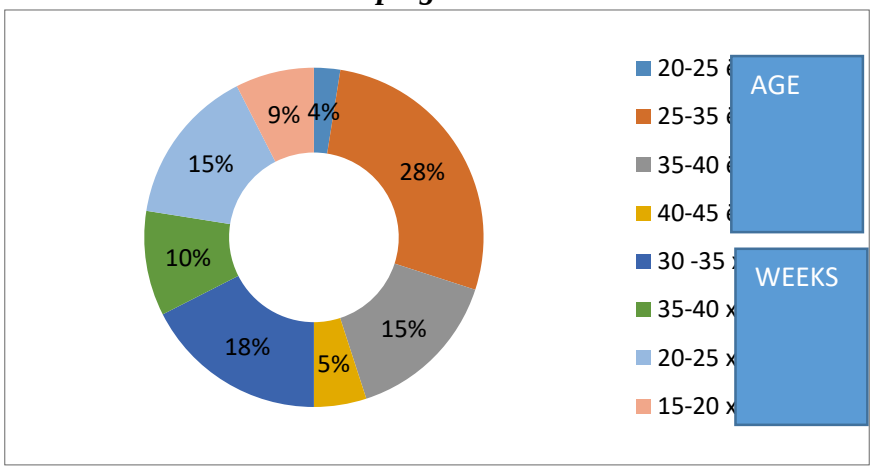
Objective: to study the main pathomorphological processes in the placenta of pregnant women infected with COVID-19.

Object and methods of research: in 2020-2023. pregnant women with PCR and Antigen-positive (+) (n=30) and a control group with PCR and Antigen-negative (-), infected with COVID-19 in Special Hospital No. 1 Zangi Ota (n=15) The anamnesis of women was studied retrospectively and by pathomorphological methods. In this case, the placenta was assessed macroscopically, pieces were taken from the central, paracentral and peripheral parts along with the membrane measuring about 1.0 * 1.0 cm, marked on histological cassettes and left in a 10% formaldehyde solution for 24 years. hours (18-20°C). The next day, the samples were washed with running water for two hours. Dehydration was carried out over 9 exposures (in a thermostat at

37°C) in order of increasing alcohol concentration (50-100%) from alcohol batteries. At the next stage, the samples were left in chloroform for 30 minutes in two batteries, the samples in a mixture of equal amounts of chloroform and paraffin (in a thermostat at 37°C) for 30 minutes. Histological blocks were prepared in paraffin batteries I and II (in a thermostat at 56°C) for -30 minutes. Sections with a thickness of 5-7 µm were taken from the prepared paraffin blocks using a microtome (Leica, Germany). The morphological structures of the placenta were assessed by hematoxylin-eosin staining using the classical method. Under a microscope, 6-7 fields were selected and images were obtained using the Image Scope program at a magnification of x100.

Results obtained: in pregnant women with PCR and Antigen-positive (+) infected with COVID-19, depending on age, 55% (25-35 years), 30% (35-40 years), 10% (40-45 years).), 5% (20-25 years), gestational age 35% (30-35 weeks), 15% (15-20 weeks), 30% (20-25 weeks), 20% (35-40 weeks). (diagram No. 1).

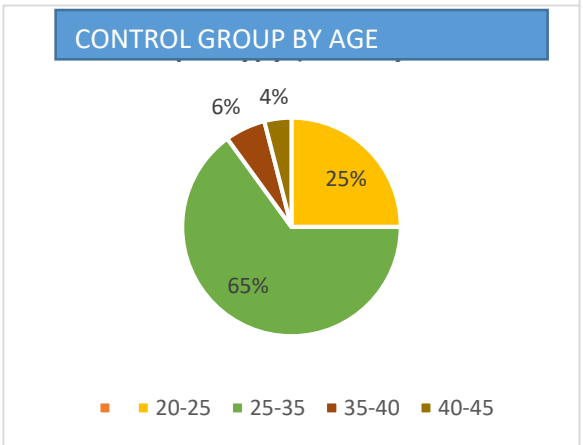
Diagram No. 1. Indicators by age and gestational age of PCR and Antigen-positive (+) pregnant



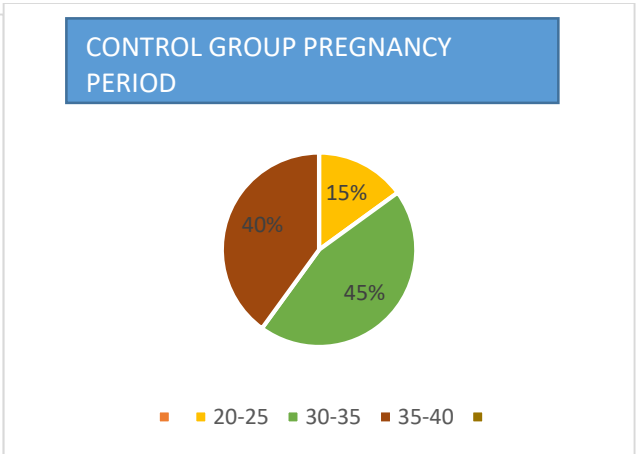
Judging by the given data, the highest age indicator of pregnant women infected with COVID-19 is in the age range of 25-30 years, followed by women of 35-40 years, and after 30-35 weeks of pregnancy, the period after that is 20 -25 sootvetstvuet weeks.

In the control group PTsR and antigen-negative (n=15) pregnant women aged 65% (25-35 years), 6% (35-40 years), 4% (40-45 years), and 25% (20- 25 let) (diagram No. 1), v zavisimosti ot sroka beremennosti opredelyalis 45% (30-35 weeks), 15% (20-25 weeks), 40% (35-40 weeks) (diagram No. 2.3) .

graphic #2



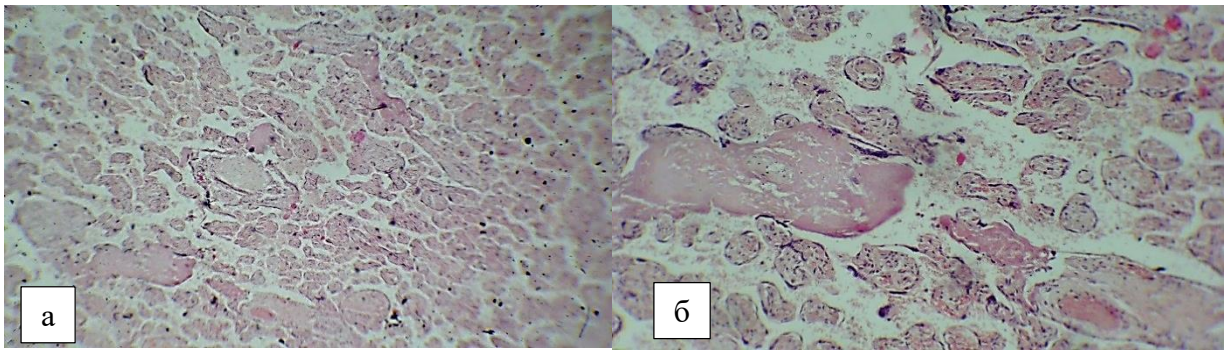
graphic #3



In the control group, the highest rate was at the age of 25-35 years, followed by 20-25 years, and in terms of gestational age - 30-35 weeks, followed by 35-40 weeks.

Pathomorphological changes in the placenta in PCR and Antigen-positive (+) pregnant women infected with COVID-19: perivillosis and subchorionic fibrin foci in the placenta (35%), vascularization and microthrombosis of the nipples with large foci (40-45), nipple infarction (10-15%), inflammatory infiltrate in the subchorionic cavity, decidual arteriopathy (25%), atherosis and fibrinoid necrosis (30%), hypertrophy of the arteriolar wall (15-20%), immaturity of the intermediate suckers (55%). %) (Fig. 1 a, b).

Picture No. 1



On microscopy of the placenta: it is presented a pathomorphological picture with thrombosis of the vessels of the terminal nipples, expansion of the interstitial spaces of the nipples and the presence of fibrinoid masses, red blood cells, thickening and fibrosis of the vascular endothelium at the base of the nipples, traces of fibrinoid formations in the peripheral bases of the nipples. Hematoxylin-eosin x100.

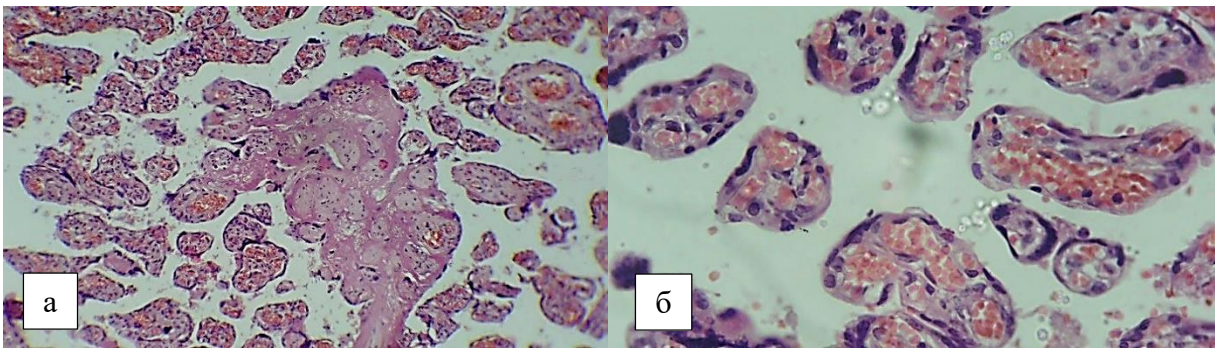
Pathomorphological changes in the placenta in PCR and Antigen-positive (+) pregnant women infected with COVID-19 were manifested mainly by vascularization of the nipples, perivillosis and subchorionic foci of fibrin, as well as atherosis and fibrinoid necrosis. in the subchorionic cavity were manifested by the predominance of pathological processes such as decidual arteriopathy.

Changes in the placenta in PCR and antigen-negative (-) pregnant control group (n=15): placental perivillosis and subchorionic fibrin foci (60%), vascularization of the nipples with large foci (20%), nipple infarction (15%).), inflammation in the subchorionic space.

The infiltrate was manifested by pathomorphological changes in the form of decidual arteriopathy (12%), atherosis and fibrinoid necrosis (45%), hypertrophy of the arteriolar wall (5%), immaturity of the intermediate papillae (10%).) (Fig. 2 a, b).

In the control group, in PCR and Antigen-negative (-) pregnant women (n=15), pathomorphological changes in the placenta predominated, such as perivillosis and subchorionic fibrin foci, vascularization of the nipples with large foci, nipple infarction, and inflammatory infiltrate. in the subchorionic space - detudual arteriopatera, atherosis and fibrinoid necrosis.

On microscopy of the placenta: an increase in the number of terminal papillae and a syncytial kidney-like appearance, stasis in microvessels, fibrosis and sclerosis of the basal papillae, widening of the interpapillary space and filling with fibrinoid mass are observed. Hematoxylin-eosin. x 100



Conclusion: The highest age of pregnant women infected with COVID-19 is on average 35 years, and the average gestational age is 30 weeks. Pathomorphological changes in the placenta were manifested mainly by vascularization of the nipples, perivillosis and subchorial fibrin foci, the predominance of atherosis and fibrinoid necrosis.

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