AJPMHS GLOBAL RESEARCH NETWORK

AMERICAN Journal of Pediatric Medicine and Health Sciences
Volume 01, Issue 05, 2023 ISSN (E): 2993-2149

Causes of death in infants born to women affected by Covid-19 disease

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The severity of the problem: The spread of the COVID-19 disease worldwide during the pandemic has resulted in the identification of harmful events in most pregnant women and fetuses through laboratory testing for SARS-CoV-2. This, in turn, leads to significant maternal complications in the field of medicine.

In infants born to pregnant women infected with COVID-19, especially those born prematurely, there have been indications of respiratory disorders (tachypnea, apnea, cyanosis), cardiovascular system disturbances (tachycardia), and gastrointestinal tract impairments (diarrhea, constipation, vomiting) based on available information about the progression of the infection. Additionally, these infants exhibit unique characteristics such as unstable body temperature, lethargy, and low birth weight at birth. Initially, the possibility of vertical transmission and harm to newborns from the infection was denied.

Objective of the study: The aim of this study is to utilize histological preparations in the Pathological Anatomy Bureau of Khorezm region and the Neonatal Center of the region in order to identify diseases observed in infants born to pregnant women infected with COVID-19 and to develop educational and methodological guidelines for medical students and specialists in this field regarding the prevention and treatment of identified diseases.

Research method and materials: The medical history, pathological histopreparations, PSR, and IFA tests of infants born to pregnant women infected with COVID-19 were used for examination from the Pathological Anatomy Bureau of Khorezm region and the Neonatal Center of the region.

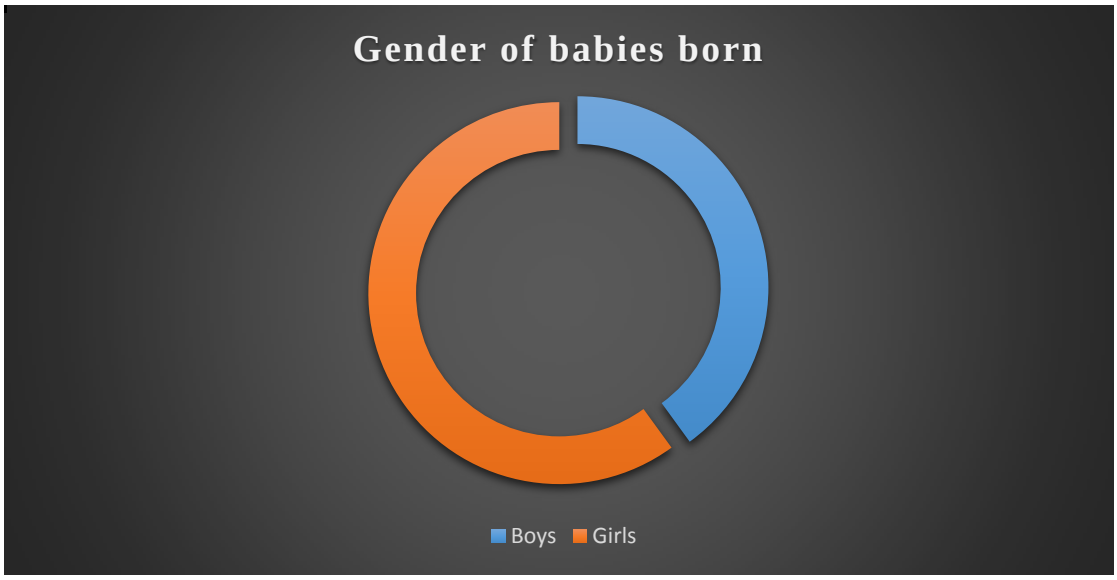
Examination results: In the course of the conducted scientific research, it was found that among the 25 infants born to pregnant women infected with COVID-19 in Urgench city,

Khorezm region, during the gestational period of 38-39 weeks, natural delivery occurred in the majority of female infants (Table 1).

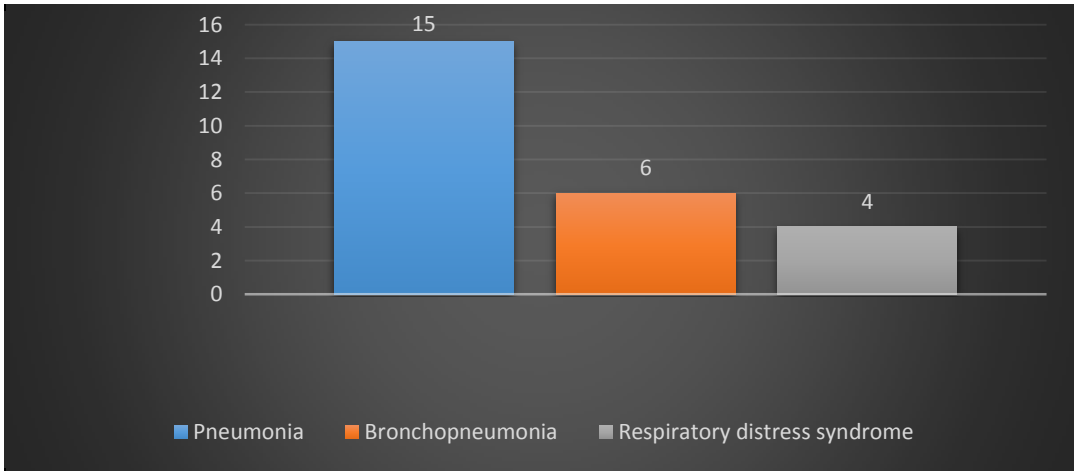
Table 1. Age of pregnant women.

№	The duration of pregnancy	The age of the pregnant woman	Number of births	Percentage (%)
1	38	22	6	24
2	39	27	5	20
3	39	29	3	12
4	38	31	4	16
5	39	32	2	8
6	39	35	2	8
7	39	37	3	12

When studying the nosology of infants born through natural delivery during the gestational period of 38-39 weeks in Urgench city, it was identified that the majority of them were female infants (Table 2).



During the conducted research, when examining the nosology of the born infants, it was found that they primarily suffered from pneumonia, followed by bronchopneumonia, and finally respiratory distress syndrome (Table 3).



When conducting an anamnestic survey of mothers of infants born with pneumonia, the majority of them complained of general weakness, shortness of breath, excessive sweating, and increased salivation. Upon conducting PSR and IFA tests on all the mothers who applied to the perinatal center, it was confirmed that they were positive for SARS-CoV-2.

Infants born through natural delivery were found to be positive for SARS-CoV-2 when PSR and IFA tests were conducted in the maternity ward itself.

Infants born to pregnant women infected with COVID-19 who suffered from pneumonia, bronchopneumonia, and respiratory distress syndrome were subjected to pathological anatomical examination. As a result of the examination, the respiratory parenchyma of the 38-week-old infant showed areas of atelectasis - partially collapsed alveolar pathways that resemble a shadow (see Figure 1)."

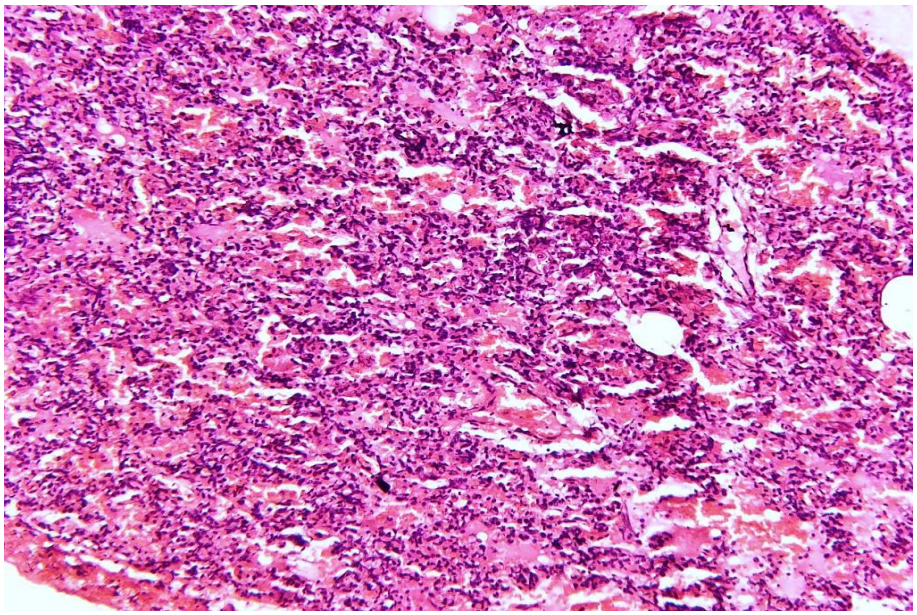


Figure 1: The first image shows an undeveloped lung with collapsed alveolar pathways. The alveolar walls are thickened, and homogeneous opaque structures are visible in the alveolar spaces. Scale: G-E. 10x10.

When examining the lungs of a 39-week-old fetus under a microscope, the bronchial walls were not fully opened. Homogeneous opaque structures were visible on the surfaces of the bronchial tubes, and there was desquamation of the bronchial epithelium (see Figure 2).

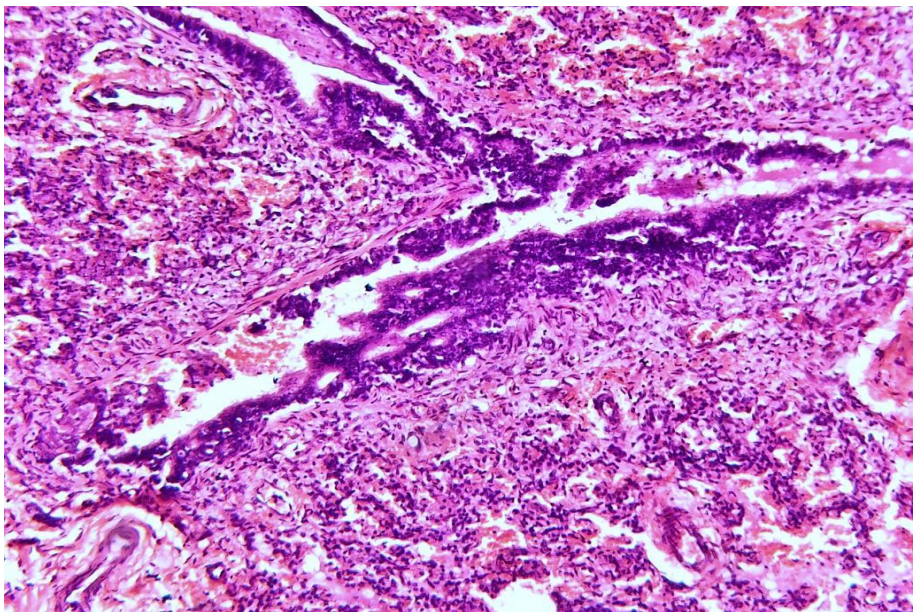


Figure 2: The bronchial walls were not fully opened. Homogeneous opaque structures were visible on the surfaces of the bronchial tubes. Desquamation of the bronchial epithelium was observed on some surfaces. Scale: G-E. 40x10.

In a newborn infant born at 38 weeks with respiratory distress syndrome, called K, who also had meconium aspiration pneumonia, the alveolar walls showed meconium staining, thickening of the alveolar walls, increased cellularity, and increased vascularity. Alveolar spaces were enlarged to varying degrees (see Figure 3).

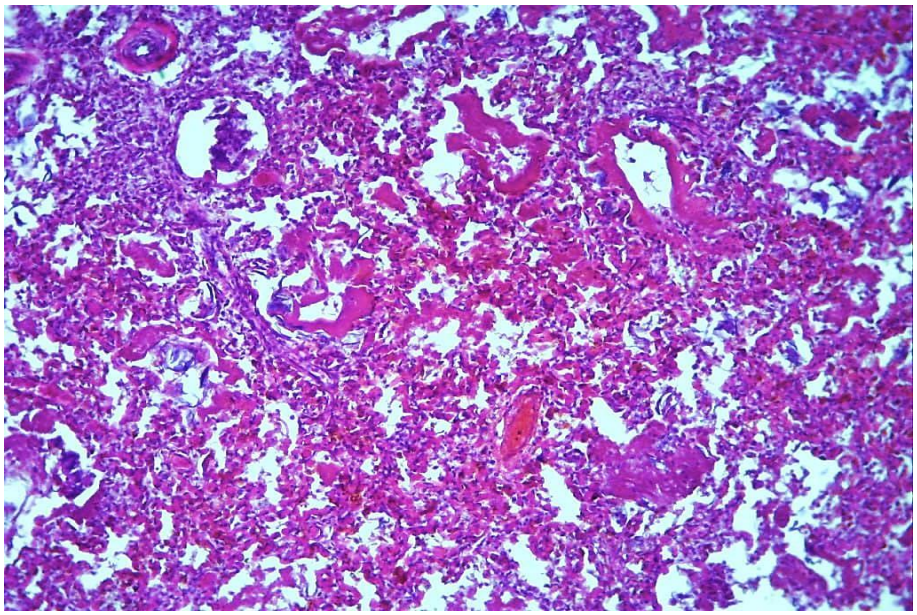


Figure 3: Emphysematous enlarged alveolar spaces with thickened walls, increased cellularity, increased vascularity, massive desquamation, and focal neutrophil infiltration in the alveolar bronchial tubes. Scale: G-E. 10x10.

In conclusion, during the COVID-19 pandemic, it was observed that 60% of newborn infants born to pregnant women infected with SARS-CoV-2 developed pneumonia as a secondary condition. This disease primarily affected infants at 38 weeks of gestation, with female infants being more affected, accounting for 60% of cases.

Most infants infected with SARS-CoV-2 also developed pneumonia, bronchopneumonia, and respiratory distress syndrome. These conditions may be the result of external factors during their development.

Autopsies were performed on deceased infants born to mothers with confirmed SARS-CoV-2 infection. The internal organs, specifically the lungs, showed undeveloped lung structures, collapsed alveolar pathways, thickened alveolar walls, homogeneous opaque structures in the alveolar spaces, complete absence of bronchial walls, homogeneous opaque structures in the bronchial tubes, desquamation of the bronchial epithelium, meconium staining in the alveolar walls, increased cellularity, increased vascularity, and varying degrees of enlargement in the alveolar spaces.

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