

## PATHOMORPHOLOGICAL CHANGES IN NEONATES WITH HYALINE MEMBRANE DISEASE

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**Purpose of the study:** To develop and improve the criteria for pathomorphological changes in the lungs of neonates with hyaline membrane disease.

**Materials and methods:** The study included autopsy data from 52 neonates who were born prematurely and died of pulmonary insufficiency. Initially, the medical history and autopsy reports of the neonates were analyzed. The premature infants were divided into the following groups based on gestational age: group 1: 22-27 weeks (12 neonates, 23.1%), group 2: 28-32 weeks (18 neonates, 34.6%), group 3: 33-37 weeks (22 neonates, 42.3%).

The first group, consisting of neonates born at 22-27 weeks with extremely low birth weights who died within one hour of birth, was taken as the control group. The objective was to identify the early morphological changes leading to the development of hyaline membrane disease in the lungs of these neonates. The main cause of death in this group was postnatal asphyxia. Prenatal and intranatal risk factors were present in all cases, as were placental and umbilical cord pathologies.

**Results:** The medical history and autopsy reports of the neonates were analyzed. Based on gestational age, the infants were divided into the following groups: Group 1: 22-27 weeks (12 neonates, 23.1%), Group 2: 28-32 weeks (18 neonates, 34.6%), Group 3: 33-37 weeks (22 neonates, 42.3%).

The first group (22-27 weeks) consisted of deeply premature infants with extremely low birth weight who died within an hour of birth and were used as the control group. The main cause of death in this group was postnatal asphyxia. Examination results indicated that the condition of these neonates at birth was extremely severe, with pronounced morphofunctional deficiencies and severe cardiac and respiratory failure. In the second group, three infants died within the first six hours after birth, six (33.3%) between 12-24 hours, five (27.7%) within 72 hours, and four (22.2%) within 120 hours. In three of the infants who died within six hours of birth, homogeneous hyaline membranes were found in certain areas of the lungs, primarily around the peribronchial regions.

In the third group, eight (36.3%) infants died within 12-24 hours after birth, six (27.3%) within 72 hours, and eight (36.3%) within 120 hours. In infants who died between 12-24 hours, hyaline membranes were found in most areas of the lung tissue, filling the expanded alveolar spaces. In many alveoli, detached alveolocytes, segmented leukocytes, cellular fragments, bronchial epithelium, and lymphocytes were observed. In infants who died within 72 hours, the alveoli were of varying sizes, with hyaline membranes present in some. The alveolar septa were thickened, and fibroblast and lymphoid cell proliferation was noted. The bronchi were dilated and filled with leukocytes, detached epithelium, and erythrocytes. In infants who died within 120 hours, the alveolar tissue was mostly expanded with air, with some emphysematous foci, and the hyaline membranes were fragmented and disintegrating. A strong reaction to the hyaline membranes was observed, including marked lymphohistiocytic infiltration in the interstitial tissue.

**Conclusion:** The presence of respiratory distress syndrome and hyaline membrane disease can be suspected based on the following criteria: 1) premature birth (27-32 weeks), 2) birth weight of 1000-1500 grams, 3) deterioration in the infant's condition by the second or third day, 4) hypoproteinemia, hyperbilirubinemia, and thrombocytopenia.