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STRUCTURAL CHANGES IN THE BRAINS OF NEWBORN DEATHS IN DEATH BECAUSE OF THE ATELEKTATIC FORM OF PNEUMOPATHY CHANGES IN THE ATELEKTATIC FORM OF PNEUMOPATHIA IN THE BRAINS OF BABIES

Amonova G.U., Jumanov Z.E.

Samarkand State Medical University

✓ ***Resume***

This article examines the morphological changes in the structures of the brain of those who died from an atelectatic form of pneumopathy, and identifies morphometric parameters and compares and analyzes changes in the brain at death in this condition. Similar aspects were identified during the analysis process.

Keywords: Pneumopathy; brain; stroke; neuron; perivascular and pericellular space.

МОРФОЛОГИЧЕСКИЕ ИЗМЕНЕНИЯ СТРУКТУР ГОЛОВНОГО МОЗГА УМЕРШИХ НОВОРОЖДЕННЫХ ОТ АТЕЛЕКТАТИЧЕСКОЙ ФОРМЫ ПНЕВМОПАТИИ

Амонова Г.У., Джуманов З.Э.

Самаркандский государственний медицинский университет

✓ ***Резюме***

В данной статье рассматриваются морфологические изменения структур головного мозга умерших от ателектатической формы пневмопатии, выявляются морфометрические параметры и проводится сравнение и анализ изменений головного мозга при смерти в этом состоянии. Аналогичные аспекты были выявлены в процессе анализа.

Ключевые слова: пневмопатия, мозг, инсульт, нейрон, периваскулярное и перицеллюлярное пространство.

PNEVMOPATIYANING ATELEKTATIK SHAKLIDAN O'LIB TUG'ILGAN BO'LGAN MIYA TUZILISHIDAGI MORFOLOGIK O'ZGARISHLARI

Amonova G.U., Djumanov Z.E.

Samarqand davlat tibbiyot universiteti

✓ ***Rezyume***

Ushbu maqolada pnevmopatiyaning atelektatik shaklidan vafot etganlarning miya tuzilmalaridagi morfologik o'zgarishlar ko'rib chiqiladi, morfometrik ko'rsatkichlar aniqlanadi va bu holatda o'lim paytida miyadagi o'zgarishlar taqqoslanadi va tahlil qilinadi. Tahlil davomida shunga o'xshash jihatlar aniqlandi.

Kalit so'zlar: pnevmopatiya, miya, insult, neyron, perivaskulyar va pericellular bo'shliq.

Relevance

Every year, 2.8 to 3.2 million infants die from respiratory pathology worldwide, according to WHO data (8, p. 72). In the first days of the early neonatal period, the direct cause of death in children remains respiratory dysfunction of various etiologies in 70-80% of cases (1, p. 3, 11, p. 517,

13, p. 608., 15, p. 788). , 16, p. 338., 18, p. 281., 20, p. 318., 22, p. 2528) According to the World Health Organization (WHO), every year on average, every tenth pregnancy in the world ends in premature birth Nearly 15 million premature babies die in a single day. Despite the significant advances in perinatal medicine today, according to WHO, acute respiratory distress syndrome is one of the leading causes of perinatal death in infants, not only in premature infants but also in preterm infants (3, pp. 9, 5, p. 20). , 7, p. 38., 6, p. 35., 12, p. 223., 14, p. 326., 17, p. 26., 19, p. 20., 21, p. 27., 23, p. 353).

The purpose of the study: to conduct a comparative analysis of structural changes in the brains of those who died due to the atelectatic form of pneumopathy.

Materials and methods

The bodies of 42 newborns who died at birth with an atelectatic form of pneumopathy were examined. The dead babies lived 3-15 days. Of these, 31 are male and 11 are female. Material for special histological examination was taken from the following parts of the brain: the cortex and the white matter attached to it. The obtained tissue fragments were fixed in 10% neutral formalin, passed through an alcohol battery, and paraffin blocks were prepared. The prepared histological sections were stained with hematoxylin and eosin, Nissl and Mallori method. The proportion of neurons and vessels in the brain was measured by the point type of G.G. Avtandilov. For the mathematical processing of the data, the Student method was used to determine the arithmetic mean M, the error m of the relative values, and the reliability coefficient t of the difference.

Results and discussion

In infants who died from an atelectatic form of pneumopathy, lung tissue was found to be unevenly filled, diffuse hemorrhage, atelectasis and distelectasis of the alveoli (Fig. №1).

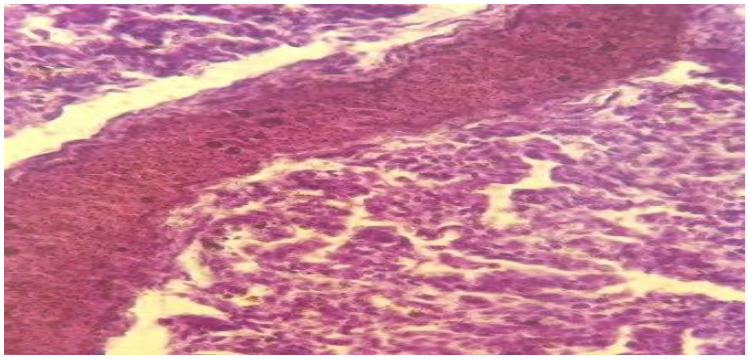

Figure-1. Atelectatic form of pneumopathy is pulmonary vascular occlusion, alveolar atelectasis and distelectasis. Stained in hematoxylin-eosin. Ob.40, ok.10

A macroscopic examination of the brain of a newborn who has died due to an atelectatic form of pneumopathy reveals fullness and swelling of the soft palate (Fig. №2).

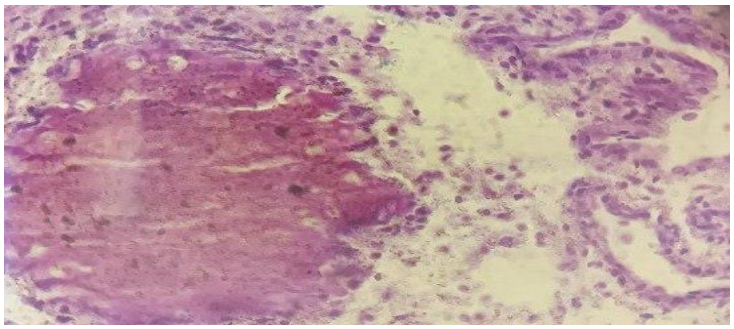

Figure-2. In the atelectatic form of pneumopathy, fullness and swelling of the soft palate of the brain. Stained in hematoxylin-eosin. Ob.40, ok.10

Microscopic examination reveals the presence of cerebral blood vessels, blood-forming elements, and signs of swelling in the wall. A slight dilation of the perivascular space is observed. There are shaped elements in the cavity of the microcirculatory vessels, and perivascular swelling is observed (Fig. №3).

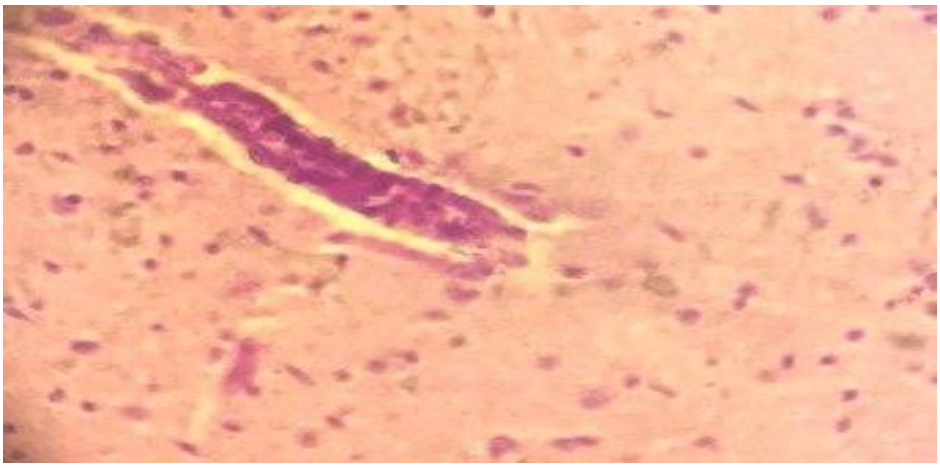

Figure-3. In the atelectatic form of pneumopathy is an enlargement of the perivascular space around the cerebral cortex. Stained in hematoxylin-eosin. Ob.40, ok.10

Ischemic-type changes in the cortical neurons of the cerebral hemispheres, the nucleus is eccentrically located, in a picnotic state, vacuolar dystrophy in the cytoplasm. In neurons, signs of wrinkling, tumors are shortened, thickened, and the process of satellitosis is detected. Weak swelling is detected around the neurons. The neuropile is illuminated. The number of gliocytes around the neurons has increased, and some gliocytes are arranged in a row in a columnar view. The nucleus is located in the center, the cytoplasm is illuminated, the nucleus of some gliocytes is not detected (Fig. №4).

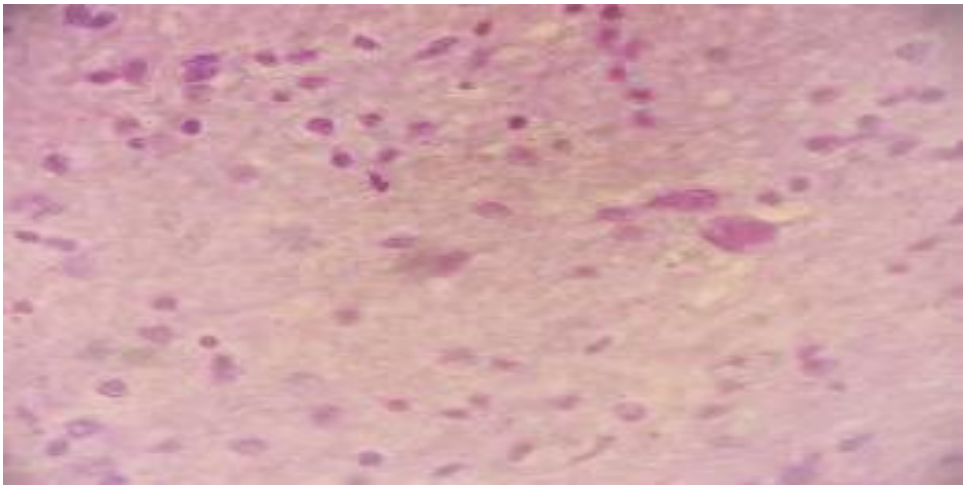

Figure-4. Changes in neurons and glial cells of the cerebral cortex in the atelectatic form of pneumopathy, the process of satellitosis. Stained in hematoxylin-eosin. Ob.40, ok.10

The morphometric parameters of the areas occupied by neurons and blood vessels in the brain of infants who died from an atelectatic form of pneumopathy are given in the following table (Table №1).

Table №1

The ratio of neurons and pericellular spaces (PCS), vascular and perivascular space (PVS) in the brain of newborns who died from an atelectatic form of pneumopathy (%)

Status	Neuron	PCS	Neuron + PCS	Vascular	PVS	Vascular + PVS
Pneumopathy	0,41±0,06	0,82±0,1	1,23±0,16	2,17±0,11	1,12±0,12	3,29±0,23

The table shows that the area occupied by neurons in the cerebral cortex of infants who died from an atelectatic form of pneumopathy was 33% and the area occupied by pericellular space was 67%. The vascular area is 66% and the perivascular share is 34%. This suggests that the space around the neurons expands more than the space around the blood vessels.

In morphometric indicators, the area occupied by the perivascular space is greater than the area occupied by the pericellular space. As the postmortal period increases, the area occupied by the perivascular and pericellular space expands in parallel (9, p. 435, 10, p. 68).

The morphometric parameters of neurons are given in the following table (Table №2).

Table №2

Morphometric parameters of neuronal tumors of the brain of newborns who died from an atelectatic form of pneumopathy (mkm)

Status	Neuron tumor height	Neuron tumor height
Pneumopathy	38,3±2,3	3,1±17,1

In the atelectatic form of pneumopathy, the average proportion of neuronal tumors is 92% in length and 8% in width.

From the above data, it can be seen that the state of stasis in the microcirculatory vessels of infants who died from an atelectatic form of pneumopathy is undetectable. As for changes in neurons, neurons are small in size, developing ischemic type and dystrophic changes. Changes in the size of morphometric indicators are characteristic of the development of the brain in infants. In the newborn's brain, the proportion of water is high and the fibrillar components are low-glial membranes, glial elements, and tumors of neurons are poorly expressed. Therefore, the brain of a newborn baby has a soft consistency. The gray matter of the newborn's brain is thin, the neurons are located close together. The number of neurons does not increase after birth. They are badly differentiated. Thus, the pyramidal cells do not have the correct shape. The shape of the neurons can be explained by the fact that they have small and few tumors (2, p. 27).

Conclusion

Thus, structural changes in the brain of newborns who died from an atelectatic form of pneumopathy are clearly reflected in the presence of neurons relative to the blood vessels. In particular, scientific research should be conducted on the problem of developing criteria for medical care, taking into account the structural changes in the brain in the atelectatic form of neonatal pneumopathy.

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