

MORPHOMETRIC INDICATIONS OF MYOCARDIAL STRUCTURES OF COMMON AMNIOTIC TWINS WITH COMMON COMMON AMNIOTIC TWINS PREPARED AT DIFFERENT PERIODS

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The purpose of the study: Determination of morphometric indicators of myocardial structures of monoamniotic twins with common placenta born at different periods.

Materials and methods of the study: Morphological and morphometric aspects of myocardial structures of 178 twins who died from atelectatic pneumopathy in the multidisciplinary clinic of Samarkand State Medical University were studied. In this case, tissue fragments measuring 1x1x0.5 cm were taken from the left ventricle and interventricular septum of the heart from the section materials obtained during autopsy for special histological examination. 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, Van Gieson, and Weigert methods. Histological preparations were used to study the myocardial layer, cardiomyocytes, intermuscular spaces, intramural blood vessels of various calibers, rheological properties of blood within the vessel, and the perivascular space (PVS). Morphometric examination was performed to objectively assess the structure of the muscle and blood vessels. For this, a dot grid of 4 small squares (consisting of 100 points) recommended by G.G. Avtandilov was used. Morphometric measurements were performed at the size of the microscope ob.20xok.10. In this case, the number of points falling on cardiomyocytes and sclerotic tissue, as well as the number of PVS and blood vessels located in it, was counted. Also, to study the morphometric aspects of the structure of cardiomyocytes, sclerotic tissue, and blood vessels, an ocular micrometer recommended by G.G. Avtandilov was used.

Results of the study. In monoamniotic twins with a common placenta who were born and died at different terms, the pathomorphological parameters of the hearts of twins with a small heart volume differed from those of twins with a large heart volume by birth dates. In this case, specific differences were detected in the interventricular edema, the proportion of the blood vessel space and wall, the perivascular space, and the diameter of cardiomyocytes. In monoamniotic twins with a large heart volume who were born and died at



different terms before 28 weeks of gestation, the area occupied by muscle tissue in the myocardial layer was 66.1 ± 0.90 , and the area occupied by interventricular edema was 19.1 ± 0.36 . In twins born at 28-32 weeks, these indicators are 73.1 ± 0.68 and 25.4 ± 0.43 , respectively . In those born at 32-37 weeks, the morphometric indicators of the area occupied by muscle (76.4 ± 0.36) and fibrous tissue (28.6 ± 0.46) are equal. In monoamniotic twins with a common placenta, with a relatively small heart volume, these indicators are in the ratio of $64.7 \pm 0.79 / 18.4 \pm 0.37$; $70.3 \pm 0.98 / 24.3 \pm 0.66$; $74.5 \pm 0.73 / 27.8 \pm 0.33$. In twins with almost identical heart volumes, these indicators are $65.0 \pm 0.88 / 18.6 \pm 0.44$; $71.0 \pm 1.02 / 24.07 \pm 0.60$; $74.9 \pm 0.69 / 28.1 \pm 0.25$, respectively.

Morphological changes in cardiomyocytes of monoamniotic twins with large and small heart volumes and close heart volume parameters have specific morphometric parameters depending on the timing of birth and heart volume.

In diamniotic twins with a common placenta and a relatively large heart volume, born and dying before 28 weeks of gestation, the morphometric parameters of cardiomyocytes were 2.2 ± 0.04 μm , while these parameters were 2.58 ± 0.06 μm in twins born at 28-32 weeks of gestation. At 32-37 weeks of gestation, they were 2.93 ± 0.03 μm , respectively. In the group with a relatively small heart volume, these parameters were 2.11 ± 0.03 ; 2.45 ± 0.08 ; 2.74 ± 0.11 μm . In the latter group, these parameters were 2.14 ± 0.03 ; 2.48 ± 0.07 ; 2.89 ± 0.08 μm .

In monoamniotic twins with a common placenta born and dying before 28 weeks of gestation, the area occupied by the intramyocardial blood vessel wall is 34.0%, and the area occupied by the blood vessel space is 66.0%, while in twins at 28-32 weeks of gestation, these indicators are 39/61%, respectively. In twins at 32-37 weeks of gestation, the area occupied by the blood vessel wall is 38%, and the area occupied by the blood vessel space is 62%. In twins with a relatively small heart volume, these indicators are 40/60% (before 28 weeks); 36/64% (before 28-32 weeks); 41/59% (up to 32-37 weeks), 39/61% up to 28 weeks in identical twin fetuses with the same heart rate; 37/63% up to 28-32 weeks; 41/59% in twin fetuses born and dying up to 32-37 weeks.

In monoamniotic twins with a large and small heart volume and similar heart volume parameters, the ratio of the areas occupied by blood vessels and perivascular space varies depending on the term of birth and heart volume. In monoamniotic twins with a large heart volume who were born and died before 28 weeks of gestation, the area occupied by intramyocardial blood vessels was 76%, while the area occupied by PVB was 24%. In twin fetuses born and died



before 28-32 weeks of gestation, the blood vessels occupied 70%, and PVB occupied 30% of the area. At 32-37 weeks, it is noted that the blood vessels occupied 71% of the area, and PVB occupied 29%. In monoamniotic twins with a common placenta, which have small heart volumes and are relatively close to each other, the ratio of /76/24; 72/28; 71/29 and 75/25; 73/27; 60/40 is observed, depending on the date of birth.

Conclusion. Thus, in monoamniotic twins with a common satellite, born before 28 weeks of gestation and living and dying at different times, the area occupied by muscle tissue in the myocardial layer is a greater percentage than in twins born between 28 and 32 weeks of gestation, and with increasing gestational age, the proportion of intermuscular area is observed to increase.

In the myocardial layer of a heart with a larger size, cardiomyocytes have higher indices, but the morphometric indices of cardiomyocytes of twin fetuses with almost equal volumes are similar to those of a heart with a larger and smaller volume.

The indices of the area occupied by the blood vessel wall and the blood vessel space of intramyocardial blood vessels of different sizes born and living at different terms do not have significant differences depending on the dates of birth. However, depending on the size of the heart and the dates of birth, differences are noticeable in the indices of the area occupied by the blood vessel wall and the space. This phenomenon can be expressed, firstly, in relation to the size of the heart and the date of birth, and secondly, due to pathomorphological changes in the blood vessel wall.

The proportions of the area occupied by intramyocardial blood vessels and PVB in monoamniotic twin fetuses with common placenta born and living at different terms differ depending on the size of the heart. In particular, in twins with a larger heart size, the area occupied by PVB is greater. Also, as the birth period increases, the indicators of the area occupied by blood vessels and PVB also increase

