

MORPHOMETRIC CHANGES OF SKELETAL MUSCLES OF ANIMALS IN THE POSTNATAL PERIOD (REVIEW OF LITERATURE)

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Abstract

The morphometric indicators of the muscles affecting the leg joint at different physiological stages of the postnatal ontogenesis of sheep were studied, and the characteristics of muscle changes at their physiological stages were studied.

Keywords: sheep, postnatal ontogeny, leg, muscle, wrist joint, morphometric,

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At different physiological stages of the postnatal development of the organism, somatic muscles, like all organs, show their morphofunctional properties. Studying the characteristics of changes in these organs at various physiological stages after the birth of an animal is of great scientific and practical importance in the development of veterinary measures for the early detection of pathological changes occurring in this system, their treatment, and prevention.

The growth process of an organism is characterized by three main elements, i.e. speed, duration, and periodicity [1]. The growth rate decreases as the animals get older.

At different stages of postnatal ontogenesis of sheep, the specific characteristics of changes in weight and muscle tissue were studied. When the muscle, fat, and bone tissues were morphologically examined, muscle tissue increased by 3.05 kg and relative weight by 1.30 during the period from 6 to 8 months of age. % decrease, from 8 months to 12 months muscle tissue by 19.6 kg, and relative weight by 6.75 % was determined [2].

In the postnatal ontogeny of Romanov sheep, it was found that the growth of muscles is not uniform, and its speed increases at one age and decreases at another age [3, 4]. According to the author, the more rapidly this indicator increases at one age, the more sharply it decreases at the next age, the weight of leg muscles increases slightly at the 3, 6, and 9 months of postnatal ontogenesis, and at 4, 5, 7, 8 months, this process slows down. A scientist who studied the growth of the muscles of soft-wool sheep of Kazakhstan [5, 6] found out that the speed of muscle growth is high in the first 2 months of the animal's life, the growth speed decreases

from 5 months, and the total weight of muscles decreases in 6-7 months. According to the author, in the first month of postnatal development of sheep, a slight acceleration of growth is observed in the back muscles, then in the body muscles, and the muscles in the front legs grow slowly.

Experts and researchers have long been interested in the study of factors affecting the dynamics of changes in the morphofunctional characteristics of skeletal muscles at various physiological stages of the postnatal development of the body. In particular, the growth dynamics of skeletal muscle tissue of sheep during postnatal ontogenesis was studied [7], and its weight increased rapidly from the newborn stage to 4 months, then it slowed down in the period up to 10 months, and at 12 months, its relative index increased slightly. The author associates this situation with the manifestation of sexual dimorphism [8].

The muscles of the forelegs have a high growth rate from birth to eighteen months of postnatal development, a sharp decrease in growth rate from 18 months to adulthood, that is, the growth rate is 11.2 times in the muscles affecting the shoulder joint and 9 times in the muscles affecting the elbow joint. ,1 times, 10.5 times in the muscles affecting the wrist joint, 4.6 times in the muscles of the finger joint, and 1.2 - 1.5 times in the studied muscles from 18 months to older years [9].

After studying the muscles of 12 sheep belonging to four different breeds, according to their data, these muscles make up 41% of the body muscles. Although there were significant differences in the weight of individual muscles during the tests, when the numerical measurements were determined as a percentage of the total weight of the muscles of the body, surprising results were obtained. That is, there was no significant difference in individual muscles in any breed, however, the highest index was determined in 6 out of 12 muscles in Southdown sheep, and therefore this type of muscle development was recognized as somewhat appropriate [10].

According to information, the skeletal muscle system is an active part of the movement organs, which is mainly made up of auxiliary elements such as muscles and fascia, tendons, and is connected to the skeleton as a system of joints, and either creates various movements of the body, or keeps the skeleton in a certain position by freezing it [11].

Researchers [12] observed that the muscle tissue of cattle, sheep and pigs consists of 300 anatomically distinct muscles.

According to the data, with the age of Tsigai lambs, the relative weight of the musculature increases in the axial part of the skeleton, and on the contrary, it decreases in the peripheral part. As a result of the author's research, it was also determined that the muscles of the shoulder girdle within the skeletal muscles of the arrow, and the muscles of the chest and abdominal wall after weaning the lambs, grow somewhat faster [13].

When the differences in the weight of muscles according to the sex of the animals were studied [14], it was noted that the weight of the muscles of the axis of the skeleton of 4-month-old Tsigai rams was 7.3% higher than that of females, 8% at 8 months, and 14.4% at 12 months. Other authors [15] stated that the 69 kg live weight of genetically modified rams had 40% more weight of broad shoulder muscle than normal animals, but it was observed that the taste quality of the meat was worse.

According to the authors, in order to obtain high-quality and more meat from animals, four methods can be used to reduce sexual reflexes and aggressiveness in them [16].

Castration of sheep by traditional surgical and other chemical methods has been shown by researches to result in complete inability to obtain meat products from them [17].

The characteristics of muscle development in the postnatal ontogeny of Tsigai sheep were studied, and it was found that the muscles of the front legs have a higher growth rate than those of the hind legs [18]. In sheep, the growth of the muscle tissues of the hind legs slows down in the distal direction, that is, the more muscle groups are located in the distal part of the legs, the more their absolute weight increases with the age of the animal. falling functional weight is also affected. The morphometrical peculiarities of tubular bones of autopodies of sheep in Karakul and Gissar breeds at postnatal ontogenesis were studied by using morphometrical methods. Proximal and distal joint cartilages of bones were thicker at new-born animals and till 60 months age it gradually became thinner. The terms of ossification of metaepifizar cartilage of tubular bones of autopodies at postnatal ontogenesis depended on their placement in the skeleton of extremities, habitat conditions and breed of animals were determined [19]

The morphometric indices of some muscles acting on the joints of the proximal thoracic and pelvic limbs in different physiological periods of postnatal ontogenesis of the Hissar sheep were studied, and an intensive increase in indices up to 3 months was found, and the highest indices were noted at 18 months of age than in the other studied ages. postnatal ontogenesis, also due to the direct influence of natural habitat conditions on the dynamics of development of these muscle indicators, it is higher in sheep with adequate conditions than in inadequate ones [20].

The morphometric indicators of the muscles acting on the joints of the thoracic limbs in different physiological periods of postnatal ontogenesis of the Hissar sheep were studied, and an intensive increase in absolute indicators up to 3 months was found, and the highest rates were noted at 18 months of age than in the other studied ages of postnatal ontogenesis; due to the direct influence of natural habitat conditions on the dynamics of the development of absolute mass indicators and the linear measurement of muscles, it is higher in sheep of adequate conditions than inadequate ones [21].

Summary

Scientific researchers have studied the morphometric parameters of somatic muscles of animals of various species and breeds, the chemical composition of the muscles, the formation and development of their histological structures in the physiological stages of natal and postnatal development. Also, it was noted that there is insufficient scientifically based information on the postnatal morphogenesis of the leg muscles during the postnatal ontogeny of Hisori sheep, which are raised in regions with different environmental conditions in the south of our republic.

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