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CHARACTERISTICS OF CHANGES IN POSTNATAL ONTOGENESIS OF THE PELVIC BONE OF SMALL CORN MOLARS

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Abstract: The dynamics of changes in the morphometric indicators of pelvic bones during the postnatal ontogeny of sheep and goats were studied. It was determined that the linear dimensions and absolute weight of the pelvis, regardless of the type of animal, increase rapidly until the first 3 months of postnatal development, this process does not change significantly until the next 48 months, and it shows the highest value at 60 months. Also, it was observed that the absolute indicators of the linear dimensions and weights of the pelvis were higher in all studied stages of postnatal ontogeny in Karakol sheep than in goats.

Key words: Sheep, goats, pelvis, linear size, absolute index, postnatal ontogeny, growth factor.

Enter. The development of the organism after birth is directly related to the conditions of the natural environment in which it lives, and this correlation is reflected in the morphofunctional characteristics of organs and tissues. In particular, the anatomical and physiological structure of the system of voluntary movement organs of animals living in regions that differ from each other in terms of geographical relief shows certain peculiarities. Because the difference in the area, in turn, is observed in the range of movement and mechanodynamics of animals.

Morphofunctional changes that occur as a result of physiological processes in the body, like all systems, are reflected in the morphological state of bones. Because the bone system is not only a reserve of elements such as calcium and phosphorus, which are important in the process of metabolism, but also an immune factor that ensures the natural resistance of the body.

Experiments conducted by many authors on laboratory animals show that natural zeolites have an effect on the amount of chemical elements included in bone and its structural structure. That is, under the influence of natural zeolites, the absorption of calcium and phosphorus increases, the amount of magnesium decreases, and the amount of aluminum and manganese increases. Structural changes in the bone are manifested in extreme effects that lead to the thickening of bone beams and canaliculi membranes, hypertrophy of the outer surface layers [1].

The authors identified previously unclear individual development laws of humans and animals, and individual development consists of 3 stages, namely embryonic, postnatal and mature periods [8]. One of the laws they interpret is that the chemical composition of cells, morphological and physiological characteristics of tissues and organs differ from each other at each stage of development, and each stage has its own biological rhythm.

As a result of the research conducted by the researcher on the general problems of ecological morphology and postnatal ontogeny of animals, it was found that the main morphological indicators of deer change according to the age of the animal throughout its life and are subject to a certain law [7].

The growth dynamics of skeletal muscle tissue of sheep during postnatal ontogenesis was studied [4], its weight increased rapidly from the newborn stage to 4 months, then it slowed down to 10 months, and its relative index increased slightly at 12 months. The author associates this situation with the manifestation of sexual dimorphism.

At the initial stage of postnatal ontogenesis, the morphofunctional state of calves has a great influence on the development of bone tissue and the development of the central organs of immunogenesis [2, 3].

The formation and development of bones in the postnatal ontogeny, changes in the amount of micro- and macroelements in their composition have been studied by a number of scientists in laboratory animals, and it has been determined that these processes are influenced by various external factors, especially in juvenile animals, which negatively affect the growth and formation of bones [6, 9] .

In the postnatal ontogeny of sheep, the absolute mass of bone tissue gradually increases, the axial section of the skeleton increases faster than the peripheral section, the percentage of the bones of the hind legs is higher than that of the front legs, and the weight of the bones of the front and hind legs increases almost synchronously (I.M. Lebedeva, 2008).

Materials and methods. Scientific investigations were carried out on the pelvic bones of small horned cattle, which were kept in the farms of Nurabad district of Samarkand region, belonging to the 3-day, 3-, 12-, 18-, 36-, 48-, and 60-month stages of postnatal ontogenesis. Young, clinically healthy and moderately obese female animals were selected for sampling.

General morphological methods used and introduced by N.P. Chirvinskiy were used in processing bones and determining their morphometric parameters. Research work was carried out at the Department of Animal Anatomy, Histology and Pathological Anatomy of the Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology.

All numerical data obtained as a result of scientific investigations were subjected to mathematical processing according to the method of E.K. Merkureva.

Reliability level - p (R) was found according to Student's table.

To determine the dynamics of bones depending on age, the growth coefficient was calculated. The growth coefficient was determined by dividing the length and weight of the bones of an adult animal by the corresponding indicators of the bones of a young animal, and the entire period of postnatal ontogenesis was determined by the formula (6) developed by K.B. Svechin:

K – growth factor;

W is the absolute index of the bone of an adult animal;

V0 is the initial index of the bone.

Mathematical-statistical analysis was performed using Student's and Fisher's criteria in Microsoft Excel computer spreadsheet.

Results and their analysis. The absolute index of the height of the pelvis, calculated as the arch of the hind leg, increased rapidly from the first 3 days of postnatal ontogeny of goats to 3 months, and this index increased from 6.46±0.08 cm to 15.81±0.08 cm, or its growth factor during this period was 2. It was noted that it reached 44 times. This bone index remained almost unchanged at 12 and 18 months, respectively, 15.86±0.11 cm (K=1.0; r<0.03) and 15.62±0.13 cm (K=0.98; r< 0.04), increasing to 17.63±0.24 cm at 36 months (K=1.13; r<0.03), without significant change at 48 months (16.64±0.17 cm, K =0.94), it was observed that 60-month-old showed the highest index (24.72±0.26 cm, K=1.48; r<0.03) compared to other ages. It was found that the coefficient

of growth of the absolute index of pelvic height increases up to 3.82 times during the period from the first 3 days to 60 months of postnatal development of goats.

The absolute index of the height of the pelvic bone in 3-day-old male goats is 7.62±0.11 cm, and it rapidly increases until the first 3 months of postnatal ontogenesis, reaching 16.56±0.12 cm (K=2.17; r<0, 03), this indicator remained almost unchanged in 12- and 18-month-old foals (respectively, 16.84±0.14 cm, K=1.02; 16.34±0.09 cm, K=0.97), 36 it was found that it increases slightly at the month of birth (18.73±0.21, K=1.15; r<0.03), does not change at 48 months and reaches the highest size at 60 months. It was noted that the coefficient of growth of the absolute index of pelvis height increases up to 3.48 times during the period from 3 days to 60 months of postnatal development of horses. it should be noted that this indicator of the pelvic bone was observed to be higher in males compared to females at all studied stages of postnatal ontogenesis.

The absolute indicator of the height of the pelvis of Karakol sheep increased from 7.32±0.11 cm to 16.76±0.09 cm (K=2.29; r<0.03) from 3 days to 3 months of postnatal ontogeny, and at 12 months - by 17.88±0.12 cm (K=1.07; r<0.03), at 18 months – by 17.64±0.14 cm, at 36 months – by 18.43±0.22 cm (K= 1.04; r<0.03), reaching 18.31±0.18 cm at 48 months and a significant increase of this indicator at 60 months (26.12±0.23 cm, K=1.43; r< 0.03) was recorded. It was found that the coefficient of growth of the absolute index of pelvis height increases up to 3.56 times during the period from 3 days to 60 months of postnatal ontogeny of sheep.

The absolute index of pelvic bone height in 3-day-old male lambs is 8.72±0.12 cm, with a slight increase until the first 3 months of postnatal ontogenesis (17.63±0.14 cm, K=2.02; r<0.03), in later youth, this indicator gradually increased to 17.64±0.16 cm (K=1.0) at 12 months, to 18.34±0.08 cm (K=1.04) at 18 months, at 36 months - up to 19.82±0.19 cm (K=1.08), at 48 months - up to 20.45±0.18 cm, at 60 months - 27.86±0.22 cm (K=1.36; r <0.03) was found to increase. It was observed that the coefficient of growth of the absolute index of pelvic height increased up to 3.19 times during the period from 3 days to 60 months of postnatal ontogeny of sheep.

The absolute index of pelvic bone weight in 3-day-old female goats was 35.46±0.14 g, and this index slightly increased until the 3rd month of postnatal ontogenesis (100.2±0.24 g, K=2.82; r<0, 03), almost unchanged until the next 18 months, i.e. at 12 months - 101.86±0.22 g (K=1.02), at 18 months - 100.96±0.19 g, at 36 months it decreased insignificantly (96.86±0.26 g, K=0.96), increasing to 109.82±0.18 g (K=1.13; p<0.03) g at 48 months and at 60 months compared to other ages the most it was noted that it shows a high index (198.66±0.26 g, K=1.81; r<0.04). It was found that the coefficient of growth of the absolute indicator of pelvic bone weight increased up to 5.6 times during the period from 3 days to 60 months of postnatal ontogeny of goats.

The absolute index of pelvic bone weight in 3-day-old male goats is 38.76±0.16 g, and its rapid increase until the first 3 months of postnatal ontogenesis (102.63±0.17 g, K=2.65; r<0, 03) and until the next 48 days to continue this process step by step and at 12 months - 107.62±0.16 g (K=1.05), at 18 months - 108.31±0.18 g (K=1 ,01), at 36 months - 112.84±0.19 g (K=1.04), at 48 months - 119.44±0.18 g (K=1.06), at 60 months to younger children it was observed that it showed the highest indicator (202.45±0.27 g, K=1.69; r<0.03). It was noted that the coefficient of growth of the absolute indicator of pelvic bone weight increases up to 5.22 times from 3 days to 60 months of postnatal ontogeny of horses.

The absolute indicator of the weight of the pelvis in female 3-day-old lambs is equal to 41.16±0.17 g, with a slight increase until the age of 3 months (104.46±0.23 g, K=2.54; r<0.03),

the gradual continuation of this process until the next 18 months of postnatal ontogenesis, and at 12 months - by 107.76±0.24 g (K=1.03), at 18 months - by 110.84±0.12 (K=1, 03; r<0.03), at 36 months it decreased to 100.78±0.26 g (K=0.91; r<0.03), at 48 months – 119.72±0.19 g (K =1.19; r<0.03), and at the age of 60 months - 201.27±0.22 g (K=1.68; r<0.03). It was found that the coefficient of growth of the absolute index of pelvic bone weight increases up to 4.89 times during the period from 3 days to 60 months of postnatal ontogeny of sheep.

The absolute index of pelvic bone weight in 3-day-old male lambs is 41.76±0.18 g, with a rapid increase until the first 3 months of postnatal ontogenesis and 106.44±0.19 g (K=2.55; r<0, 03), this process will continue at the same rate until the next 48 months of development, i.e. at 12 months - up to 109.22±0.18 g (K=1.03), at 18 months - 112.23±0.19 g up to 36 months - up to 116.67±0.21 g, at 48 days - up to 123.45±0.17 g (K=1.06), at 60 months the highest indicator compared to other ages (204.69± 0.22 g, K=1.66; r<0.03). It was noted that the coefficient of growth of this absolute index of bone weight increased up to 4.9 times during the period from 3 days to 60 months of postnatal ontogeny of sheep.

Summary:

- it was determined that the linear dimensions and absolute weight of the pelvis, regardless of the type of animal, increase rapidly until the first 3 months of postnatal development, pass this process without major changes until the next 48 months, and show the highest index at 60 months;

- it was observed that the absolute indicators of the linear sizes and weights of the pelvis were higher in Karakol sheep than in goats at all studied stages of postnatal ontogeny.

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