MORPHOFUNCTIONAL CORRELATIONS OF THE FOREARM MUSCLE AT SHEEP AND DOG

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Abstract

At both ovines and canines, the carpal, metacarpophalangeal and interphalangeal joints are predominantly organized in order for flexion and extension to be possible.cSince these movements are made in the same way for all joints mentioned, extensor muscles are grouped on the back and flexor muscles are on the palmar. At dogs, supinator muscles are framed in terms of topography, in extensor, dorsal muscle group and the pronator muscle in flexor, palmar muscle group.

Key words: muscle, forearm, sheep, dog

INTRODUCTION

Muscles found in the forearm region have large variations in domestic mammals,which corresponds to the specialization and diversification of the fingers numerical differences (1,2,5). At dogs, there are well represented pronator and supinator muscles, responsible for mobilization possibilities of autopodium in this species (3,4,6,7). This paper aims to detail the last two groups, correlating their morphology with specific functions.

MATERIALS AND METHODS

Research was conducted on a total of 5 sheep and 5 canine; muscles were dissected on successive plans untill reaching visibility limit, using Nikon's SMZ2-T Stereomicroscope. They photographed the most important elements. Description and formations approval was made according to N.A.V. - 2005.

RESULTS AND DISSUTION

At canines, on the cranial side of the forearm the brahio-radial muscle is sometimes,very reduced. It is accompanying the dorso-medial edge of extensor carpo-radial, from epicondyle ridge to the distal part of radius's medial edge.

Carpo-radial expander, which is very bulky in sheep, at dogs has a division tendency.

At canines the common digital extensor muscle divides his tendon in four branches who are distributed to distal phalanges of fingers II-V. In sheep, the muscle has two components: one medial, whose tendon ends on finger III and one on the side, with the tendons that reach the distal phalanges of the fingers III and IV.

Lateral digital extensor tendon in sheep ends at the finger four, while the dog is divided, with branches to finger IV and V.

If at sheep, the round pronator muscle is the superficial bundle of the medial collateral ligament and has some fleshy fibers interlaced with fibrous tissue, in dogs,the round pronator muscle is developed. It is thick, spindle-shaped, palpable under the skin and fascia on the medial forearm and elbow joint proximal third of the radius, which ends in a tendon blade. In addition to that,on the dog's cranial side there is the supinator muscle, caught between extensor muscles. It starts with a strong flat tendon that inserts on humerus, together with the lateral collateral ligament of the elbow. Fleshy body, flattened, covered by a thin aponeurosis that covers the proximal quarter of the dorsal side and medial edge of radius.

Also the dog has the square pronator muscle, which extends along the full length of the forearm palm face. Its fibers are oriented obliquely from the interosseous edge of the ulna on the palmar side, near the medial edge radius.

Carpo-ulnar extensor muscle at sheep is moved caudally and serves as autopodium`s flexor.

Superficial and deep digital flexors topography corresponds to the two species, except that tendons are divided into branches which correspond to the number of fingers

Fig. 1 Sheep forearm muscles - lateral aspect
1 carpo-radial extensor; 2-finger extensor digital media; 3-common digital extensor finger III and IV; 4-digital extensor lateral; 5-carpo-ulnar extensor; 6-carpo-ulnar flexor; 7-Superficial digital flexor; 8-digital flexor deep humeral portion; 9-flexor carpo-radial.

Fig. 2 Forearm muscles in sheep - medial aspect
1 carpo-radial extensor, 2 - pronator round, 3 - carpo-radial flexor, 4 - digital extensor side; 5 - carpo-ulnar extensor, 6 - carpo-ulnar flexor; 7 - superficial digital flexor, 8 - digital flexor deep humeral portion 9 - carpo-radial flexor.

Fig. 3 Forearm muscles in dogs - lateral aspect
1 - carpo-radial extensor, 2 - common digital extensor, 3 - lateral digital extensor, 4 - carpo-ulnar extensor, 5 - policis abductor longus, 6 - humeral portion of carpo-ulnar flexor; 7 - ulnar portion of the flexor carpo-ulnar, 8 - deep digital flexor, humeral portion.

Fig. 4 Forearm muscles in dogs - medial aspect
1 - carpo-radial extensor, 2 - pronator round, 3 - square pronator, 4 - superficial digital flexor; 5 - carpo-radial flexor, 6 - carpo-ulnar flexor, portion of humerus; 7 - digital flexor deep humeral portion, 8 - digital flexor deep radial portion.

CONCLUSIONS

Both at sheeps and in dogs the forearm muscles do not cover the radius`s medial edge ,which can be palpated under the skin.
The largest portions of venters muscles are located in the proximal half of the forearm, the distal third of the forearm, most of the muscles being represented by tendons.
Supinator muscle contractions cause radius rotation around an longitudinal axis, while ulna remains fixed;
Forearm muscles that control the movements of pronation and supination are: supinator muscle, quadrate pronator muscle and round pronator muscle whose morphological topography was described above.

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