Romanian Biotechnological Letters *Vol. 16, No. 2, 2011*
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ORIGINAL PAPER

Morpho-topographic study of the head lymphocenters in small ruminants

Received for publication, November 3, 2010
Accepted, April 11, 2011

G. PREDOI, C. BELU, B. GEORGESCU, I. DUMITRESCU, PETRONELA ROŞU, CARMEN BIŢOIU
Faculty of Veterinary Medicine Bucharest, Splaiul Independentei 105, sector 5, Romania.
E-mail: gabrielpredoi@yahoo.com

Abstract

The literature data being relatively brief, a comparative study was done regarding the morphology and topography of head lymphocenters in small ruminants. We investigated 10 sheep heads and 10 goats heads injected with China ink solution and dissected under the stereomicroscope. The appearance of the lymph nodes, their number and relations with neighboring formations, their topography and their efferents were followed.

Keywords: sheep, goats, lymph nodes, corresponding

Introduction

Anatomy treaties (BARONE, [1] CONSTANTINESCU [2]; COTOFAN & al. [3]; HABEL [5], PASTEA & al. [8] SISSON, [10]) provide summary data regarding the comparative morphology and topography of lymph nodes in the two species of small ruminants. In some work-papers (GABELLA, [4], HEATH [6], MAY [7]) there are some data regarding the lymphatic system in sheep and in others in goat (PREDOI, [9]) but there are not reported comparative aspects or individual variations that may occur.

Materials and methods

Dissection was performed on 10 heads of sheep and 10 heads of goats. A Stereomicroscope Nikon SMZ-2T was used for morphotopography studies. To highlight the lymphatic system injections using ink of China as a dye solution were performed. This is a black substance, soluble in water, which has an affinity for lymphatic tissue and is very well suitable to be managed in live animal. China ink solution was diluted in saline or distilled water to avoid any infections that would cause any changes in the volume of lymph nodes, which should induce some errors in interpreting the results. Description of formations was done according to Nomina Anatomica Veterinaria - 2005.

Results and discussion

In sheep, the mandibular lymph nodes are located on the medial portion of the horizontal mandibular branch, about halfway between the vascular notch and its angle (Fig. 1). They are placed at the junction of submental vein with the lingo-facial vein on the lateral side of the mandibular gland and ventral to the parotid gland. In 60% of the cases a single lymph group was identified and two lymph nodes in the rest; in both situations they have a kidney-shaped appearance, with variable sizes ranging from 1 to 2.5cm/0.5 to 0.8 cm.

The afferents come from nostrils, lips, cheeks and ventral regions of the head, aiming mainly facial vein and its auxiliary veins and lingo-facialis vein. The efferents are distributed to the lateral retropharyngeal lymph nodes.

Parotid lymph nodes are located at the caudal edge of the masseter muscle, ventral to the temporo-mandibular joint, covered by the rostral edge of the parotid gland (Fig. 2). Frequently (80% of cases) the lymphocenters were represented by two or three lymph nodes, the most voluminous length not exceeding 2.5 cm. The afferents come from nostrils, lips, skin from nasal and frontal regions, external ear, eyelids, from the skin that cover the masseter muscle. Also receive afferents from the parotid gland. The efferents reach the lateral retropharyngeal lymph nodes.

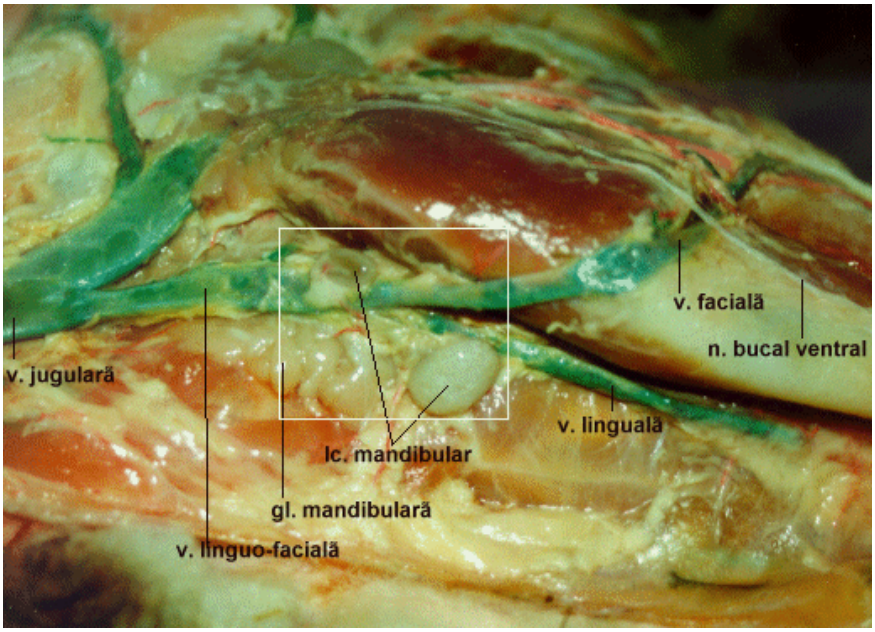

Fig. 1. The morphotopography of mandibular lymphocenter in sheep

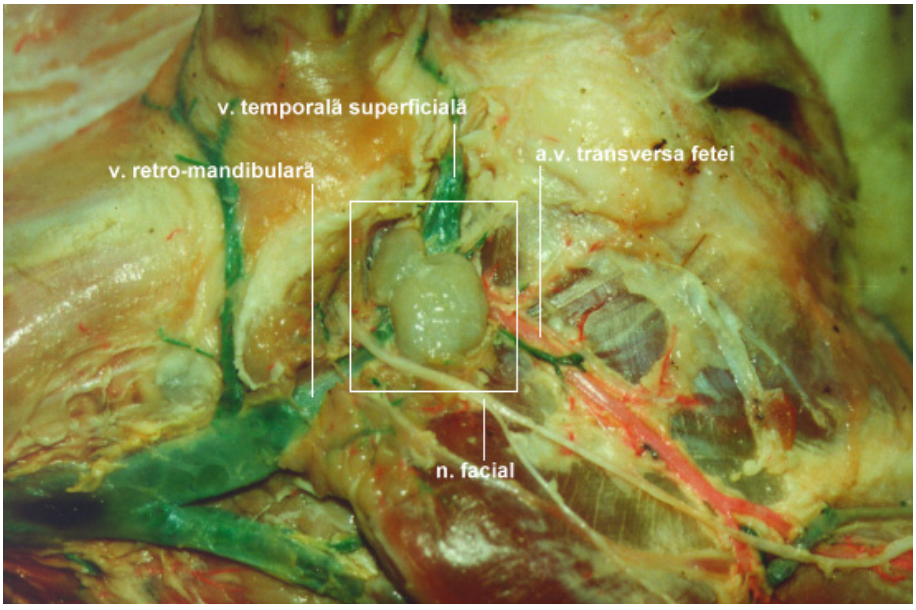

Fig. 2. The morphotopography of parotid lymphocenter in sheep

Lateral retropharyngeal lymph nodes are located at the caudal edge of the parotid gland, medial to the muscle tendon cleido-cephalic, caudal to the jugular process of occipital bone and cranial from ventral right muscle of the head (Fig. 3). There were identified one (20% of cases), two (60% of cases) or three groups of lymph nodes. Afferents come from parotid gland, medial retropharyngeal lymph nodes, partial from the pharynx and larynx and sometimes directly from the mandibular and parotid lymph nodes. Efferents get together and form tracheal trunk.

Medial retropharyngeal lymph nodes are located on the dorso-lateral wall of the pharynx. They can appear as a single group (80% of cases) or two lymph node groups whose length does not exceed 2 cm. Lateral they have relationships with the dorsal tip of the tirohioid bone and dorsal with the ventral right muscle of the head. Afferents come from the tongue, soft palate, roof of the mouth, pharynx, larynx, caudal portion of nasal cavity, sublingual and mandibular glands, and sometimes, from the mandibular lymph nodes. The efferents are dependent to lateral retropharyngeal lymph nodes.

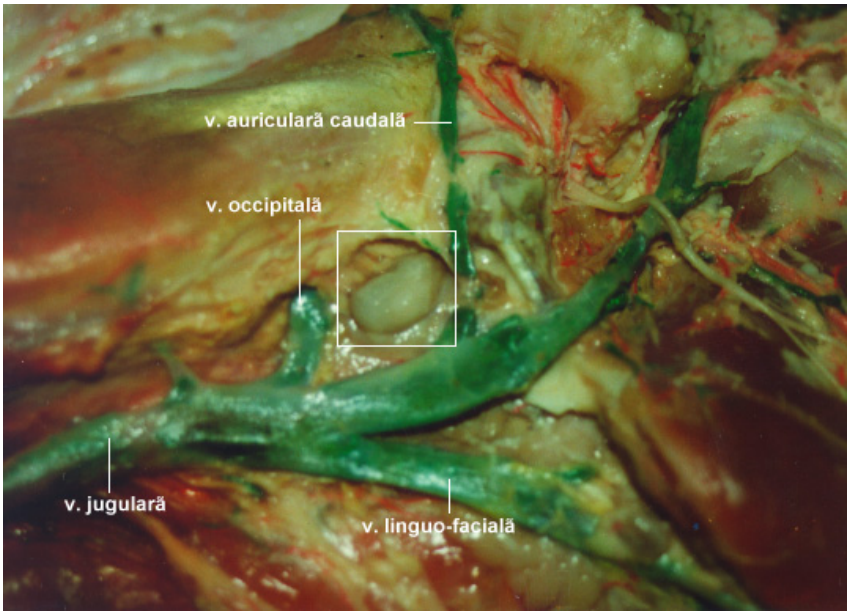

Fig. 3. The morphotopography of retropharyngeal lymphocenter in sheep

In goats the mandibular lymph is sized between 1.7 to 3.5 cm long and 1.0 to 2.2 cm thick. The afferents come from the skin and related structures associated with mandibular trough, tongue, mandibular gland and caudo-ventral portion of the masseter muscle. Efferents are directed to the lateral retropharyngeal lymph nodes or in isolated cases (10%) in the medial retropharyngeal lymph nodes. No pterigoidian lymph nodes were isolated.

Parotid lymph node, usually solitary have average size between 1.2 and 5 cm long, 0.8 to 2 cm wide and 0.5 to 1.5 cm thick. It is variable in shape, often presenting a slight middle strangulation. Laterally it has relationships with parotid gland. Medially it fits the origin of artery and vein transverse facial and terminal of superficial temporal vein. Afferents come from regional skin, nasal cavities, the dorsal regions of the nose, forehead, eyelid, external ear and maseterine and parotid gland. Efferent lymph vessels drain to the lateral retropharyngeal lymph nodes.

Lateral retropharyngeal lymph nodes are represented by two or three lymph nodes groups, most voluminous package not exceeding 2.8 cm long, 2.7 cm wide and 0.9 cm thick. These groups are placed in the cranial part of neck, on the ventral wing of the atlas, on caudal edge of the parotide gland normally included in a mass of fat. They are laterally covered by

the rostral aponeurosis of the cleido-cervical muscle. Medially they have reports with the long muscle of the head. The afferent vessels come from the skin associated with parotid region, the mandibular and parotid lymph from the cranial region of the neck muscles. The efferents were distributed to the medial retropharyngeal lymph nodes .

Retrofaringian medial lymph node in 90% of cases appears uniform, with sizes ranging from 2.1 to 4.5 cm long, 1.1 to 2.6 cm wide and 0.6 -1.2 cm thick. It is located like in sheep on dorso-lateral side of the pharynx on both sides of the median plan, the distance between left and right lymph node being of approximately 5 cm. On the lateral side they are in contact with the medial pterygoid muscle, with the external carotid arteries and the ascending pharyngeal arteries and with the glosofaringian nerve.

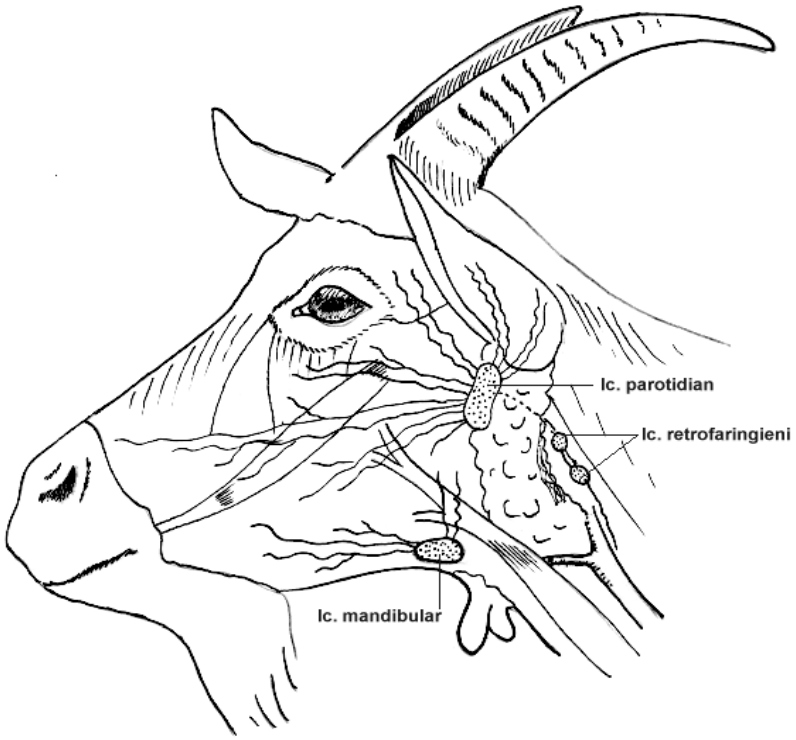

Fig. 4. The morphotopography of head lymphocenters in goat

They are located ventral to the basilar portion of occipital bone and the tendon of the long muscle of the head and dorsal to the pterygoid muscles and tirofaringian. The afferents come from the mouth, gums, tongue muscles and the mandibular region and occasionally from the mandibular lymph nodes. The efferents converge and form the root of tracheal trunk. There were no evidence of hyoidien lymph nodes.

Conclusions

Mandibular lymph node in sheep is represented by a single lymph node in 60% of cases, or two lymph nodes, while in goats there is a larger single lymph node. Parotid lymph center in sheep is represented by two or three lymph nodes in 80% of cases, while in goats is often solitary, showing in the middle a slight strangulation. Retrofaringian lymph center is represented by the lateral and medial retropharyngeal lymph nodes. Hyoidien and pterigoiden lymph nodes were not found.

Acknowledgements

This research was financially supported by UEFISCSU, research grant 1096/2009, project ID_1324/2008.

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