

Macroscopic study of lymph nodes development in sheep fetus

Khazaeel, K.¹; Khaksary Mahabady, M.²; Pourmahdi Borujeni, M.³ and Yazdanjoo, B.⁴

Received: 17.06.2017

Accepted: 04.11.2017

Abstract

Due to the importance of immune system and important roles of lymph nodes against pathogens and with regard to there were not any study about the anatomy of lymph nodes in sheep fetuses, This research was conducted to study macroscopic developmental growth of lymph nodes in fetal period. Also, anatomical specifications and estimating time of formation of some important lymph nodes evaluated. For this purpose, sixty sheep fetuses collected from slaughterhouse of Ahvaz, after fixation in 10% formalin solution and sex determination, were divided into four groups according to CRL. Mandibular, superficial cervical (prescapular), caudal mediastinal, jejunal mesenteric and popliteal lymph nodes from five lympho centers included head, neck, thorax, abdominal viscera and pelvic limb was evaluated, respectively. In each sample, appearance formation of nodes was studied and in the case of formation, gross shape, location, and their number were checked. In this research, a morphological study of the lymph nodes in the sheep fetuses showed that mandibular, prescapular and jejunal mesenteric lymph nodes, commonly had and ovoid shape in all groups. However, with regard to the mesenteric lymph node, other forms were seen with age increasing.

Key words: Fetus, Lymph Nodes, Sheep, Morphology, Macroscopic development

1- Assistant Professor, Department of Basic Sciences, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran

2- Associated Professor, Department of Basic Sciences, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran

3- Associated Professor, Department of Food Hygiene and Quality Control, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran

4- DVM Graduated from Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran

Corresponding Author: Khazaeel, K., E-mail: k.khazaeil@scu.ac.ir

References

- Asha, A.; Maya, S.; Harshan, K.R. and Chungath J.J. (2011). Morphometric observation on lymph nodes in goat foetuses. *Journal of Veterinary and Animal Sciences*, 42: 30-33.
- Bagi, A.S.; Vyas, K.N. and Bhayani, D.M. (1992). Study on the various dimensions of superficial regional lymph nodes in young and adult Surti buffalo (*Bubalus bubalis*). *Indian Veterinary Journal*, 69(2): 172-175.
- Dyce, K.M.; Sack, W.O. and Wensing, C.J.G. (2010). *Text Book of Veterinary Anatomy*, 3rd ed., WB. Saunders Company, Philadelphia, Pp: 29-30.
- Gadre, K.M.; Malik, M.R. and Srivastava, A.M. (1986). Gross Anatomical Changes in Abdominal Lymph Node Cross Bred Calves with Age and Immune Response. *Indian Journal of Animal Science*, 56: 623-633.
- Getty, R. (1975). *Sisson and Grossman's The Anatomy of the Domestic Animals*. 5th ed.; W.B. Saunders Co, New York, Pp: 176-179.
- Konig, H.E. and Liebich, H.G. (2007). *Veterinary Anatomy of Domestic Mammals*, 1st ed, Schattauer, Germany, Pp: 452- 453.
- Maddox, J.F.; Makay, C.R. and Brandon, M.R. (1987). Ontogeny of ovine lymphocytes an immunohistological study on the development of T lymphocytes in the sheep fetal spleen. *Immunology*, 62(1): 107-112.
- McGeady, T.A.; Quinn, P.J.; Fitzpatrick, E.S. et al. (2017). *Veterinary embryology*. UK: John Wiley and Sons Ltd.; 341-342.
- Mohammadpour, A.A.; Moshtaghi, H. and Naderi, A.R. (2010). Morphometry and histometrical study of prescapular, prefemoral and popliteal lymph nodes in Iranian Lori _ Bakhtiari sheep. *Pajouhesh and Sazandegi*, 86: 47-52. (In Persian).
- Mohammadpour, A.A.; Radmehr, B. and Al-e-Ahmad Dehkordi, M. (2006). Morphological and morphometrical study of important lymph nodes of cow in meat inspection. *Pajouhesh & Sazandegi*; 71: 13-18. (In Persian).
- Noakes, D.E.; Parkinson, T.J. and England, G.C.W. (2001). *Arthur's veterinary reproduction and obstetrics*. W. B. Saunders, London, P: 68.
- Panchal, K.M.; Vyas, K.N. and Vyas, Y.L. (1998). Histomorphological study on secondary lymphoid organs (spleen, sublumbar lymph nodes and peyer's patches) of the Marwari sheep (*Ovisaries*). *Indian Veterinary Journal*, 75(4): 318-322.
- Pospieszny, N.; Kleckowska, J.; Chroszcz, A. and Juszczak, M. (2002). The Morphology and Development of the Sheeps Tracheo-Bronchal Cranial Lymphonodes in Prenatal Period. *Veterinary Medicine*, 5(2).
- Pugach, P.V. (2012). Structure of Mesenteric Lymph Nodes in Healthy Neonatal Rats and Rats subjected to Prenatal Exposure to Ethanol. *Neuroscience and Behavioral Physiology*, 42(2): 205-209.
- Raji, R. and Feizbakhsh, H. (2010). Morphometrical study of prescapular, prefemoral and popliteal lymph node of one-humped camel (*Camelus dromedaries*). *Pajouhesh and Sazandegi*, 87: 47-52. (In Persian).
- Sarma, K.; Kalita, A.; Suri, S. and Zama, M.M.S. (2004). Gross Anatomical Observations on the Superficial Lymph Nodes of Bakarwali Goat (*Capra Hircus*). *Indian Journal of Animal Science*, 74: 750-751.
- Schummer, A.; Wilkens, H.; Vollmerhus, B. and Habermehl, KH. (1981). *The Circulatory System, the Skin and the Cutaneous Organs of the Domestic Mammals*. Verlag Paul Parey, Berlin, Pp: 278, 293-294.
- Shirazi, R. and Bakhsh'alizadeh, S. (2015). *Longman Medical Embryology*. Compiled by: Sadler, Thomas. Thirteenth Edition, Andisheh Rafi Publications, Tehran, P: 245.
- Yoon, Y.S.; Shin, J.W. and Lee, J.S. (1999). Age related morphological studies on hemal node and hemolymph node in Korean native goats. *Korean Journal of Veterinary Researches*, 39(5): 865-877.
- Zoltzer, H. (2003). Initial lymphatics: Morphology and function of endothelial cells. *Lymphology*, 36(1): 7-25.