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### Clinical Report

## Cervical Intramuscular Lipoma in a Donkey (*Equus asinus*): A Case Report

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#### ABSTRACT

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Cancer is an uncontrolled growth of abnormal cells. It is found in animals as well as humans. There are many different types of cancer that are found in animals, symptoms are often similar to those in people. An 8-year-old male donkey was referred to the Veterinary Teaching Hospital and examined for cylinder-like dense mass that was found on the top of the cervical region and extended from the dorsal part of the base of the ears to withers. Radiographic evaluation of the cervical region was demonstrated that the mass was well-demarcated soft tissue opacity in dorsal cervical vertebrae. Ultrasonographic experimentation display a well circumscribe hyperechoic triangular shape mass with fat echogenicity in the sagittal plane without any vascularization. Surgical exploration of the mass indicated fusiform to cylindrical, well-demarcated, and soft tissue in yellow color. The microscopic finding showed that the tumor cells were identical to those in normal fat tissue and massive vacuoles exchange the cytoplasm with peripheralization of the nuclei. Necrosis and inflammation were not observed, while, dystrophic calcification and fibrosis were detected. Based on the aforesaid macro-, microscopic and histopathologic findings, Lipoma was recognized. Nevertheless, no treatment was performed for this case due to the large volume of the mass.

### Introduction

Fatty tumors are mesenchymal neoplasms which classified into two categories including benign (lipoma, lipoblastoma/lipoblastomatosis, angioliipoma, myoliipoma, chondroid lipoma, pleomorphic lipoma, and hibernoma) and malignant, also called liposarcomas (myxoid/round cell liposarcoma, and pleomorphic liposarcoma).<sup>1</sup>

Lipomas are a type of benign hyperplastic growths of well-differentiated adipocytes which seen in human species and dogs, but they are less common in cattle and equines and also found in tissues such as subcutaneous and with low prevalence, in internal organs.<sup>2</sup> These lipomas have no mortality rates and also are most current benign mesenchymal cells tumor that is well-demarcated from normal tissues around it. This neoplasm occurs in a major several of sites including

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subcutaneous/musculoskeletal tissues, the epidural space, liver, mesentery/gastrointestinal tract and also superficial lipomas have been shown in stifle, extensor tendon sheath, abdomen, and as well as in the thorax. On rare cases, of equine Lipomas have been reported in the pericardium/myocardium, meninges, and mediastinum.<sup>1-8</sup>

Depending on the area that involvement with lipoma, different clinical signs are noted. For example, lipomas in major airways, oropharynx, and esophagus cause respiratory distress, dysphagia, regurgitation, and reflux. Intramediastinal and intestinal lipomas cause blockage, intussusception, volvulization, or hemorrhage. In intramuscular septa cause diffuse and palpable swelling. Hyperuricemia, obesity, renal tubular acidosis, peripheral neuropathy, and liver disease are other complications.<sup>9</sup> Lipoma and infiltrative lipomas are type of masses that are sectionally aggressive and mainly painless. The difference between the two types of tumors is that infiltrative lipomas can involve muscle, bone, vessels, and even nerves<sup>10</sup>. Lipomas may be incidental intraoperative findings in large animals. The present study represents the clinical sciences and histopathological findings of a broad extensive cervical lipoma in a donkey.

### Case Description

An 8-year-old male donkey (*Equus asinus*) weighting about 200 kg that was referred to the Veterinary Teaching Hospital and was examined for the being of a soft tissue mass on the top of the cervical region (Figure 1). The owner claimed a slowly growing subcutaneous mass present for several years that usually do not complain of discomfort for the animal. Most recently, the animal had a history of lowered its head and neck and resisted to carry any load on his back. Based on the owner statements, the whole amount of meal was 2.5-3.5 kg of pearl barley and 3-4 kg straw which was separated into two meals per day. The Body Condition Score (BCS) of the donkey was four according to 9-point modified Henneke system.<sup>11</sup>

Upon clinical examination, a large soft and well-circumscribed cylinder-like dense subcutaneous mass on the top of the cervical region that was extended from the caudal part of the base of the ears to the withers part was detected. Bilateral palpation of cervical vertebrae for size, texture, mobility and tenderness indicated very big and relatively soft, movable mass with normal skin overlying the lesion. Vital signs (heart rate: 36 per min, respiratory rate: 16 per min, rectal

temperature: 38.4° C) of the animal were in a normal range. The clinical symptoms that observed were neck pain, and reaction to palpation of mass in the lower part of the neck in cervical region. A blood sample (EDTA/k2 test tube, Tajhiz Gostar, Isfahan, Iran) was collected from the jugular vein for assessment of routine hematology parameters (Veterinary hematology analyzer, H400, Exigo, Sweden). The results of hematology analysis including CBC were in normal range.



**Figure 1.** Appearance of the tumoral mass over the cervical region in an 8-year-old male donkey (*Equus asinus*).

In radiographic evaluation, lateral projection of the cervical region was performed and well-defined oval to triangular shape mass with soft tissue opacity is noted in the dorsal aspect of cervical vertebrae apart from the nuchal ligament. No sign of mineralization and gas opacity was detected. Although radiolucent area is noted outside the lesion. Suspected mass pushed the cervical vertebrae ventrally and as a result, tracheal vertebral distances were decreased. The trachea was normal in luminal diameter, opacity, course, and wall thickness. No sign of bone and joint involvement was distinguished and bone density also was in normal appearance (Figure 2). Ultrasonographic assessment of the mass was performed using a 9-10 MHz linear transducer for evaluation of the tissue characteristic, mass margin, vascularization, and bony involvement before surgical exploration. In the sagittal plane, a heterogeneous well-defined triangular shape mass with fat echogenicity which had distinct from the hypochoic region in the ventral portion was noted. The mass had no connection to internal structures and extends to the withers beneath the fiber of the nuchal ligament (Figure 3a). Color flow Doppler examination was performed to assess mass vascularization, however no sign of vascularization was detected in the peripheral and inside lesion (Figure 3b).

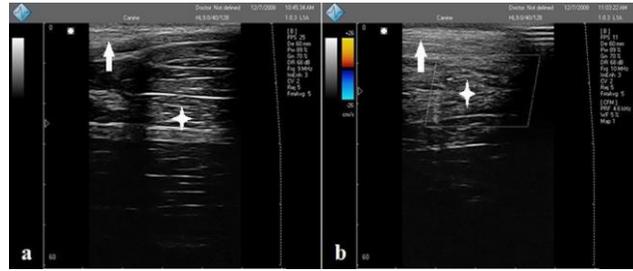


**Figure 2.** Lateral projection of soft mass over the cervical region with radiolucent density. Arrows show the Nuchal ligament and the asterisk shows the tumoral mass.

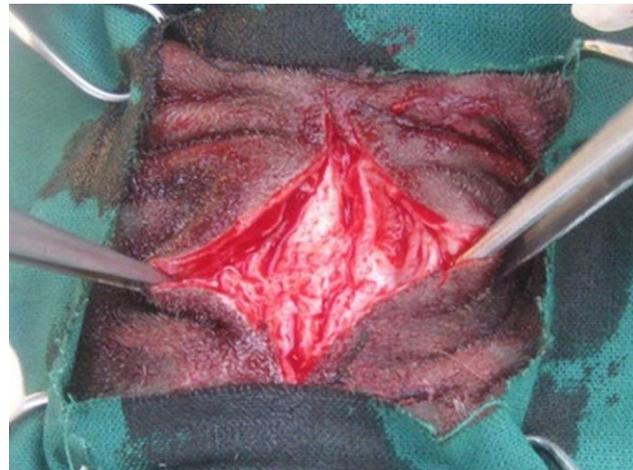
Surgical exploration of the suspected mass after skin washing by aqueous-based iodophors (Behsa, Arak, Iran) was performed under local anesthesia (lidocaine 2%, 1 ml/cm, SC, AbuReihan, Iran) and general sedation (acepromazine 2%, 0.04-0.06 mg/kg, IV, Alfasan, The Netherlands, and xylazine 2%, 0.05-1 mg/kg, IV, Alfasan, The Netherlands) of the donkey which was restrained in standing position in the stanchion. A 15 cm linear incision was made above the swollen part. The fusiform to cylindrical soft tissue, well-circumscribed, and yellowish color that was similar to fat tissue observed and tissue sample was taken for histopathological study (Figure 4). An encapsulated mass was exposed using a compound of sharp and blunt incision. The tissue was white to yellow in color, with fatty consistency, and surrounded by a thick fibrous capsule in gross examination. Fresh specimen fixed in neutral buffer formalin, then dehydrated in alcohols, embedded in paraffin block, sectioned and finally stained. Microscopic findings of Hematoxylin and Eosin (H&E) stained sections indicated that the tumor cells were identical to those in normal fat tissue and large vacuoles replaced the cytoplasm with peripheralization of the nuclei; however, necrosis and/or inflammation not discerned. Dystrophic calcification and fibrosis were noted. Based on the aforementioned microscopic and histopathologic findings, lipoma was confirmed. (Figures 5a and 5b).

According to the history, clinical signs, diagnostic imaging techniques, exploratory surgery, and histopathological findings, the results showed evidences of benign lipomatous tumors which are compatible with the subtype intramuscular Lipoma. Due to the large extremity of the mass and also its proximity to the nuchal ligament, it was not possible to

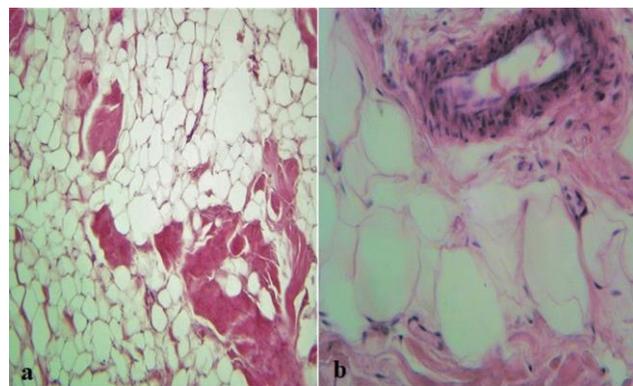
completely removed, so no special medical and/or surgical treatment was performed and animal discharged from the hospital.



**Figure 3.** Plain (a) and color flow Doppler (b) ultrasonographic appearance of the mass using a 9-10 MHz linear transducer which did not show any vascularization. It is Hyperechoic tissue compared to adjacent muscle, and relatively well-defined, with miniature Hyperechoic lines. Areas of Hypoechoicities corresponding to nonlipomatous components. Arrow show the Nuchal ligament and the asterisk shows the tumoral mass.



**Figure 4.** Appearance of the mass at the time of exploratory surgery approach



**Figure 5.** Section shows mature adipose tissue and contains few small capillaries and muscular tissue within thin fibrous strands. The mass is composed of lobules of mature white adipose cells divided by septa containing thin-walled capillary-sized vessels (10x, H&E, a). Areas of fat necrosis with dystrophic calcification and fibrosis are obvious. Large vacuoles replaced the cytoplasm with peripheralization of the nuclei. (100x, H&E, b).

## Treatment and Outcome

For treating Lipomas, several surgical procedures can be used. It is important to evaluate infiltrating Lipomas intently, when considering excision since they can develop in intramuscular or intermuscular sites and also can infiltrate into tendon, bone and nerve tissue, thus need intent microdissection to protect the significant structures. In medical care, if Lipomas is asymptomatic, it can be ignored. When treatment is considered, surgery is preferred.<sup>3,9</sup>

In our case report, noninvasive incision of the mass was selected during the surgical procedure. Considering the growth pattern and further techniques assessment criteria, do not support the diagnosis of a malignant neoplasm and lipoma was diagnosed. To the best of our knowledge, no reports has been found about this lesion in the neck and cervical region of domestic animals in peer-reviewed publications. In the current study, all essential diagnostic techniques were used to confirm the nature of suspected mass while no original study has been done so far with complete assessment diagnostic methods to detect lipoma tumor in veterinary medicine.

## Clinical Relevance

Lipoma is a kind of benign subcutaneous and submucosal tumor. It usually has a little clinical concern in equine health. Lipomas in horses of various ages and locations have documented in veterinary reports. Regional distinction in climate changes, species popularity and also other environmental risk factors impression the occurrence and types of equine cutaneous and mucocutaneous tumors, Subcutaneous Lipomas may be single or multiple (referred to as Lipomatosis), that has been noted frequently in humans, these tumors may be established in deeper structures such as the pharynx, tendons, muscles, connective tissues, and extradural spaces.<sup>7,8,12,13</sup>

Most external Lipomas tend to proliferate traitorously abundant without any clinical signs and cause few problems except those of the localized mass. External lipomas have been reported up to the age of 2 years old in horses.<sup>14</sup>

Multiple mesenteric pedunculated Lipomas have been discerned in pigs, dogs and horses; however, most mesenteric Lipomas have no clinical complications in senile horses. Secondary complications by pedunculated Lipomas of the mesentery can caused strangulating obstructions in the abdomen.<sup>15</sup>

One of the useful technics to evaluating of soft tissue swelling is diagnostic ultrasound, and when compared to palpation, accuracy rates were 88.1% versus 54.8% with palpation alone. Often the ultrasonographic characteristics will process to understand the nature of the swelling and its relationship to surrounding tissues, but tumor types are difficult to predict with ultrasound alone, so other differential diagnoses should be considered.<sup>9,16</sup>

Lipomas histologically simulate to normal fat and when it completely removed, a thin fibrous capsule surrounding the congestion of adipocyte cells may be detected. It can be impossible to distinguish between tumor cells and mature adipocytes without any clinical or gross description. In most cases, a deterministic diagnosis of this condition is often achieved with surgery or post-mortem examinations due to the nonspecific clinical signs.<sup>8,9</sup>

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## Conflict of Interest

The authors declare that they have no competing interests.

## References

1. Fletcher CDM, Unni KK, Mertens F. World health organization classification of tumors. Pathology and genetics of tumors of soft tissue and bone. *IARC Press*; Lyon. 2002.
2. Kazemi D, Neshat-Gharamaleki M. Intermuscular lipoma in the pelvic limb of an aged Shih Tzu-Terrier dog. *Iranian Journal of Veterinary Surgery*. 2021; 16(1): 71-74.
3. Erkert R, Moll H, Mac Allister C, Confer A, Ritchery J. Infiltrative lipoma in an American Quarter Horse. *Equine Veterinary Education*. 2007; 19: 380-383.
4. Flisberg P., Thomas O. Geijer B. Schott U. Epidural lipomatosis and congenital small pinal canal in spinal anesthesia: a case report and review of the literature. *Journal of Medical Case Report*. 2009; 3: 128.
5. Klopffleisch R, Van Der Grinton E, Gruber A. Metastatic uterine adenocarcinoma and hepatic lipomatosis in a llama (*Lama glama*). *Journal of Veterinary Diagnostic Investigation*. 2009; 21: 280-282.
6. Prange T, Holcombe SJ. Brown, JA, Dechant J E, Fubini SL, Embertson RM, Peroni J, Rakestraw PC, Hauptman JG. Resection and anastomosis of the descending colon in 43 horses. *Veterinary Surgery*. 2010; 39: 748-753.

7. Hammer EJ, Chope K, Lemire TD, Reef VB. A lipoma of the extensor tendon sheaths in a horse. *Veterinary Radiology and Ultrasound*. 2002; 43: 63-65.
8. Rebsamen E, Gygax D, Dennler M, Jud R, Kummer M. External infiltrating lipoma in a two-week-old foal: computed tomographic evaluation for the assessment of the extension and invasiveness of the tumor. *Equine Veterinary Education*. 2010; 22, 602-607.
9. Todd A, Nickloes DO, Facos JG. Lipomas clinical presentation. *Medscape*. 2020.
10. Mcchesney AE, Stephensic, Snyder S, Ferguson HR. Infiltrative lipoma in dogs. *Veterinary Pathology*. 1980; 316-322.
11. Henneke DR, Potter GD, Kreiderjl, Yeates BF. Relationship between condition score, physical measurements and body fat percentage in mares. *Equine Veterinary Journal*. 1983; 15(4): 371-372.
12. Valentine BA. Survey of equine cutaneous neoplasia in the Pacific Northwest. *Journal of Veterinary Diagnostic Investigation*. 2006; 18(1): 123-126.
13. Mukaratirwa S, Chipunza J, Chitanga S, Chimonyo M, Bhebhe E. Canine cutaneous neoplasms: prevalence and influence of age, sex and site on the presence and potential malignancy of cutaneous neoplasms in dogs from Zimbabwe. *Journal of the South African Veterinary Association*. 2005; 76(2):59-62.
14. Salvatore C, Antonio B, Del Vecchio W, Lanza A, Tartaro G, Giuseppe C. Giant infiltrating lipoma of the face: CT and MR imaging findings. *American Journal of Neuroradiology*. 2003; 24: 283-286.
15. Mcgavin MD, Zachary JF. Pathologic basis of veterinary disease. Mosby, London, 2007.
16. Freeman SL, Boswell JC, Smith RK. Use of transrectal ultrasonography to aid diagnosis of small colon strangulation in two horses. *Veterinary Record*. 2001; 148: 812-813.