



Histopathological Findings and Treatment of Intermuscular Lipoma in a Dog: A Rare Case

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Abstract: In this study, the histopathological diagnosis and treatment of an intermuscular lipoma were reported in a dog. In the clinical inspection, there was a large mass in the caudal of the left femur and that the animal had difficulty in moving. On palpation, the mass was solid and painful. A decision was made to totally extirpate the mass, which was suspected to be a tumor. A wide skin incision was made from the caudal part of the left femur; the mass was separated from the surrounding tissues by blunt dissection and extirpated. Histopathological examination revealed that the mass was an intermuscular lipoma. In the postoperative period, the patient recovered completely and returned to its normal life.

Keywords: Dog, histopathology, intermuscular lipoma, mass

Bir Köpekte İntermusküler Lipomun Histopatolojik Bulguları ve Tedavisi: Nadir Bir Vaka

Öz: Bu çalışmada bir köpekte intermusküler lipomun histopatolojik tanısı ve uzaklaştırılması rapor edilmiştir. Hastanın inspeksiyon ile yapılan muayenesinde, sol femurun kaudalinde büyük bir kitle olduğu ve hayvanın hareket etmekte güçlük yaşadığı belirlendi. Palpasyonla yapılan muayenede, kitlenin solid yapıda olduğu ve hastanın ağrı duyduğu tespit edildi. Tümör olabileceğinden şüphelenilen kitlenin total olarak ekstirpe edilmesine karar verildi. Hastanın sol femurunun kaudal kısmından geniş bir deri ensizyon yapıldı. Kitleye ulaşıldıktan sonra, kitle çevre dokulardan künt diseksiyon ile ayrılarak ekstirpe edildi. Histopatolojik incelemeler sonucunda kitlenin intermusküler lipom olduğu belirlendi. Postoperatif dönemde yapılan muayenelerde ise, hastanın tamamen iyileştiği ve normal yaşamına döndüğü belirlendi.

Anahtar kelimeler: Histopatoloji, intermusküler lipom, kitle, köpek

Introduction

Lipomas are benign tumors of soft tissues of mesenchymal origin, usually caused by the differentiation of mature adipocytes in older and obese dogs (Hupples et al., 2016; Kim et al., 2015; Leriquier et al., 2017; O'Neill et al., 2018; Sasikala et al., 2020; Veena et al., 2013). Lipomas affect approximately 16% of dogs (Hupples et al., 2016; Sasikala et al., 2020) and female dogs are more prone to lipoma development (Aydoğan and Metin, 2013; Hupples et al., 2016; Julie et al., 2013; O'Neill et al., 2018; Veena et al., 2013; Vigneshwaran et al., 2020). Doberman Pinscher and Labrador Retriever are the most common dog breeds with lipoma cases (Gough et al., 2018). Lipomas are classified according to their histological features as lipoma, fibrolipoma, angiolipoma, myolipoma, pleomorphic lipoma and spindle cell lipoma (Kim et al., 2015; Sasikala et al., 2020). Size of lipomas can vary between 1-30 cm (Veena et al., 2013; Vigneshwaran et al., 2020).

Infiltrative and intermuscular lipomas are types of lipomas that are rarely encountered in dogs (Azizi et al., 2011; Leriquier et al., 2017; Olle et al., 2002). In infiltrative lipoma cases, the adipose tissue invades deeply into the muscle and connective tissue, separating the muscle fibers and causing atrophy (Aydoğan and Metin, 2013; Azizi et al., 2011; Leriquier et al., 2017; McChesney et al., 1980). Intermuscular lipomas, on the other hand, are subcutaneous lipoma variants that are located between the muscles that do not invade surrounding tissues. Intermuscular lipomas occur mostly in the caudal aspect of the pelvic extremity (especially in the area close to the semitendinosus and semimembranosus muscles) in both humans and dogs (Hupples et al., 2016; Leriquier et al., 2017; Pakanati et al., 2019; Trebacz and Galanty, 2016). The treatment of both intermuscular lipomas and infiltrative lipomas is the surgical extirpation of the masses (Hupples et al., 2016; McChesney et al., 1980; Sasikala et al., 2020). Complications such as seroma, wound infection and nerve damage may occur postoperatively (Hupples et al., 2016).

In this case report, we aimed to contribute to the literature by discussing the histopathological diagnosis and treatment of intermuscular lipoma encountered in the left hind leg (between the semimembranosus and semitendinosus muscles) of a 7-year-old English Cocker Spaniel dog. The fact that it is the first case report in Turkey about intermuscular lipomas, which is rarely encountered in dogs, shows the importance of the study.

Case Description

In this case report, a 7-year-old female English Cocker Spaniel dog brought to Firat University Animal Hospital with the complaint of a large mass in her left hind leg is discussed.

The animal owner stated that the dog had a large mass on the left hind leg for about two months and had been limping while walking. In clinical examination, a large mass was detected caudal to the left femur of the dog (Figure 1). On palpation the mass was painful and was solid in structure with clear borders. Since the mass was thought to be a tumor, a decision was made for total extirpation.

The wide area from the proximal of the left femur to the middle of the tibia was prepared for the operation.

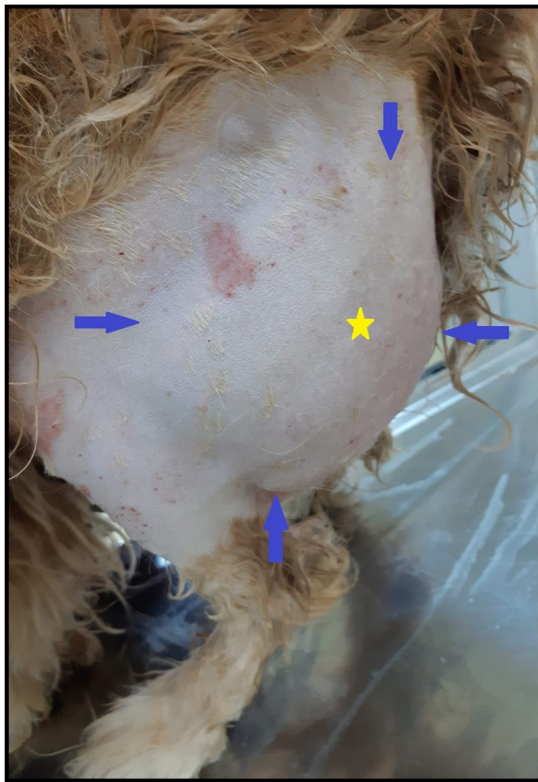


Figure 1. View of the solid mass (yellow star) and its borders (blue arrows) encountered in the caudal part of the femur.

In order to provide analgesia before the operation, 0.5 mg/kg meloxicam (Bavet Meloksikam, 5 mg/ml, Bavet, Turkey) was administered subcutaneously to the dog. Ten minutes after the patient was given 1 mg/kg xylazine hydrochloride (Xylazinbio 2%, 23.32 mg/ml, Bioveta, Czech Republic) intramuscularly, inhalation anesthesia was administered using isoflurane with the help of a mask. After the patient was anesthetized, a wide skin incision was made from the caudal part of the femur. After the incision was made, it was observed that there was a mass resembling adipose tissue with clear borders on the semitendinosus and semimembranosus muscles. With blunt dissections, the mass was carefully separated from the surrounding tissues and totally extirpated (Figure 2a). The subcutaneous connective tissue and skin were then sutured according to routine surgical procedures. The extirpated mass (Figure 2b) was sent to Firat University Veterinary Faculty Pathology Department Laboratory for examination. Postoperatively, penicillin at a dose of 20,000 IU/kg (Iecilline, 400,000 IU, İE Ulagay, İstanbul) was administered intramuscularly for one week. In addition, 0.2 mg/kg meloxicam (Bavet Meloxicam, 5 mg/ml, Bavet İlaç San. Ltd., İstanbul) was administered subcutaneously once every three days for one week. The dog returned to its normal life in a short time postoperatively (Figure 3a, 3b).

Biopsy specimens were fixed in a 10% solution of

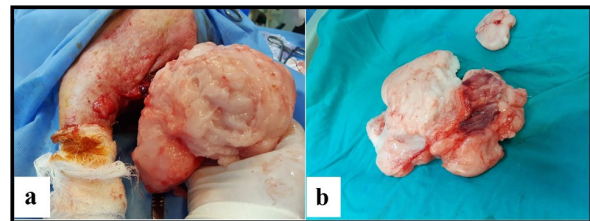


Figure 2. Total extirpation of the mass (a) and the extirpated mass (b).



Figure 3. The appearance of the dog (a) and the operation wound (b) on the 15th postoperative day.

neutral formalin solution before being routinely processed and stained with hematoxylin and eosin (H&E) for light microscopic examination (Luna, 1968). The mass was sharply circumscribed, but not encapsulated. The neoplasm consisted of well-differentiated lipocytes that had infiltrated and replaced muscle and collagen fibers. Most of the adipocytes showed necrotic changes. Tumor cells destroyed and replaced the muscle cells and connective tissues. Atrophic muscle tissue remnants were found only in the surgical margins (Figure 4a, 4b). As a result, the mass was diagnosed as infiltrative intermuscular lipoma.

Discussion and Conclusion

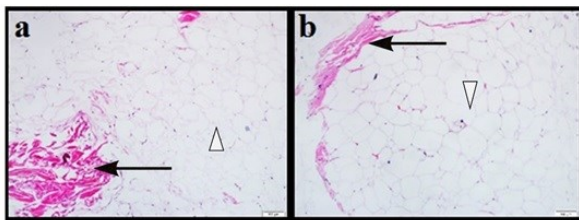


Figure 4. The lipocytes (arrowheads) invading the muscle cells (arrows). The muscle cells were atrophic and lipocytes were mostly necrotic (a,b). Hematoxylin-eosin staining.

Intermuscular lipomas are lipoma variants that are less common than simple lipomas and whose biological significance is unknown (Azizi et al., 2011; Olle et al., 2002). Lipoma cases are mostly seen in old and obese dogs (Huppés et al., 2016; Lერიკიერი et al., 2017; O'Neill et al., 2018; Sasikala et al., 2020; Vigneshwaran et al., 2020). Huppés et al. (2016) reported that all five dogs in which they detected intermuscular lipoma were older than six years of age. In the same study, the majority of dogs were heavy and obese according to their breed characteristics. Kazemi and Neshat-Gharamaleki, (2021) reported that a dog with an intermuscular lipoma on the right hind leg was 10.5 years old. In our study, the dog with the intermuscular lipoma on the left hind leg was a 7-year-old geriatric dog.

Lipoma cases are more common in female dogs compared to male dogs (Huppés et al., 2016; Julie et al., 2013; O'Neill et al., 2018; Veena et al., 2013; Vigneshwaran et al., 2020). Although studies on breed predisposition are insufficient, some studies have reported that lipomas are more common in Doberman Pinscher and Labrador Retriever dogs (Gough et al., 2018; O'Neill et al., 2018). In the study of Huppés et al. (2016) three of the five dogs with intermuscular lipoma were female. Two of the dogs in the same study were reported to be Labrador Retrievers. Kazemi and Neshat-Gharamaleki, (2021) reported that the dog they detected an intermuscular lipoma on the right hind leg was a female Shih Tzu Terrier breed. In our study, the dog with an intermus-

cular lipoma on the left hind leg was a female English Cocker Spaniel dog.

Intermuscular lipomas are mostly detected in the chest, neck, gluteal muscles and proximal hind legs (especially between the semitendinosus and semimembranosus muscles) (Azizi et al., 2011; Huppés et al., 2016; Kazemi and Neshat-Gharamaleki, 2021; Lერიკიერი et al., 2017; Trebacz and Galanty, 2016). Huppés et al. (2016) reported that the masses were seen in the hind legs in four of the five dogs in which they detected intermuscular lipoma. In many studies the masses were detected between the semitendinosus and semimembranosus muscles (Huppés et al., 2016; Kazemi and Neshat-Gharamaleki, 2021; Trebacz and Galanty, 2016) similar to our study.

The most important and effective treatment method for all lipomas, especially intermuscular lipomas, is the surgical removal of the masses (Huppés et al., 2016; McChesney et al., 1980; Sasikala et al., 2020). In many studies it has been reported that lipomas do not recur after surgical removal and patients return to their normal lives in a short time (Huppés et al., 2016; Vigneshwaran et al., 2020). In this study, the intermuscular lipoma mass extirpated from the left hind leg of a 7-year-old dog did not recur. The most common complications after surgical removal of intermuscular lipomas are seroma, wound infections and nerve damage (Huppés et al., 2016). In our case, no complications occurred in the postoperative period and the patient returned to its normal life shortly.

The gold standard for the definitive diagnosis of intermuscular lipomas is histopathology (Azizi et al., 2011; Kazemi and Neshat-Gharamaleki, 2021). Sasikala et al. (2020), in their study in which they extracted a giant lipoma mass from the prescapular region of a 9-year-old dog, reported that the adipocytes had histopathologically clear borders and the nuclei were located eccentrically. Veena et al. (2013) also reported that in the histopathological examination of the lipoma they detected in the neck of a dog, the cell nuclei were eccentrically located and there were multiple vacuoles in the cytoplasm. In our study, the histopathological examination of the extirpated mass revealed, well-differentiated necrotic adipocytes. Tumor cells infiltrated the muscle and connective tissue only within the tumor borders, and atrophic muscle tissue residues were found in these regions.

As a result, as reported in many studies, the case of intermuscular lipoma, which was the subject of this study, was encountered in an obese, geriatric and female dog. Intermuscular lipoma, which was reported to be found in different dog breeds in many studies, was encountered in this study in a dog breed that was rarely reported before. Intermuscular lipoma was encountered caudal to the pelvic extremity in this study, as in most cases reported in human and veterinary medicine. Apart from these, this study is also

very important in terms of bringing a case of intermuscular lipoma, which is very rare in dogs, to the literature for the first time in Turkey.

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