Short Communication / Kısa Bilimsel Çalışma

Myxoid liposarcoma in a cat

Yonca Betil KABAK1, Cenk YARDIMCI2, Semra OKUR-GUMUSOVA3, Mustafa Yavuz GULBAHAR1

Ondokuz Mayıs Üniversitesi, Veteriner Fakültesi, 1Patoloji, 2Cerrahi, 3Viroloji Anabilim Dalı, Samsun.

Summary: In the study, a myxoid liposarcoma in the proximal region of the left humerus of a 15-year-old male, shorthair cat was described. Left arm along with scapula was amputated. The cut section of tumor was tan to white with soft multilobulated mass which contained hemorrhagic and necrotic foci as well as mucuous composition. Microscopically, the tumor was composed of round-to-polygonal cells. The cells had numerous round, variable-sized, well-defined, intracytoplasmic vacuoles. The lipid droplets in the cytoplasmic vacuoles of the tumor cells was showed with Oil Red O staining. A myxoid extracellular substance remind of mucin was stained by Alcian blue staining (pH = 2,5). Tumor cells were strongly positive for vimentin, but negative for pancytokeratin and S-100. A polymerase chain reaction (PCR) assay from samples showed no evidence of feline leukemia virus (FeLV) / feline sarcomavirus (FeSV) or feline immunodeficiency virus (FIV) deoksiribonucleic acid (DNA). This case describes a first report of myxoid liposarcoma in a cat.

Key words: Cat, liposarcoma, myxoid, tumor.

Bir kedide mikroid liposarkom

Özet: Bu çalışmada, 15 yaşlı erkek bir kedinin sol humerusunun proksimal bölgesindeki mikroid liposarkom tanımlanmıştır. Skapula ile birlikte sol kol ampute edildi. Tümörün kesit yüzü krem- beyaz renkte, müköz yapısı yanında hemorajik ve nekrotik odaklar içeren yumuşak loplu bir yapıydı. Mikroskobik olarak tümör, yuvarlak- polyonal hücreler içeriyordu. Hücreler çok sayıda yuvarlak, değişik büyüklüklerde, belirgin intrasitoplazmik vakullere sahipti. Oil Red O boyası ile tümör hücrelerinin sitoplazmik vakullerindeki yağ damlacıkları gösterildi. Müsini akla getiren ekstrasellüler mikroid yapış Alcian blue boyası ile boylarıdı. Tümör hücreleri vimentin pozitif fakat pansitokeratin ve S-100 negatifti. Örnekle de polimeraz zincir reaksiyonu (PZR) ile feline leukemia virus (FeLV), feline sarcomavirus (FeSV) veya feline immunodeficiency virus (FIV) deoksiribonükleik asit (DNA)’leri görüldü. Bu vaka, kedilerdeki mikroid liposarkomu tanımlayan ilk raporudur.

Anahtar sözcükler: Kedi, liposarkoma, mikroid, tümör.

Liposarcoma is a rare tumor in domestic animals and has been most frequently described in dogs (1,6). In cats, there are limited numbers of liposarcoma cases in the literature (8,9). A myxoid variant of liposarcoma is the least common for the cat, and has been mostly reported in dogs (1). According to the literature, myxoid liposarcoma has not been reported in cats. This study is suggested to be the first case of myxoid liposarcoma in a cat.

A 15-year-old male, shorthair cat showed a gradually increased swelling in the proximal region of the left humerus, by initial clinical examination. During radiographic examination, the complete encirclement of humerus with tumor and the destruction of bone were seen. After three months of the first examination, even though destruction of the humerus had not progressed, the swelling had increased (Fig. 1A). Therefore, the limb was amputated totally together with the humerus and scapula. The cat was in good health for 10 months post-surgical period, there was no evidence of distant metastasis or regional recurrence of the tumor. The tumor samples were stained with hematoxylin-eosin, Oil Red O, Alcian Blue (pH = 2,5), and Masson’s trichrome stains in routine processes. Additional sections were immunostained by the avidin-biotin peroxidase complex method (ABPC) (Zymed Histostain Plus Kit, California, USA) with the chromogenic substrate AEC (3-Amino-9-Ethyl Carbazole) (Zymed AEC RED substrat kit, Kaliforniya, ABD) using mouse monoclonal anti-vimentin (Clone V9, Lab Vision Corporation, Fremont, USA), mouse anti-human pancytokeratin (AE1 / AE3, Dako Carpenteria, USA), and rabbit polyclonal anti-S-100 (Clone A1, Lab Vision Corporation, Fremont, USA).

The blood (leukocyte and serum) samples and paraffin-embedded tissues were tested against feline leukemia virus (FeLV)/ feline sarcomavirus (FeSV) and
Figure 1. A) The proximal region of the left humerus of cat before the surgery. B) Tan to white, multilobulated mass which contains wide hemorrhage and necrotic foci in the cross section of the tumor with humerus (arrow), (* scapula). C) Round or oval atypical nuclei with one or more prominent nucleoli in the neoplastic cells, HE x240. D) Mitotic figure (arrowhead) and nuclear indentation (arrow), HE x320. E) Oil Red O-positive lipid droplets in cytoplasmic vacuoles of the tumor cells, frozen section, Oil Red O stain x320. F) Myxoid extracellular substance, Alcian blue stain (ph=2.5), x240. G) Vimentin- positive tumor cells (arrow). ABPC, AEC chromogen, hematoxylin counterstain, 240x.

based on gross, histochemical and immunohistochemical S-100. Additionally, the tumor cells were strongly positive for mucins in the myxoid extracellular substance (Fig. 1F). The most common type of liposarcoma is myxoid variant in humans (7) and it is infrequent in the canine (1). The myxoid variant is identified by the presence of neoplastic cells embedded within the Alcian blue-positive, loose, mucoid stroma (6). The myxoid background was detected among the tumor cells with vacuolated cytoplasm by using Alcian blue at pH = 2.5, in this study. The microscopical features of tumor cells together with Oil Red O positive-vacuoles and Alcian blue positive-stroma verified the first case of the myxoid variant of liposarcoma in a cat.

Vimentin and S-100 immunolabeling are suggestive of liposarcoma (11). Our case showed only vimentin immunolabeling, but was negative for S-100. In humans, liposarcomas have been located in the lower extremities, retroperitoneal, mesenteric, and shoulder areas (7). In dogs, liposarcoma has been located in the shoulder, thorax, axilla, tail base, or hip regions as subcutaneous masses and within the viscera (1). In the present case, it was located essentially in the left proximal humerus, extending to the scapular region to a lesser degree. The liposarcoma tends to recur locally and metasizes rarely to the lung, liver, and bone (1,7). After surgery, follow-up information has shown no evidence of local recurrence and / or distant metastasis for 10 months post-surgical time and the cat is in health.

In veterinary literature, the etiology of liposarcoma has been determined by limited reports. In cats, the increased incidence of feline vaccine-associated sarcoma is a significant problem in veterinary medicine (2) and the risk factor of postvaccinal sarcomas is considered to be a fibrous connective tissue reaction to the aluminium within the vaccine and leads to tumors. Vaccine-associated sarcomas are fibrosarcomas, malignant fibrous histiocytomas, osteosarcomas, chondrosarcomas, rhabdomyosarcomas, myxosarcomas, and liposarcomas (2). The present case was localized on the proximal humeral region on the first clinical examination, and we suspected that this region was not the usual vaccination site in cats. Moreover, there was no information about the anatomical region where the vaccination(s) was applied by the hospital or veterinarian. Several studies have reported that feline leukemia virus, polyomavirus, and feline immunodeficiency virus do not have any direct involvement in the pathogenesis of vaccine-associated sarcomas of cats (3-5). However, another liposarcoma...
case has been determined in a cat having serological evidence of feline leukemia virus infection (8) and a tumor that includes type C virus particles that are transmitted to kittens (9). In the study showed no evidence of FeLV – FeSV and FIV DNA in the etiology of liposarcoma.

In conclusion, the present case is the first description of spontaneous myxoid liposarcoma in a cat and there is no association with FeLV – FeSV and FIV infections or the vaccination site.

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References

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Corresponding author
Yonca Betil Kabak
University of Ondokuz Mayis, Faculty of Veterinary Medicine, Department of Pathology, Kurupelit 55139 Samsun-Turkey
Tel: +90 362 3121919 ext.3914
Fax: +90 362 4576922
E-mail: yoncakabak@hotmail.com or ybkabak@omu.edu.tr