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Case Report

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A Case of Giant Myxoid Liposarcoma in a Cow

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Abstract

In this case, it was aimed to evaluate the immunohistochemical and histopathological examinations along with surgical intervention results of a myxoid liposarcoma in a ten-year-old, female hybrid cattle. During clinical examination, an elastic mass, approximately 35x30x30 cm in size, was detected in the right fossa paralumbal region. As a treatment, total extirpation of the mass under sedation and local infiltration anesthesia was performed. The sections were prepared from the extirpated mass tissues and stained with hematoxylin-eosin for histopathological examination. In addition they were labeled with S-100 antibody for immunohistochemical examination. Histopathologically, atypical stellate spindle-shaped tumour cells were seen in the stroma of hypocellular region and inlarge lipoid cells locally and also, around the numerous vessels with thin Wall character. In addition, it was determined that these cells reacted positively with S-100 antibody immunohistochemically. After the removal of the mass surgically, no recurrence was observed during 2 year follow up and it was learned that the general condition of the cattle was good. As a result, due to the rarity of the disease, it was concluded that reporting myxoid liposarcoma cases may contribute to future studies.

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INTRODUCTION

Soft tissue sarcomas are malignant tumoral formations originating from mesenchymal tissues. They are classified according to the age at which they appear, genetic changes and the tissues from which they originate. There are more than eighty different subtypes (Antonescu and Ladanyi, 2013; Pearl *et al*., 2020).

Liposarcomas are the second most widespread type of soft tissue sarcomas with a rate of 15-20% (Hans *et al*., 2018). They are malignant tumours that originate from mature adipose tissue cells such as lipoblasts or more often from primitive mesenchymal cells (Belhan *et al*., 2008; Aksoy and Aksoy, 2009). Liposarcomas are rare in domestic animals, they have been reported mostly in adult and elderly dogs (Ahamad *et al*., 2015; Plumlee *et al*., 2016). In veterinary medicine considering the cellular morphological evaluations and on the basis of WHO classification; they are divided into 3 classes: well-differentiated, pleomorphic and myxoid liposarcomas (Aksoy and Aksoy, 2009; Pearl *et al*., 2020). Myxoid subtype accounts for 30-50% of liposarcomas (Antonescu and Ladanyi, 2013).

Myxoids are mostly encapsulated with round cells, which are large and lobular liposarcomas (Belhan *et al*., 2008). Myxoid liposarcoma is a type of liposarcoma characterized genetically differently by the t(12:16) translocation. The characteristic features of round cells are variable, so more than 5% of them are known to be poor prognostic (Antonescu and Ladanyi, 2013; Hans *et al*., 2018). In animals, from a clinical point of view an important factor of usually slow-growing, deep seated tumour mainly located, myxoid liposarcomas have been reported in subcutaneous fascia tissue, muscle tissue, thoracal and abdominal cavities (Spillane *et al*., 1999; Ahamad *et al*., 2015).

To the best of the authors' knowledge, there are not enough reports about myxoid liposarcoma in cattle. Therefore, in this report, immunohistochemical and histopathological examnations along with surgical intervention results of a case of a myxoid liposarcoma which was detected in the fossa paralumbal region of a ten-year-old, hybrid cow was presented.

HISTORY, CLINICAL SIGNS AND DIAGNOSIS

The animal material of this report was consisted of a ten-year-old, hybrid cow, which was admitted to the Harran University, Faculty of Veterinary Medicine Animal Hospital with a complaint of a soccer ball sized mass in the right fossa paralumbal region.

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In the anamnesis, it was learned that the mass was small at first and it has been in the same area for five years and started to grow lately. During this period, the owner applied various medicines and a ligature to the root part of the mass in order to remove it but it was learned that no successful result have been achieved. Physical examination revealed an increase in the volume of mildly firm, painless, non-ulcerated and measuring about 35x30x30 centimeters. An inflammatory reaction was observed in the ligated area. Also, it was noticed that the mass was the consistency of a rubber ball and it has been determined that it does not originate from deep tissues and has a more superficial course (Fig. 1A, B). Puncture of the mass revealed no inflammatory content. Mucous membranes congestion and jugular veins turgor were also present. Clinical examinations revealed a heart rate of 84 beats/min, a respiratory rate of 26 breaths/min and a rectal temperature of 39.1°C. Blood sampling was performed by jugular venipuncture via vacutainer siliconized tubes containing 10% EDTA (Vacuette®) for measurements of blood count, total plasma protein (TPP), and plasma fibrinogen. As a result of blood analyzes, the complete blood count revealed protein of 7.2 g/dL (reference range: 7-8.5); fibrinogen of 380 mg/dL (reference range: 300-700); thrombocyt of 386,000/µL (reference range: 200,000 - 730,000), and neutrophilia with 2.644/µL (reference range: 600-4000).

Fig. 1. A. Posterior view of the mass in the right hunger pit of the cattle; B. Dorsal view of the mass in the right hunger pit of the cattle.

TREATMENT

In accordance with the procedures performed, surgical intervention was decided. Xylazine hydrochloride (Rompun, Bayer, 23.32 mg/ml) at a dose of 0.2 mg/kg was administered intramuscularly for sedation purposes, lidocaine hydrochloride for local anesthesia (Vilcain, Vilsan, 20 mg/ml) layer infiltration anesthesia was applied circularly to the base of the mass. The animal was placed in the left lateral recumbency and the operation was started in accordance with the asepsis and antisepsis rules after shaving the operation area. An elliptical skin incision was made on both sides of the root of the mass and the skin and subcutaneous connective tissues were separated from the surrounding tissues by blunt dissection. During the operation, no mass was observed in the muscle tissues of the region and determined to be superficial. After the removal of the mass, the operating area was closed in accordance with the appropriate surgical technique. As a postoperative treatment, Benzylpenicillin + Dihydrostreptomycin (Reptopen S-DIF) 5 ml/100 kg/day was administered intramuscularly for 5 days. In addition, the operation area was medical dressed with 0.1% povidone iode daily for 10 days. The mass was sent to the pathology laboratory for histopathological examination. For the histopathological and immunohistochemical examination of the mass, the sections were prepared from the tissues and stained with hematoxylin-eosin. In addition, it was marked with antibody S100. Histopathologically, the tumor was composed of round to polygonal cells arranged in solid or loose sheets. The cells had numerous clear, round, variable-sized, well defined, intracytoplasmic vacuoles. The neoplastic cells had round or oval atypical nuclei with one or more prominent nucleoli. Hypocellular and sometimes large lipoid cells in the stroma, a large number of atypical stellate spindle-shaped tumour cells around thin-walled vessels were observed. Some tumor cells showed nuclear indentation by lipid-laden cytoplasmic vacuoles, typical of liposarcoma. (Fig. 2A, B). Immunohistochemically, it was noted that these cells form a positive reaction with the S100 antibody. (Fig. 2C, D). As a result of forementioned surgical interventions, examinations and 2 years follow-up period, it was learned from the owner that no reccurrence was observed and the general condition of the cattle was good (Fig. 3).

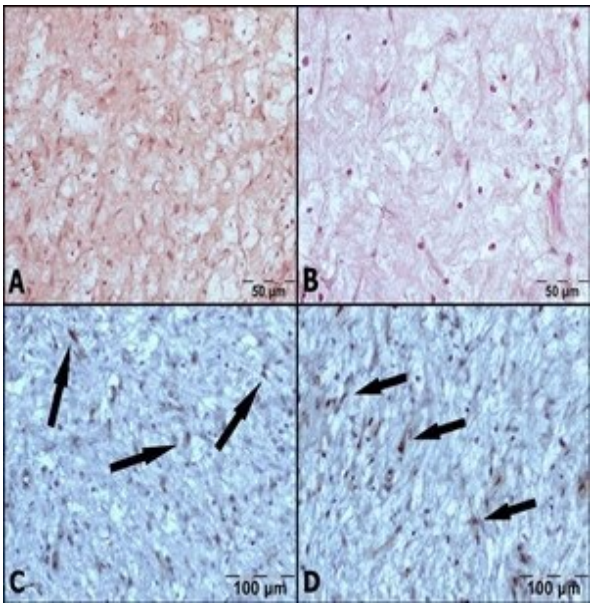

Fig. 2. A. B.) Spindle-shaped mucinous stroma, hypocellular myxoid cells and lipoid cells with vacuoles among them (Hematoxylin-Eosin Staining). C.D.) Large number of S100 immunopositive cells, black arrows, (Immunohistochemical Staining, S100).

DISCUSSION

The case of liposarcoma in cattle is rare. In the literature studies, it was observed that liposarcoma was reported in a few number of cattle and there was not enough data on the myxoid subclass (Shive *et al*., 2006; Ahamad *et al*., 2015). In this report, a case of myxoid liposarcoma developed in the right abdominal wall in a cattle may shed light to the future studies and it has been reported with the idea that it will contribute to the literature.

In a case of a ten-year-old male dog which had a 26x21x21 centimeters in size myxoid liposarcoma on the left abdominal wall, regional necrotic and hemorrhagic foci in the cross-sectional area of the mass was reported by Q. D. Plumlee *et al*. Moreover it was reported that the mass was yellow spotted, gelatinous and soft-structured, thinly encapsulated in character and it had been present for 15 months and a rapid growth was occured in the last 3-4 months (Plumblee *et al*., 2016). In the present case, a giant

myxoid liposarcoma 35x30x30 centimeters in size on the right abdominal wall in a ten-year-old female hybrid cow was presented. Also, cross-sectional findings such as yellow color, gelatinous and thinly encapsulated characteristics and slow development over 5 years were consistent findings with previous reports.

Fig. 3. The appearance of the cattle in the 2nd postoperative year (Treated area; white arrow).

It was expressed by several authors that cases of liposarcoma occur spontaneously in animals. In dog studies, it was stated that liposarcoma cases are mostly encountered in the areas where subcutaneous microchip is placed and glass cuts in the following days. Therefore, it was highlighted that traumatic causes may be effective in the occurrence of liposarcomas (Shive *et al*., 2009). However in the present case, it couldn't be learned if the cow had any trauma from the owner.

In domestic animals, 2 cases of virus-induced liposarcoma have been reported one of these, a four-month-old kitten infected with the feline leukemia virus was also reported and retroviral particles in the ultrastructural neoplastic cells were observed (Stephens *et al*., 1983). In another report of a hamster vaccinated with bovine papillomavirus type 4, it was observed that hamster had developed liposarcoma at the injection site (Moar *et al*., 1986). In the present case, no signs of any comorbid disease were detected and it was learned that bovine papilloma vaccine was not administered before.

Cases of liposarcoma in humans are often seen in the lower extremities and seldomly in the abdominal cavity. Also, it has been reported that it can occur retroperitoneally or in the trunk (Belhan *et al*., 2008; Aksoy and Aksoy, 2009; Heijs *et al*., 2020). It was reported that the only treatment option for the removal of pathological mass is surgical intervention. However, recurrence occurred in 40% of the cases (Arda and Demiryont, 1995; Belhan *et al*., 2008; Aksoy and Aksoy, 2009). In this case report, surgical intervention was preferred as the treatment protocol and no recurrence was observed during 2 years of follow-up and it was learned from the owner that the general condition of the cow was good.

The S-100 protein was isolated by Moore in 1965 as a nerve tissue-specific protein. S-100 protein is used in tumours with epidermal differentiation and it can be used as a determinant in the detection of inflammatory diseases (Hashimoto *et al*., 1984). In a report by Doria-Torra *et al*. (2015), S-100 protein was determined to be positive in pigs with liposarcoma. Similarly, in a case of myxoid liposarcoma developing on the abdominal wall in a human by Marouane Harhar *et al*. (2020), S-100 protein was determined to be positive too. In the present study, as a result of immunohistochemical studies, the S-100 protein was determined to be positive and this finding was consistent with the previous reports.

CONCLUSION

A rare case of a myxoid liposarcoma in a cattle was presented and treated with appropriate surgical intervention. Also, histopathological and immunohistocemical examinations were presented and it was concluded that these examinations along with investigation of S-100 protein are important in its diagnosis. Due to the rarity of the disease, it is thought that reporting myxoid liposarcoma cases may contribute to future studies.

CONFLICT OF INTEREST

The authors declare no conflicts of interests.

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