SHORT COMMUNICATION

LIPOSARCOMA IN A MALE ALSATIAN DOG IN IBADAN, OYO STATE, NIGERIA-A CASE REPORT

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Introduction:

Liposarcoma is a malignant tumour of adipocytes and its occurrence is rare in domestic animals (Meuten, 2002). A few foreign authors have reported the occurrence of this neoplasm in dogs (Messick and Radin, 1989; Vascellari et al., 2004; Hobert et al., 2013). Currently, there is a dearth of information on the occurrence and pathology of this tumour in dogs in Nigeria. Liposarcoma is locally invasive and can occur on the flanks and the limbs and occasionally in body cavities (Dobson and Lascelles, 2011). The aetiology of liposarcoma is uncertain, however it has been reported to be associated with foreign body (microchip) implant in a dog (Vascellari et al., 2004). Grossly, the masses are firm, poorly demarcated, locally invasive and posess a low metastatic potential (Kudnig and Séguin, 2012; Withrow, Vail & Page, 2013). The most common sites of metastasis include lungs, spleen, liver and bone (Withrow, Vail & Page, 2013). Histological subtypes of liposarcoma include myxoid, round cell, well-differentiated and pleomorphic (Kilpatrick et al., 1996). Here we describe a case of well differentiated liposarcoma in a six year-old male Alsatian dog.

Case History, Diagnosis and Discussion

A six year-old male Alsatian dog was presented to the Small Animal Clinic of the Veterinary Teaching Hospital, University of Ibadan with complaint of anorexia, hind limb deficit and overextension of the distal hind limb. A day after presentation, the dog was found to have bilateral hind limb paresis. At presentation, the dog's rectal temperature was 40.7°C. The dog also had severely pale mucous membranes. Serum chemistry and haematology revealed the following: mild azotaemia (Creatinine-2.2mg/dl; BUN-40 mg/dl), mild elevation of liver enzymes (ALT-135µL, ALP-128µL, AST- 11µL), mild hyperalbuminaemia (3.0g/dl). Neurobion was administered. However, this intervention did not lead to an improvement in the dog's condition as it was found dead on the fifth day after it was first presented to the small animal clinic for medical attention.

At necropsy, there was a small, subcutaneous, irregular pendulous mass (6x5x5cm) in the ventral midline of the carcass about 5 cm caudal to the xiphoid sternum. The cut surface of the mass was yellowish brown, firm, lobulated (Plate 1) and haemorrhagic. Blood was dripping from the dog's nostrils. The oral and ocular mucous membranes were severely pale and the trachea contained moderate amount of blood stained mucus. The lungs were markedly congested and had multifocal, 0.3-0.5cm diameter, cream coloured, slightly raised foci .The thoracic cavity and pericardium contained 5mls and 10 mls of blood respectively. There was diffuse yellowish discolouration of the liver. Other gross lesions observed included rough, pitted kidneys, multifocal ecchymotic haemorrhages in the spleen, blood tinged watery intestinal contents and cutaneous decubital ulcers. 0.5cm thick sections of the subcutaneous tumour, lungs, liver and kidneys were fixed in 10% neutral buffered formalin for 24 hours and routinely processed for histology and stained with haematoxylin and eosin. Some of the sections were also stained with Sudan black.

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Histologically, the subcutaneous mass was irregular and lobulated, consisting of sheets of loosely arranged pleomorphic cells trapped in delicate fibrovascular stroma. The atypical cells were pleomorphic with shapes ranging from round to oval to polygonal with distinct cell margins and scanty to abundant eosinophilic cytoplasm. Many of the cells posess a single, large, cytoplasmic vacuole with peripherally displaced nucleus conferring a signet ring appearance on each cell (Plate 2). Nuclear shapes varied from round to oval to irregular. Generally, nuclei were euchromatic and each posessed one to two basophilic nucleoli. There were also numerous, large, multinucleated cells (Inset, plate 2) often with one to multiple, large cytoplasmic vacuoles, scattered throughout the tumour stroma. Occasionally, there were large, irregular bizarre cells with very large, irregular, basophilic nucleus. Mitotic figures were occasionally present in some fields. There were numerous random, foci of coagulative necrosis of the tumour cells. The histological features including the morphology of constituent cells of the pulmonary nodules were similar to those found in the subcutaneous mass (Plate 3). The cytoplasm of most of the cells in the Sudan black stained sections were stained black indicating the presence of fat (Plate 4). Histologically, the kidneys and liver showed severe chronic non-suppurative tubulointerstitial nephritis and severe, chronic, diffuse hepatitis, with diffuse hepatocellular cord atrophy and moderate biliary hyperplasia respectively.

The subcutaneous and pulmonary tumours in the present case were diagnosed as well differentiated liposarcoma based on the histological findings of predominant atypical lipocytes with 'signet ring' appearance, numerous multinucleated giant cells and occasional mitoses. Well differentiated liposarcoma is defined as a locally aggressive malignant mesenchymal tumour made up either entirely or in part of a mature adipocytic proliferation showing significant variation in cell size and at least focal nuclear atypia in both adipocytes and stromal cells (Dei Tos and Pedeutour, 2002). The gross and histological findings from the subcutaneous and pulmonary tumours in this case are to a large extent in agreement with those reported for canine liposarcoma (Wang et al., 2005, Piseddu et al., 2011). The aetiology of the neoplasm in this case cannot be easily ascertained however, the aetiology of liposarcoma is largely unknown (Withrow, Vail & Page, 2013), but it has been reported to arise de novo (Messick and Radin, 1989) especially subcutaneously, often at the site of a microchip implant in a dog (Vascellari et al., 2004).

Prognosis of this tumour is essentially dependent on its anatomical location as neoplasms located in surgically manageable soft tissue do not recur following complete excision while those occurring in deep anatomic sites such as peritoneum and mediastinum tend to recur repeatedly often resulting in the death of the patient possibly as a result of uncontrolled local effects or metastasis (Dei Tos and Pedeutour, 2002). Taking these details into consideration, the prognosis of the neoplasm in the present case can be regarded as poor due to the fact that the neoplasm was also found in the lungs.

The cause of death in the present case was most likely not due to the tumour (liposarcoma), rather it could be attributed to an undetermined intercurrent disease. This is due to the fact that, other gross and histological findings not suggestive of liposarcoma were also observed. These lesions included severe chronic lymphoplasmacytic tubulointerstitial nephritis and severe, chronic, diffuse hepatitis, with diffuse hepatocellular cord atrophy and moderate biliary hyperplasia. The aetiology of these other lesions were not determined, however canine leptospirosis has been associated with lymphoplasmacytic tubulointerstitial nephritis (Prescott et al., 1991).

There is currently a dearth of information concerning the incidence, prevalence and pathology of liposarcoma in dogs in Nigeria. It is therefore pertinent that further research be done to study the incidence and pathology of this neoplasm in dogs in Nigeria with a view to determining the aetiology and formulation of effective preventive measures.

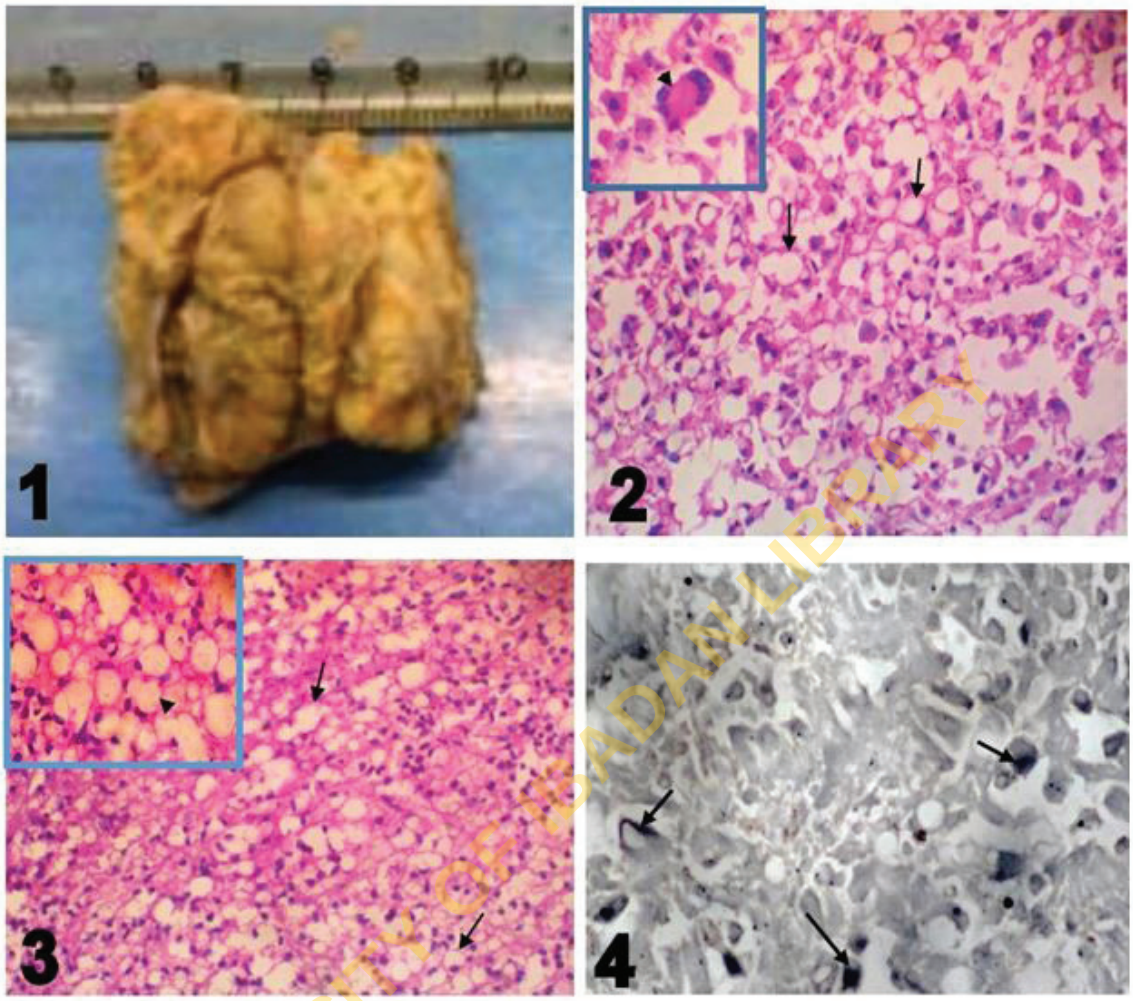

Plate 1: Cut surface of formalin fixed, subcutaneous tumour. The surface is yellowish brown and lobulated.

Plate 2: Photomicrograph of the subcutaneous mass showing numerous atypical lipocytes. Each neoplastic lipocytes has a single large cytoplasmic vacuole with peripherally displaced nucleus (arrows). The inset shows a multinucleated giant cell. H&E, x400

Plate 3: Photomicrograph of a pulmonary nodule showing sheets of atypical lipocytes each possessing a single large cytoplasmic vacuole and peripherally displaced nucleus (arrows). Inset shows a higher magnification (x1000) of the neoplasm with an atypical lipocytes indicated by the arrow head. H&E, x400

Plate 4: Photomicrograph of Sudan black stained section of the subcutaneous mass showing positive staining of the cytoplasm of the neoplastic cells for fat (arrows). The cytoplasmic fat accumulations are stained black. X400, Sudan black

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