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Fibrosarcoma in a dog: Case report

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Abstract

Fibrosarcoma is a rare, highly malignant tumour of mesenchymal cell origin. A Labrador dog aged 11 years was presented with a history of anorexia and depression. On clinical examination a growth was detected at the base of the tail. The growth was surgically removed and submitted for diagnosis to Department of Veterinary Pathology, College of Veterinary Science, Assam Agricultural University, Khanapara. The growth was examined cytologically and histopathologically. Cytological examination revealed individually arranged or aggregates of spindle shaped neoplastic cells with basophilic nuclei. Histopathologically, the tumour mass was composed of spindle shaped fibrous connective tissue cells. Eosinophilic collagen fibers were running in all directions. There was increased nuclear cytoplasmic ratio. Based on cytological and histopathological observation the tumour was diagnosed as fibrosarcoma.

Keywords: Fibrosarcoma, dog, cytology, histopathology

Introduction

Cancer is the major cause of morbidity and mortality in dogs. Approximately 25 percent of deaths in dogs are a result of cancer [1]. Soft tissue sarcomas are mesenchymal neoplasms derived from soft connective tissues, occur commonly in cutaneous and subcutaneous tissues. Examples for soft tissue sarcomas include fibrosarcoma, liposarcoma, lymphoma, hemangiosarcoma and peripheral nerve sheath tumours. Fibrosarcoma is a rare, highly malignant soft tissue tumour of mesenchymal cell origin that connects supports or surrounds other structures and organs of the body [2, 3, 4]. Fibrosarcoma originates from connective tissue cells. Since connective tissue is abundant in all parts of the body, fibrosarcoma as can occur anywhere in the body [5]. Histopathological examination is still one of the best and reliable methods for routine diagnosis of various canine neoplasms. In dogs, 60 to 80 per cent of skin tumors are benign and can be cured with early surgical removal [6]. Present report describes a case of fibrosarcoma in an eleven year old male dog which was diagnosed based on cytological and histopathological observations.

Case presentation

An 11 year old male Labrador dog weighing 30kg was presented to Veterinary Clinical Complex, College of Veterinary Science, Assam Agricultural University, Khanapara-781022 with the history of anorexia and progressive swelling at the base of the tail. The information pertaining to the history of clinical signs, age, vaccination, deworming and body weight of the affected dog were recorded. On clinical examination the animal appeared dull, depressed with pale visible mucous membrane. The general health condition of the animal was found to be poor. Palpation of base of the tail revealed a firm tumour like growth. After clinical examination, the tumorous mass was surgically excised. Location, size, shape, colour and consistency of the tumorous mass were properly recorded. Fine needle aspiration cytology (FNAC) was applied for collection of tissue samples for cytological examination and smears were prepared and stained using standard Giemsa, Wright's technique [7]. Representative tissue samples were collected from the neoplastic growth and fixed immediately in 10% neutral buffered formalin and were processed by routine paraffin embedding technique. Sections of 4-5 µm thickness were cut using rotary microtome with disposable blade and were stained with routine hematoxylin and eosin (H&E) method. Grossly, the tumour mass was round, firm, greyish white in colour and 10X12X 6 cm in size. Cut surface of the tumour was dry and white in colour.

In cytological examination there were multiple evidences of malignancy which includes plump and spindle shaped cells arranged individually or in aggregates (Fig 1).

In the surrounding there is deposition of extracellular, pink, collagenous substances (Fig 2). The nuclei were highly basophilic, round to elongate with coarse chromatin materials and distinguishable amount of pleomorphism [8].

Histopathological examination of the tumour mass revealed homogenous sheet of closely packed large spindle shaped fibrocytes with spindle shaped nuclei (Fig 3). Masses of large fibroblasts with oval shaped nuclei were also present which were arranged in a haphazard fashion (Fig 4). Collagen fibres were arranged in a concentric manner around blood vessels (Fig 5). Nuclei of neoplastic cells were hyperchromatic. Nuclear cytoplasmic ratio was 1:1. There was moderate to severe nuclear pleomorphism in fibroblasts with anisokaryosis and polymorphonucleus, which is consistent with malignancy. Fibrocytes and fibroblasts were running haphazardly in all directions. There was marked angiogenesis with numerous mitotic figures. Areas of necrosis and haemorrhages (Fig 6) were also recorded within the tumour mass.

In present case, the tumour mass was surgically removed. There was no evidence of metastasis and recurrence at the external surgical site and the animal recovered completely.

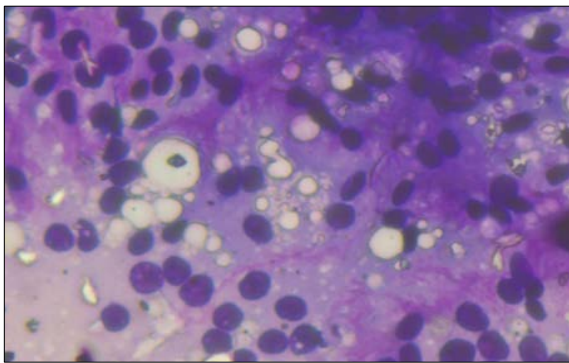


Fig 1: Plump and spindle shaped neoplastic cells. Giemsa $\times 10$

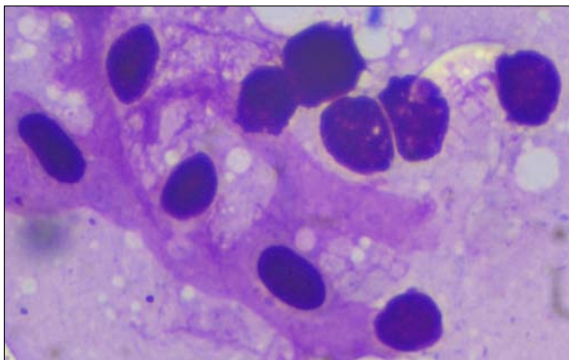


Fig 2: Extracellular pink collagenous deposits. Giemsa $\times 10$

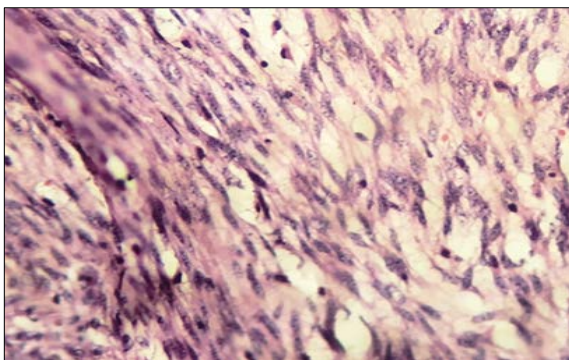


Fig 3: Homogenous sheets of fibrocytes with spindle shaped nuclei, H&E $\times 40$

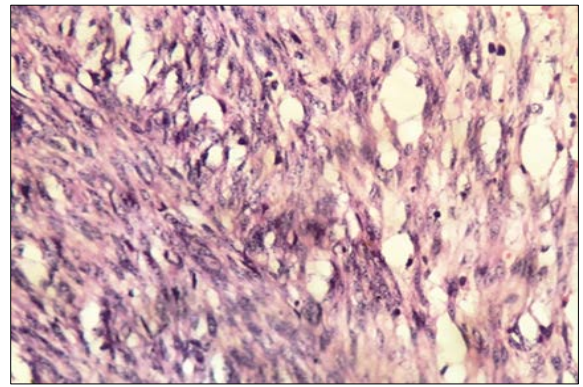


Fig 4: Masses of fibroblasts arranged in a haphazard fashion, H&E $\times 40$

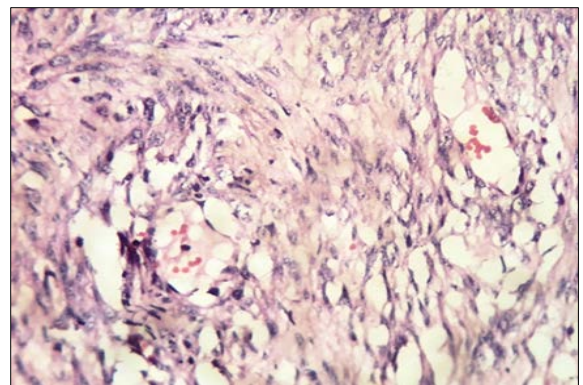


Fig 5: Collagen fibres arranged concentrically around blood vessels, H&E $\times 40$

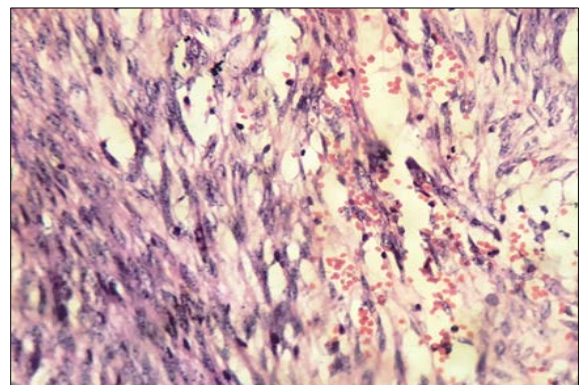


Fig 6: Focal areas of haemorrhage, H&E $\times 40$

Discussion

Dog presented in the present case was having poor health condition which is a common finding in neoplasia. Pale visible mucous membrane of the dog might be due to anaemia which is a common effect of neoplasia [9]. Cytological examination revealed individually arranged or aggregates of plump and spindle shaped neoplastic cells with basophilic nuclei. Similar findings were reported by Ruskin, 2016. In the present case, histological examination revealed masses of fibrocytes with shaped nuclei which were arranged in a haphazard fashion. Similar lesions were also recorded by Soujanya and Madhuri 2019 [6] in cutaneous fibrosarcoma of a dog. In the present case, fibrosarcoma was observed on skin at the base of the tail. It may be originated from the dermis because it is rich in the dense fibrous connective tissue. Nuclear pleomorphism, hyperchromatism, presence of mitotic figures recorded in the present study were characteristics of anaplasia and were also in agreement with earlier reports [6,10].

Marked angiogenesis recorded in the present case is a characteristic of anaplasia.

Conclusion

The present communication describes the diagnosis of a fibrosarcoma in a dog based on cytological and histopathological observations. It can be concluded that if the tumour is surgically excised in early stages, the local recurrence and systemic spread to other organs can be prevented.

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