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Cytological and histopathological study of fibrosarcoma in perianal region of a Kangeyam cow

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Abstract

A three-year-old Kangeyam cow was presented with two black coloured irregular masses in the perianal region measuring about 4.5×5.2 cm, 6 cm $\times$ 5 cm. Clinical examination revealed the masses were hard, pedunculated and intact with no ulceration. The cut section of mass appeared homogenously dirty white in colour, with an obvious interwoven fascicular pattern. There were no foci of necrosis. Cytology revealed low cellularity with presence of large, plump cells individually or in clusters with pink collagenous material. Nuclear pleomorphism is prominent. Cells are less uniform with a high nuclear to cytoplasmic ratio. Histopathologically, spindle shaped fibroblasts with elongated nuclei forming compact interlacing and intersecting bundles with long and wavy collagen fibres in between the tumor cells were noticed. The neoplastic fibroblasts haphazardly showed nuclear and cellular pleomorphism along with tumor giant cells. The nuclei of neoplastic cells were large and hyperchromatic, elongated to oval shape and contained one or more prominent nucleoli. The neoplastic cells had a scanty cytoplasm with poorly defined cell boundaries.

Keywords: Fibrosarcoma, tumours, cytology, histopathology, perianal region

Introduction

Fibrosarcoma is a type of sarcoma, a malignant tumour of soft tissue that connects, supports or surrounds other structures and organs of the body. They are malignant tumours of fibroblasts that show no other evidence of cell differentiation. (Meuten, 2004; Maxie, 2007) [8, 7]. Fibrosarcomas are tumours of mesenchymal origin that are rarely seen in the genital organs such as the vagina and penis in cattle (Maclachlan *et al.* 1996 and Hesarak *et al.* 2010) [6, 4]. Fibrosarcomas are common in dogs and cats but are rare in domestic animals (Kahn *et al.* 2005) [5]. Fibromas, fibro-papillomas and fibrosarcomas have been reported as mushroom-shaped growths which are attached either by a broad base or by a long pedicle that allows part of the tumour to protrude from the vulva (Yeruham *et al.*, 1999) [13]. They are usually pedunculated and can be removed surgically. The reports on occurrence of bovine fibrosarcoma compared with other tumors of cattle are very rare (Yeruham and Orgad, 1999; Musal *et al.*, 2007; Birgit *et al.*, 2004) [13, 10, 1]. The most common sites for fibrosarcoma are the skin and subcutis of trunk and extremities, the oral cavity and nasal cavity (Moulton, 1990) [9]. The present study describes the clinical features, gross and microscopic characteristics of a fibrosarcoma in a Kangeyam breed of cow.

Materials and Methods

The sample for the present study was collected from a Kangeyam cow brought to the Large Animal Surgical outpatient ward, Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal- 637 001, Tamil Nadu. The history and details of the animal were recorded. Samples for cytology were collected using fine needle aspiration cytology (FNAC) and impression smear methods. These cytology smears were air-dried and fixed in methanol and stained with Leishman - Giemsa stain. The tissue samples for histopathology were obtained from surgically excised tumour masses of affected cattle. The masses were

cross-sectioned and representative tissue samples were collected and fixed in 10% neutral buffered formalin for histopathology. The samples were processed by routine paraffin-embedding technique and sections were cut at 4 -5 μ m thickness. The sections were stained by routine Haematoxylin and Eosin (H&E) stain for detailed histopathological study.

Results

Gross pathology

Macroscopically the tumour appeared as two hard irregular black colour masses in the perianal region (Fig. 1) measuring about 4.5 $\times$ 5.2 cm, 6 cm $\times$ 5 cm (Fig. 2). The cut section was homogenously dirty white in colour, with an obvious interwoven fascicular pattern. There were no foci of necrosis (Fig. 3).

Cytology

Impression smear revealed low cellularity with presence of large, plump cells individually or in clusters with pink collagenous material. Nuclear pleomorphism is prominent. Cells are less uniform with a high nuclear to cytoplasmic ratio. Fibrosarcoma exhibited circular or bipolar basophilic cytoplasm, elongated nuclei, marked anisocytosis, and small nucleoli (Fig. 4).



Fig 1: Irregular black pedunculated hard growth in the perianal region



Fig 2: Gross appearance of excised masses

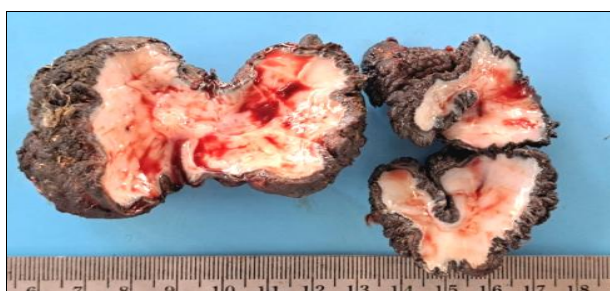


Fig 3: Cut section of the masses revealing dirty white colour smooth shiny surface

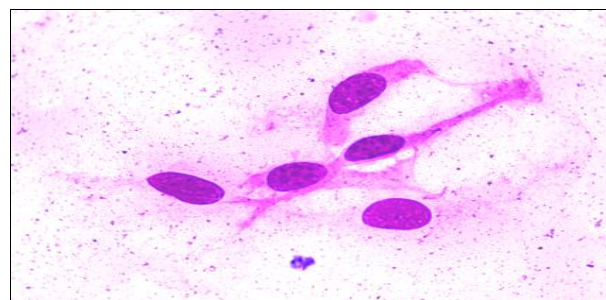


Fig 4: Fine needle aspiration cytology revealing spindle shaped fibroblast, LG stain x 1000

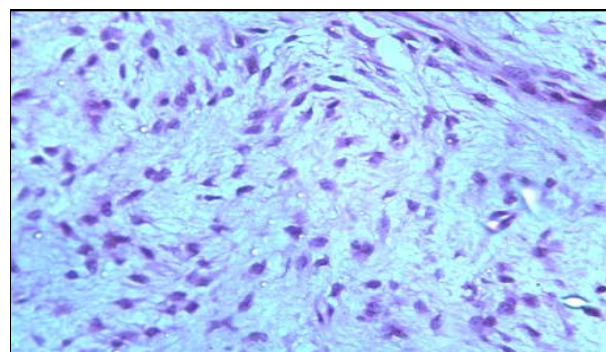


Fig 5: Fibrosarcoma showing spindle shaped pleomorphic neoplastic cells H&E x400

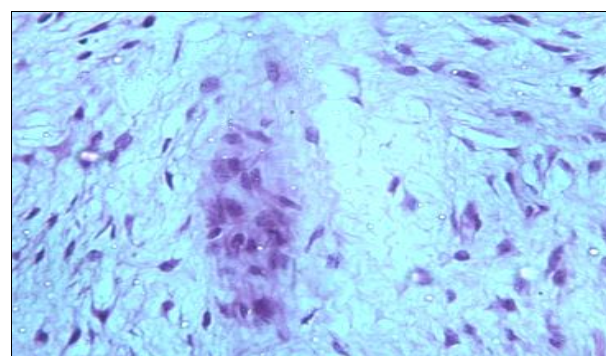


Fig 6: Fibrosarcoma showing spindle shaped pleomorphic neoplastic cells and a multinucleated giant cell (arrow) H&E x 400

Histopathology

Microscopically, spindle shaped fibroblasts with elongated nuclei (Fig.5) forming compact interlacing and intersecting bundles with long and wavy collagen fibres in between the tumour cells were noticed. The neoplastic fibroblasts haphazardly showed nuclear and cellular pleomorphism along with tumor giant cell (Fig.6). The nuclei of neoplastic cells were large and hyperchromatic, elongated to oval shape and contained one or more prominent nucleoli. The neoplastic cells had a scanty cytoplasm with poorly defined cell boundaries. Numerous blood vessels and abundant collagen stroma with collagen fibres and fibrocytes arranged in a concentric manner around the blood vessels were observed.

Discussion

Tumours such as squamous cell carcinoma, leiomyoma, fibroma, fibropapilloma, hemangioma, fibrosarcoma, leiomyoma-sarcoma, and melanoma have been reported in the vagina or vulva of cows (Yeruham *et al.*, 1999) [13].

In the present study, fibrosarcoma was observed in the perianal region whereas Hamali and Ashrafi Helan (2010) [3] reported fibrosarcoma in vagina of a cow. These observations varied with earlier reports by Maxie (2007) [7], Meuten (2004)

[8] and Sharma and Tiwari (2010) [12] and this is the first report of fibrosarcoma in the perianal region.

Fibrosarcomas can be found in any location of the body but they are unusual mesenchymal tumors of the bovine vagina (Musal, 2007) [10]. In bovine, fibrosarcoma is also reported on the face (Britt *et al.*, 1998) [2], penis, and vagina (Musal, 2007) [10], and in the skin.

Premasairam *et al.* (2018) [11] reported fibrosarcoma in a seven-year-old crossbred jersey presented with an ulcerated growth on the right fore teat with dribbling of milk.

Sharma *et al.* (2017) [12] diagnosed a case of cutaneous fibrosarcoma at the ventral aspect of the neck and jaw. Gross examination revealed a large, ulcerated, nodular, intact and hard mass measuring 11 cm x 3 cm. Histopathological examination showed haphazardly arranged intersecting bundles of anaplastic spindle-shaped neoplastic cells within the collagenous stroma. Anaplastic cells were pleomorphic, having elongated hyperchromatic nuclei and varying in size and shape. Mitotic figures were also visualized.

Conclusion

The present study discussed the occurrence, cytological and histopathological characteristics of fibrosarcoma in the perianal region of a Kangayam cow. A follow-up study was performed after a six-month period; no evidence of recurrence of the tumour could be found and the general condition of the cow was normal.

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Conflict of Interest

Not available

Financial Support

Not available

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