

PATHOLOGICAL STUDIES OF FIBROMA AND FIBROSARCOMA IN DOGS IN JAIPUR

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ABSTRACT

Constant exposure of skin to the tumour inducing environmental etiological factors makes it more susceptible to neoplasms. Neoplasms of the skin constitute one third of the tumour processes in the dog and can be of benign and malignant type. In the present study, neoplasms of the skin were observed in 43 (17.34%) cases out of 248 cases of skin disorders in dogs. Occurrence of fibroma and fibrosarcoma among various neoplastic conditions of skin is 5 (11.63%) and 2 (4.65%) cases, respectively. Grossly, fibromas were circumscribed, solitary and solid with firm consistency, whereas fibrosarcoma observed as variable sized, non-encapsulated growths with firm consistency. Histopathological findings of fibromas were presence of interlacing bundles of proliferating fibroblasts with formation of whorls, whereas histopathological evaluation of fibrosarcoma depicted spindle, polygonal or fusiform pleomorphic neoplastic fibroblasts with congested blood vessels.

Key words: Skin disorders, neoplasm, fibroma, fibrosarcoma

Introduction

Dogs were among the first domesticated animals. Dogs help out our society in an extraordinarily diverse range of activities and are living example of love and faith. Despite it, the role of pets in family systems and family therapy has received little attention in research, training, and practice. One third of the tumour processes in the dog consists of skin neoplasm. Skin neoplasms are most commonly reported in dogs and can be of benign or malignant type. On the basis of histopathological observations, skin neoplasms can be classified into various types such as epithelial, mesenchymal and melanocytic type (Palanivelu *et al.* 2013). Incidence of skin neoplasm was reported as 9.5 percent to 51 percent among various neoplastic conditions in dogs (Bronden *et al.*, 2010). Looking to the importance of skin disorders from the canine health of point view, study to find out incidence and pathological studies of various canine skin neoplastic conditions among various dermatological disorders of skin was carried out. Fibroma and fibrosarcoma holds a remarkable place among various skin neoplastic conditions of dogs and their study imparts help to veterinarian in early diagnosis of the condition and to set line of treatment accordingly.

Materials and Methods

In the present study, representative neoplastic tissue samples were taken from clinical cases of surgically excised neoplasm from various private clinics situated in Jaipur, Government Veterinary Hospitals, NGO's (Help in Suffering) and Surgery section of Veterinary Clinical Complex of Post Graduate Institute of Veterinary Education and Research (PGIVER), Jaipur. The selected tissue samples of skin were preserved in 10 per cent neutral buffered formalin and processed mechanically for histopathological studies using paraffin embedding by acetone and benzene technique

(Culling, 1974; Lillie, 1965). The tissue sections of 4-6 micron thickness were cut by microtome and mounted over albuminized slide. The tissue sections were stained with haematoxylin and eosin method of staining.

Results and Discussion

In the present study, fibroma of skin was reported in 5 cases (11.63%), whereas fibrosarcoma was found in 2 cases (4.65%). Higher incidence of fibroma (22.01%) was recorded by Gupta and Tiwari (2009). On the other hand, fibroma with

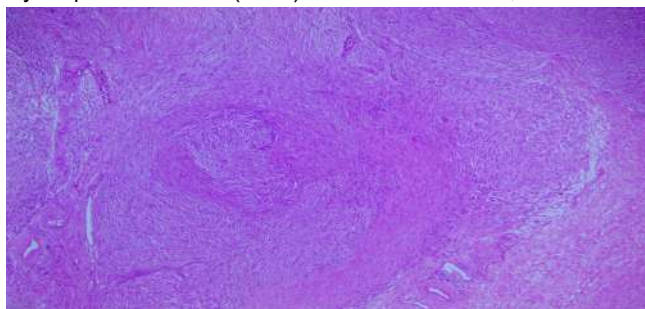


Figure 1: Microphotograph of fibroma showing interlacing bundles of fibroblasts with formation of whorls. H&E 40 X



Figure 2: Microphotograph of fibroma interlacing bundles of fibroblasts with formation of whorls. Masson's trichome 40 X

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lower incidence i.e. 9.26, 2.81 and 3.4 per cent were reported by Dadhich (2004), Pakhrin *et al.* (2007), and Sathiseelan *et al.* (2013), respectively. Chikweto *et al.* (2011) recorded higher incidence of fibrosarcoma i.e. 5.6 per cent among the skin neoplasm in comparison to present study, whereas occurrence of lower incidence was observed by Sathiseelan *et al.* (2013) and Kok *et al.* (2019) as 1.7 and 2.30 per cent, respectively than the present study.

Grossly, fibromas were mainly present on the skin of extremities, flank and groin area and observed as circumscribed, solitary and solid growth with firm consistency. These observations are similar to gross observations mentioned by Moriello and Rosenthal (1990) and Meuten (2017). Cut surface of fibroma was greyish-white. Histopathological examination showed interlacing bundles of proliferating fibroblasts with formation of whorls (Fig. 1). Other section of the tissue also showed spindle or fusiform shaped tumour cells with presence of large, elongated nuclei. Hyperplasia of the epidermis with variable degree of vascularization was also observed. Interlacing bundles of fibroblasts were also seen in sections stain with Masson's trichrome stain (Fig. 2). Interlacing bundles of fusiform fibroblasts, running in criss cross direction with formation of whorl were observed in the present study, is in accordance with the findings of Reddy *et al.* (2009), Kashyap *et al.* (2013), Palanivelu *et al.* (2013), Meuten (2017) and Khan (2019).

Gross examination of the fibrosarcoma revealed presence of variable sized, non-encapsulated growths with firm consistency. Firm and fibrous growth in fibrosarcoma, closely adherent to underlying muscles were also reported by Bostock (1986) and Dadhich (2004). These were irregular sized and nodular shaped with reddish-brown areas of haemorrhages and yellowish areas of necrosis. Histopathologically, evaluation of fibrosarcoma depicted interwoven bundles and whorls of varying sized fibroblasts (Fig. 3). Histopathologically, interwoven

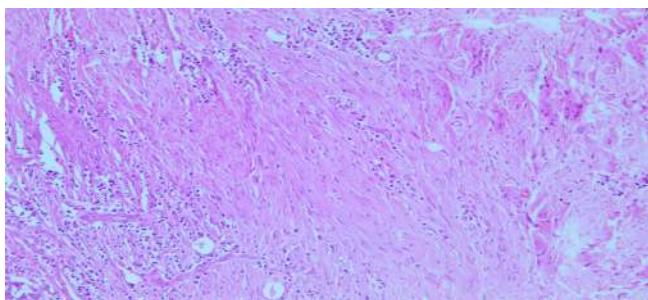


Figure 3: Microphotograph of fibrosarcoma showing interwoven bundles and whorls of fibroblasts. H&E 100 X

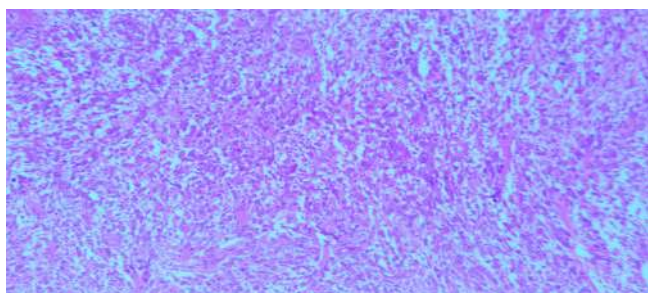


Figure 4: Microphotograph of fibrosarcoma showing interwoven bundles of fibroblasts and fragile blood vessels. H&E 100 X

bundles and whorls of varying sized fibroblasts were also noticed by Bostock (1986) and Kashyap *et al.* (2013). Spindle, polygonal or fusiform pleomorphic neoplastic cells were also observed. Other section of fibrosarcoma also showed presence of interwoven fusiform shaped immature fibroblasts with moderate amount of collagen fibers with congested blood vessels. Dadhich (2004), Reddy *et al.* (2009), Palanivelu *et al.* (2013), Meuten (2017) and Khan (2019) described presence of interwoven fusiform shaped immature fibroblasts with moderate amount of collagen fibers, infiltration of mononuclear cells and neutrophils with congested blood vessels in fibrosarcoma. There was presence of fragile blood vessels between interwoven bundles of fibroblasts at places (Fig. 4).

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