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Pathology of cutaneous fibroma in a German Shepherd Dog

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Abstract

A seven years old female German Shepherd dog was presented with a spherical hard mass in the limb. For cytologic identification of the mass, sample was collected by Fine needle aspiration cytology (FNAC). Cytologic examination revealed sparse spindle shaped cells containing oval to elongated nuclei with indistinct cytoplasm. Histopathologic examination of the mass revealed interlacing bundles of spindle shaped fibroblasts with elongated, oval nuclei and indistinct nucleoli. Picro sirius red special stain revealed the presence of red coloured interlacing bundles of spindle shaped fibroblasts. Based on the above findings, the mass was diagnosed as fibroma.

Keywords: Dog – FNAC- cytology – histopathology- fibroma

Introduction

Fibromas are benign neoplasms of fibrocytes. They occur more commonly on the limbs and heads of dogs. They are slow growing and complete excision is curative (Goldschmidt and Hendrick, 2002) ^[1]. Conroy (1983) ^[2] reported that fibromas appear as soft, firm or rubbery, round or oval, dome shaped or pedunculated, grayish white uniform mass. Though fibroma and fibrosarcoma are represented by fibrocytes, microscopically the cells appear uniform in fibroma compared to the cells in fibrosarcoma which appear pleomorphic with numerous mitotic figures. Cowell *et al.* (2007) ^[3] reported that the cells in fibroma are uniform in size and shape and tend to have spindle shape with moderate amount of light blue cytoplasm. Goldschmidt and Hendrick (2002) ^[1] also reported that the neoplastic fibrocytes of fibroma are uniform with oval, normochromatic nuclei and indistinct cytoplasm with rarity of mitotic figures.

Materials and methods

A total of 500 dogs belonging to different breeds, age groups and of both sexes and presented with cutaneous masses to the Madras Veterinary College Teaching Hospital was included for the present study. Gross appearance of the tumour like changes in the shape, size and consistency were recorded. Tissue samples were collected from surgically excised biopsies of cutaneous tumours in dogs. Fine needle aspiration cytology (FNAC) was performed. The collected material was expelled and spread gently into a thin layer with the help of another glass slide for further staining and screening procedures as per Meinkoth and Cowell (2002) ^[4]. The smears were then stained with cock tail stain of Leishman-Giemsa (LG) and screened for cellularity, nuclear and cytoplasmic details etc. As the cytological findings were suggestive of fibroma which is a benign tumour, the tumour mass was surgically excised. Representative thin sections were made from the excised mass and subjected to histopathological processing and staining with Haematoxylin and Eosin.

Results and discussion

The current study to diagnose the different types of skin tumours in dogs over a period of three years identified a total of 160 skin tumours out of which one case of fibroma was recorded in a seven years old female German Shepherd dog. Thus the incidence of fibroma accounted to 0.63 per cent of skin tumour incidence and 0.20 per cent of total tumour incidence in dogs for the same period.

Grossly, the tumour appeared as irregularly spherical, gray white, hard mass and 7 cm in diameter in the left forelimb (Fig.1). Cut section of the mass was greyish white. Cytologic

smears revealed sparse spindle shaped cells containing oval to elongated nuclei with indistinct cytoplasm suggestive of fibroma. Rajni (2005) [5] have reported similar cytologic features of fibroma in a study on skin tumours in dogs.

Histopathologic examination of the mass after surgical excision revealed interlacing bundles of spindle shaped fibroblasts (Fig.2) with elongated, oval nuclei and indistinct nucleoli. Indistinct elongated cytoplasm and abundant collagen was seen. Similar histological findings have been reported by Goldschmidt and Hendrick (2002) [1]. Moulton (1990) [6] reported that fibromas are well circumscribed with well differentiated fibroblasts arranged in interlacing bundles and in less whorled pattern. Picro sirius red special stain was further employed to confirm the tumour which revealed the presence of red coloured interlacing bundles of spindle shaped fibroblasts (Fig.3). Based on the above findings, the tumour was diagnosed as fibroma.

Yager and Wilcock (1994) [7] have earlier reported that a high mitotic rate would warrant a diagnosis of fibrosarcoma. Subapriya *et al.* (2018) [8] have also earlier observed numerous mitotic figures in a cutaneous mass of a one year old female Labrador dog based on which the tumour was diagnosed as fibrosarcoma. This was considered in differentiating the mass of fibroma from fibrosarcoma as mitotic figures were virtually absent in histological examination of the excised mass. Further, the cut section of the tumour was grayish white. This was in concordance with Moulton (1990) [6] who reported earlier that cut section of fibroma appear gray to white with a glistening appearance compared to fibrosarcoma which has lobulated, homogenous, opaque and reddish brown haemorrhagic appearance.

Conclusion

As fibromas are benign in nature, the tumour in dogs is less death defying once diagnosed and surgically excised compared to their malignant counterpart fibrosarcoma, Hence gross examination of a tumour suspected mass followed by cytological examination will help to identify fibroma from malignant tumour like fibrosarcoma as well as non neoplastic conditions like chronic inflammation.

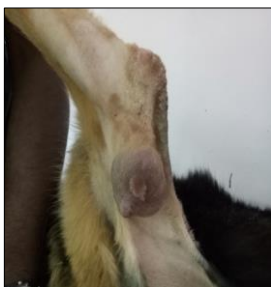


Fig 1: Fibroma- German Shepherd - Left forelimb- Gray white circumscribed hard mass

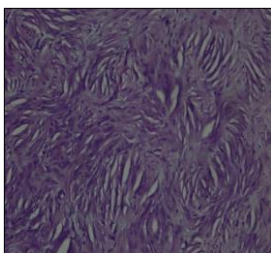


Fig 2: Fibroma- Fibroblasts arranged in interlacing bundles H&E x100

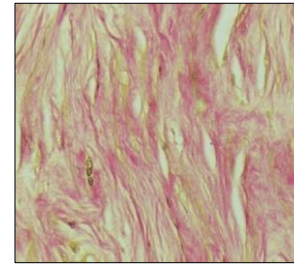


Fig 3: Fibroma - Picro Sirius Red –Interlacing bundles of fibroblasts H&E x100

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