POORLY DIFFERENTIATED SARCOMA OF SPLEEN WITH METASTASIS TO LUNG IN DOBERMAN DOG

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Poorly differentiated splenic sarcoma with metastasis to lung was diagnosed in a ten year old female Doberman dog on the basis of gross, histopathological and special staining technique. During necropsy, on cut section, spleen showed nodular growth (10 cm x 9 cm) of grey-white in colour. The portion of spleen showed rupture of artery at one point of nodule. Lung showed red hepitization in all lobes with three nodules of lemon size and one large nodule in diaphragmatic lobe. Liver was enlarged and congested. The small cyst like structure was noticed on surface of both the kidneys.

Microscopic examination of section of nodules from spleen revealed presence of round to elongated polygonal atypical cells arranged in haphazard manner. The nuclei were elongate to oval with scanty cytoplasm. The mitotic figures were numerous. The proliferating cells were more immature and showed pleomorphism. In between neoplastic cells, mucin was also noticed, both in spleen and lung. Microscopic lesions in nodules of lung were similar to those found in spleen nodules. Section of liver showed areas of necrosis.

Key words: Fibrosarcoma, Doberman, Metastasis, Necropsy, Histopathology.

Introduction

Soft connective tissue tumors particularly sarcomas are on rise in pet animals, however their accurate classification and histological characterization are difficult due to extremely high morphological heterogeneity (Baba. and Toi, 2007). However its occurrence in spleen with metastasis in lung is rare hence reported.

Case history and Clinical Observation

A ten year old female Doberman dog was presented to the Department for necropsy examination. History taken from owner revealed that the dog was apparently healthy and fine on yesterday evening and had a normal evening walk with the owner. However, dog died suddenly during night hours. A detailed necropsy was conducted revealed nodules in spleen and lung. The affected tissue samples along with healthy tissue were collected in 10% formal saline. The tissue sample were processed and embedded in paraffin blocks. Sections of 5 µm were taken on slides in duplicate. One section stained with haematoxylin and eosin (Culling, 1963) and another stained with Masson's Trichrome stain (Jones, 2010).

Result and Discussion

Necropsy examination of dog revealed pale mucus membrane and distended abdominal with fluid flashing sound. Upon opening the abdomen, unclotted blood of around 900-1000 ml (Hemoperitoneum) was noticed. Few large clots were also noticed. Spleen showed one large (10 cm x 9 cm) nodule of slightly more than tennis ball size (Fig. 1). Nodule was hard in consistency. On section, the nodule was grey-white in colour. The portion of spleen showed rupture of artery at one point of nodule. Lung showed red hepitization in all lobes with three nodules of lemon size and one large nodule in diaphragmatic lobe. The gross features of nodules in lungs were similar to the nodule found in spleen. Liver was enlarged and congested. The small cysts like structure were noticed on surface of both the kidneys.

Microscopic examination of section of nodules on spleen revealed presence of elongated, spindle shaped to round or polygonal atypical cells arranged in haphazard manner. The nuclei were elongate to oval with scanty cytoplasm (Fig. 2). The mitotic figures were moderate. The proliferating cells were more immature and showed pleomorphism and hyperchmacia. Areas of focal necrosis, haemorrhages and neo-angiogenesis were also noticed. In between neoplastic cells, mucin was also noticed, both in spleen and lung (Fig. 3). The capsule was absent.

Fig. 5: Cut section of splenic nodules appears grey to white colour

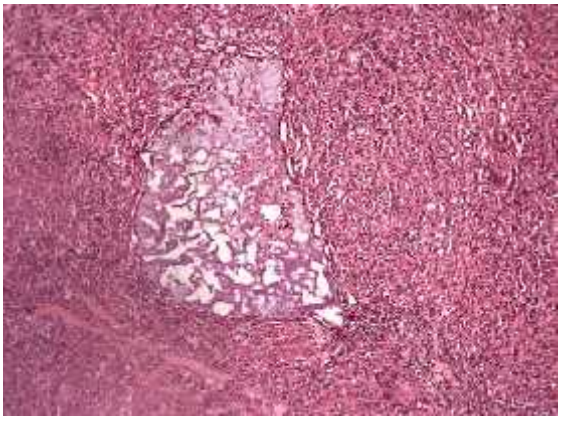

Fig. 3: Mucin like substance in between the neoplastic cells (HE 200X)

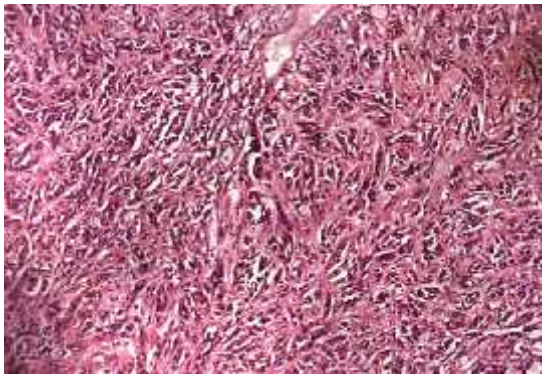

Fig. 2: Elongated to spindle shaped cells arranged haphazardly (arrow)

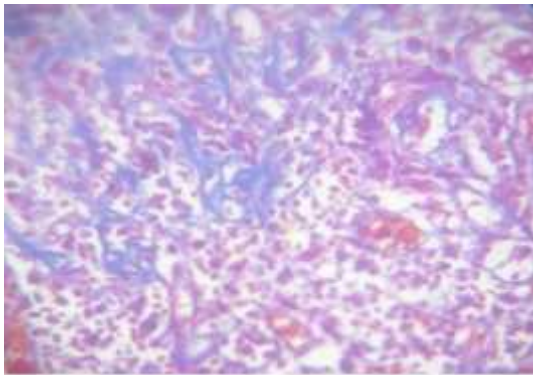

Fig. 4: Masson's Trichrome stain showing collagen (HE 400X)

In lung section, microscopic lesions were similar to those observed in spleen. In addition, there was mucin like basophilic material accumulated in the centre of masses of these neoplastic cells. Section of liver showed areas of coagulative necrosis with disorganized hepatocytes, particularly around portal triad. Section of kidney showed areas of necrosis and fibrosis around the periphery of necrotic areas. The pieces of spleen and lung tissue stained with Masson's trichome stain (MST) revealed scanty collagen stroma (indicated by blue line) in-between the proliferating cells (Fig. 4). The cytoplasm of the proliferating and red blood cells in MST took red colour which is in accordance with the observation of Jones, (2010).

Considering various factors viz. rapid growth of tumour, absence of capsule, metastasis, un-organized blood supply to new growth-leading to necrotic areas within tumor masses, anaplasia and

pleomorphism exhibited by tumor cells, the lesions were suggestive of poorly differentiated arcoma or anaplastic sarcoma. Similar to our observation, ruptured viscera, hemoperitoneum, anaemia and metastasis to other organs have been reported in splenic tumours (Kevin, 2002). Similar to our observation, Ginn, *et al*. (2006*)* were of the opinion that the tumors show great deal of variation with respect to cellular pleomorphism, density, mitotic activity, and amount and maturity of collagen.

The neoplastic cells when become more embryonic tend to produce mucin which was observed in the present investigation. Similar to our observation, Ginn, *et al*. (2006*)* was also of the opinion that although the collagen is primary stromal element, mucin may also be produced in small amount.

MST stain has been suggested to diagnose fibrosarcoma and differentiate it from peripheral nerve sheath tumors (PNSTs) and leiomyosarcomas (Jones, 2010). In peripheral nerve sheath tumors (PNSTs), the amount of collagen stroma is less prominent and smooth muscle can be demonstrated in leiomyosarcomas with MST. In the present case, the muscle tissue on the basis of MST and PNSTs on the basis of cellular morphology of proliferating cells was ruled out. Hence, histopathological and special staining technique study of spleen tumour and metastatic lung tumour in Doberman dog suggest fibrosarcoma. The fibrosarcoma is very common tumour of skin of dog, however, its occurrence in spleen and lung is rare hence documented.

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