



Histopathological study of canine hepatoid gland tumours



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Abstract

Hepatoid gland neoplasms arise due to disorganized and uncontrolled proliferation of cells of hepatoid glands. These are the modified sebaceous glands located mainly in the perianal area. Gross and histological findings of canine hepatoid gland tumours were evaluated. Dogs of different breed, age and sex that were presented to Department of Veterinary Surgery and Radiology, College of Veterinary and Animal Sciences, Mannuthy formed the materials for the present study. Grossly, tumours were solitary or multiple irregular shaped intradermal masses. The excisional biopsy samples were collected in 10 per cent neutral buffered formalin after surgical removal of tumour mass. Histopathologically, the masses were encircled by fibrovascular capsule which extended to the parenchyma as tumour stroma, which separated it into lobules. Two cases of hepatoid gland adenoma one case of hepatoid gland epithelioma and two cases of carcinoma were recognised on histopathological examination. Hepatoid adenoma were characterised by proliferation of hepatocyte like hepatoid gland epithelial cells with extensive sebaceous differentiation and were arranged in cords and anastomosing trabeculae. In hepatoid gland epithelioma, many of the cells were basaloid reserve cells with fewer hepatocyte like cells. Histopathological examination of carcinoma revealed irregular arrangement of the hepatoid cells which showed varying degrees of maturation and marked nuclear pleomorphism. The malignant hepatoid cells had abundant eosinophilic cytoplasm and large nuclei with several prominent nucleoli and mitotic figures.

Keywords: canine, hepatoid gland adenoma, hepatoid gland epithelioma, hepatoid gland carcinoma

Neoplasms of perianal glands are most common in male dogs. These non-secretory sebaceous glands are located in the areas of anal orifice, prepuce, tail, hind leg and trunk. This tumour is also known as hepatoid gland tumours due to morphological appearance of cells resembling that of hepatocytes. In canines, these tumours usually appear to be hormone related. Hence it is more common in uncastrated dogs and sometimes spontaneous regression of the tumour

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without excision is also reported. It is reported that Terriers, Mongrels, Cocker Spaniels and Rottweilers are more predisposed to hepatoid gland tumours (Yumusak *et al.*, 2016).

The present study was aimed to study the occurrence, and gross and histological findings of canine hepatoid gland tumours. We have also attempted to make a comparative assessment of histomorphological features of canine hepatoid gland tumours.

Materials and methods

The study material comprised of excisional biopsy samples from different dogs that were collected in 10 per cent neutral buffered formalin. Fixed tissue samples were processed routinely, embedded in paraffin, and sectioned at a thickness of 4-5 μm using a manual microtome. Then they were stained with haematoxylin and eosin (H&E) and special staining (Masson's trichrome) as per the standard staining technique (Suvarna *et al.*, 2019).

Results and discussion

Of the 5 dogs, three were non-descript, one was Labrador Retriever and one was Dachshund. Furthermore, all the dogs were male with a mean age of 9.8 ± 0.48 years. Clinical history of dogs diagnosed with hepatoid tumour was loss of appetite, polyuria, difficulty in defecation, hair loss, severe itching, haemorrhages and ulcers on the perianal region.

Grossly, hepatoid gland tumours were solitary or multiple irregular shaped lobular structure and 1 to 5 cm diameter located around the anus and in the paraprepuccial region. The masses were ulcerated. Cross section of tumour displayed grayish white coloured multilobular structure with haemorrhages and necrosis.

Histologically, two cases were diagnosed as hepatoid gland adenoma, one case was hepatoid gland epithelioma and two were hepatoid gland carcinoma. Hepatoid gland adenoma was characterised by proliferation of hepatocyte like hepatoid gland

epithelial cells that were arranged in cords and anastomosing trabeculae with extensive sebaceous differentiation (Fig. 1). The cells were polyhedral in shape with centrally placed, large ovoid, normochromatic and vesicular nuclei. The cytoplasm was eosinophilic with distinct borders. The periphery of the islands had a layer of basaloid reserve cells with a small hyperchromatic nucleus and narrow cytoplasm.

In case of hepatoid gland epithelioma, many of the cells were basaloid reserve cells and fewer hepatocyte like cells with indistinct lobules (Fig. 3). Hepatoid cells were characterised by vacuolated cytoplasm and were organised in nests with a thick basaloid reserve cell layer. The reserve cells showed marked mitotic figures.

Hepatoid gland carcinomas were composed of marked pleomorphic cells with abundant eosinophilic and vacuolated cytoplasm and large nuclei with prominent nucleoli (Fig. 5). Multinucleated giant cells were also observed and some of the neoplastic cells had undergone squamous metaplasia. Mitotic figures were also evident in the carcinoma. The connective tissue stroma dividing the tumour growth into lobules appeared as blue in Masson's trichrome staining (Fig. 2, 4 and 6). The special staining helped in differentiating the lobules of neoplastic cells from the surrounding stroma. It also helped in identifying even small nests of invading neoplastic cells, into the stroma a feature seen especially in the epithelioma and carcinoma, compared to adenoma.

All the dogs which were diagnosed with hepatoid gland tumours in the current study were uncastrated males. Pisani *et al.* (2006) reported the higher immunohistochemical expression of androgen receptors in hepatoid gland tumours. Previous research on hepatoid gland tumours has observed that these tumours are mostly reported in Terriers followed by Mongrels. In the present study, out of five cases, three dogs were non-descript, one was Labrador Retriever and one was Dachshund. This difference in incidence for dog breeds in the current study with that in published literature may be due to the fact that Terriers are not common in Kerala.

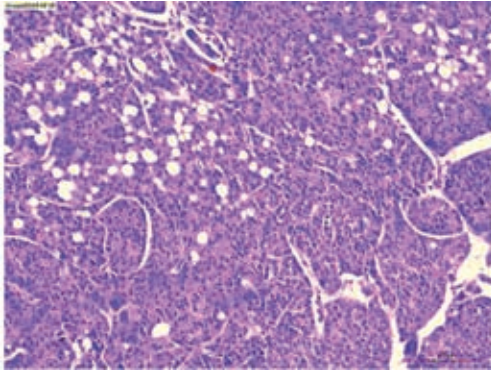


Fig. 1. Hepatoid gland adenoma- Proliferation of hepatocyte like hepatoid cells with extensive sebaceous differentiation (H &E x 100)

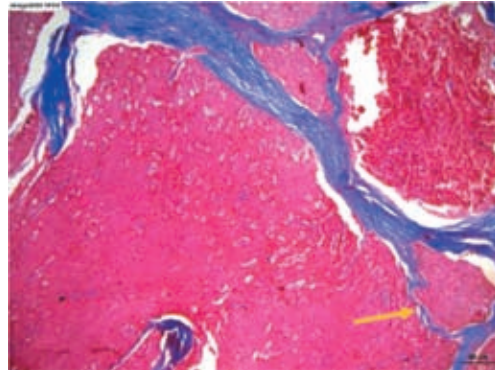


Fig. 4. Hepatoid gland epithelioma- invading neoplastic cells (arrow) into the blue stained connective tissue stroma (Masson's trichrome x 100)

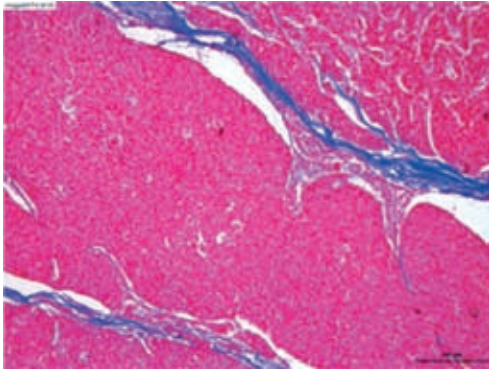


Fig.2. Hepatoid gland adenoma- The connective tissue stroma dividing the tumour growth into lobules appeared as blue (Masson's trichrome x 200) in Masson's trichrome staining

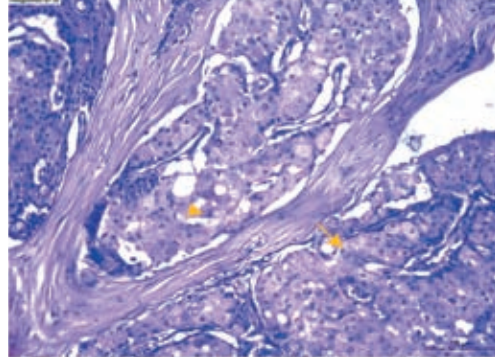


Fig. 5. Hepatoid gland carcinoma- pleomorphic cells with abundant eosinophilic and vacuolated cytoplasm and large nuclei with prominent nucleoli. Multinucleated cell (arrow) and mitotic figure (arrow head) (H&E x 200)

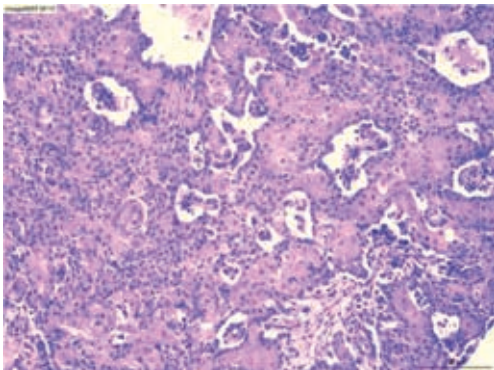


Fig. 3. Hepatoid gland epithelioma- many of cells were basaloid reserve cells and fewer hepatocytes with indistinct lobules (H&E x 200)

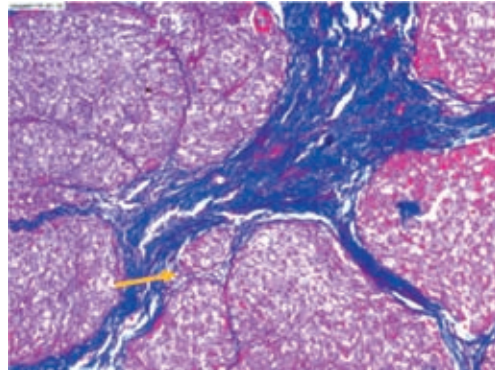


Fig. 6. Hepatoid gland carcinoma- invading neoplastic cells (arrow) into the blue stained connective tissue stroma (Masson's trichrome x 100)

Clinically, the animals affected with hepatoid tumours of diameter larger than 2 cm were showed clinical symptoms like polyuria and difficulty in defecation (Yumusak *et al.*, 2016). In the histological examination of hepatoid adenoma, the tumour islets were surrounded by basaloid cells. Hepatoid gland epithelioma had low grade malignancy and characterized by the presence of mainly basaloid cells with few hepatoid cells. These findings were also reported by Goldschmidt and Goldschmidt (2017). Hepatoid gland carcinomas were well differentiated which had a morphology and histological architecture similar to those of hepatoid adenomas in the current study. But, hepatoid cells with vesicular nucleus, hyperchromatic nucleolus and numerous vacuolated cytoplasm are evident in carcinomas. These findings were in agreement with Gross *et al.* (2006) and Yumusak *et al.* (2016).

Conclusion

Metastasis is usually very rare in hepatoid gland tumours and their surgical excision produces good results. No metastasis and post operative complications were observed in the cases documented in the current study. Symptoms disappeared following the excision of tumour mass. Grossly all hepatoid tumours had almost same features and histopathological study helped to diagnose different types of hepatoid gland tumours. The study thus points out the importance of histology and special staining in differentiating the benign and malignant variants and identifying their biological properties important in disease progression.

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Conflict of interest

The authors declare that they have no conflict of interest.

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