

HEPATOID CARCINOMA IN A SPITZ DOG

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Abstract: Hepatoid glands are modified sebaceous glands in dogs. Hepatoid carcinomas have predominant occurrence in affected dogs of age group 9 to 13 years. This report describes the histopathological detection of hepatoid carcinoma in a thirteen-year-old male spitz dog. Clinical history revealed slowly growing mass around the tail for the past 3 months. Grossly, mass was exophytic, round, firm to palpate, and about 10 cm in diameter. Histopathological examination revealed proliferating well differentiated hepatoid cells arranged in islands and trabeculae rimmed by basaloid reserve cells. They were suspended in thin fibrovascular stroma. The hepatoid cells had abundant eosinophilic cytoplasm with multifocal areas of squamous metaplasia. Occasionally, there were areas of dilatation of blood vessels filled with red blood cells. Few multifocal areas revealed presence of marked pleomorphic hepatoid cells with abundant eosinophilic and vacuolated cytoplasm, large nuclei and prominent nucleoli, admixed with haphazard reserve cells and very few mitotic figures. Also, superficial areas of ulceration and necrosis surrounded by numerous mononuclear inflammatory cells with haemorrhages were observed. Based on the findings, it was confirmed as Hepatoid carcinoma. The mass was surgically excised and further follow-up was monitored.

Keywords: Dog, Hepatoid carcinoma, tail, histopathology.

INTRODUCTION

Neoplasms originating from perianal glands are predominantly observed in male dogs. Hepatoid glands, specialized sweat glands found exclusively in dogs, are situated in the perianal area, prepuce, base of the tail, groin, inner thigh, and back. Hepatoid gland carcinomas (HGC) are relatively rare, comprising 3-7% of perianal neoplasms in dogs (Jardim et al., 2018). They predominantly affect sexually intact male dogs aged between 7 to 14 years. In canines, these tumors are often linked to hormonal factors, making them more prevalent in intact males. Occasionally, spontaneous regression of the tumor is noted. This study aims to investigate the incidence, macroscopic and microscopic characteristics of this tumor in dogs.

These tumors exhibit aggressive behaviour compared to adenomas, arising from the uncontrolled proliferation of hepatoid gland cells (Berrocal et al., 1989). Despite similar gross appearances between hepatoid gland adenomas and carcinomas, their microscopic characteristics are crucial for accurate diagnosis (Genevois., 1980). Their resemblance to hepatocytes earns them the moniker "hepatoid gland tumors." These tumors are more prevalent in older, intact male dogs, with certain breeds like Huskies, Cocker Spaniels, and Terriers showing predisposition (Berrocal et al., 1989, Goldschmidt., 2002, Pisani et al., 2006, Wilson et al., 1979). Initially, these tumors appear spherical to ovoid but can become multinodular and ulcerated with growth. Aspirates from these lesions display exfoliative features, showcasing large ovoid to cuboidal cells with eccentrically placed nuclei and abundant pink granular cytoplasm. Although typically benign, these tumors may exhibit minimal pleomorphism and contain smaller reserve cells with basophilic cytoplasm, necessitating histopathological examination for definitive characterization due to poor correlation between cytomorphology and clinical behaviour.

MATERIAL METHODS

A thirteen year old male spitz dog was presented with a history of slow growth of a mass around the tail for the past 3 months. Biopsy was performed and the tissue collected in 10% formalin was submitted for histopathological examination to Central University Laboratory, Centre for Animal Health Studies, TANUVAS, Chennai - 51. Fixed tissue samples were processed routinely, embedded in paraffin, and sectioned at a thickness of 4-5 μ m using a microtome. The processed slides were stained with haematoxylin and eosin (H&E) as per the standard staining technique (Suvana et al., 2018).

RESULTS AND DISCUSSION

Grossly, the mass was exophytic, round, firm to palpate, and about 10 cm in diameter situated on the proximal one-third of the dorsum of the tail. Microscopically, the tissue sections revealed superficial areas of ulceration and necrosis surrounded by numerous mononuclear inflammatory cells with hemorrhages. There was presence of proliferating well-differentiated hepatoid cells arranged in islands and trabeculae rimmed by basaloid reserve cells. They were suspended in thin fibrovascular stroma. The hepatoid cells had abundant eosinophilic cytoplasm (Fig. 1) with multifocal areas of squamous metaplasia.

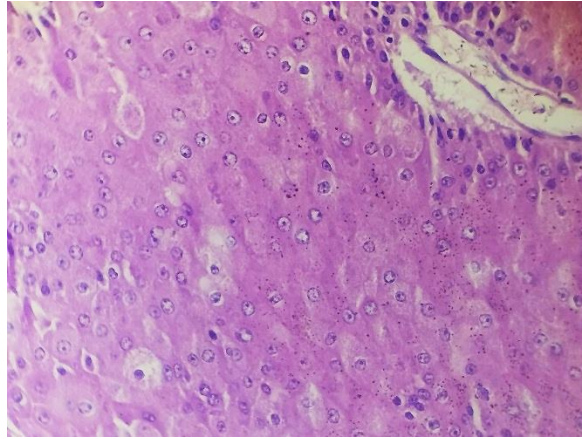


Fig. 1: Proliferating well-differentiated hepatoid cells with abundant eosinophilic cytoplasm
H&E 20x

Occasionally, there were areas of dilatation of blood vessels filled with red blood cells. Few multifocal areas revealed the presence of marked pleomorphic hepatoid cells with abundant eosinophilic and vacuolated cytoplasm, large nuclei, and prominent nucleoli, admixed with haphazard reserve cells (Fig. 2, 3) and very few mitotic figures.

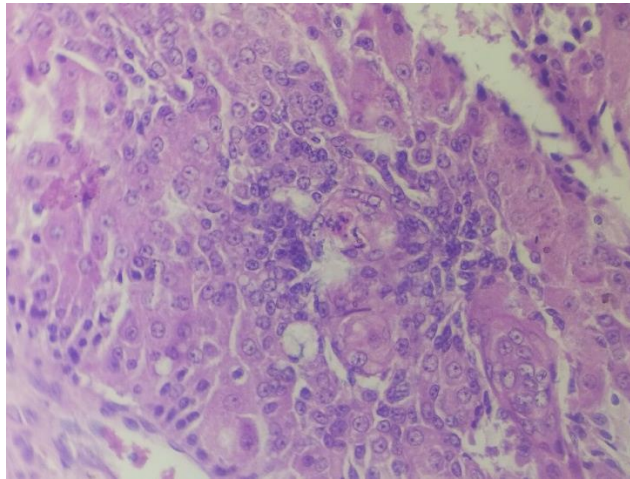


Fig. 2: Marked pleomorphic hepatoid cells with abundant eosinophilic and vacuolated cytoplasm, large nuclei, and prominent nucleoli, admixed with haphazard reserve cells H&E
40x

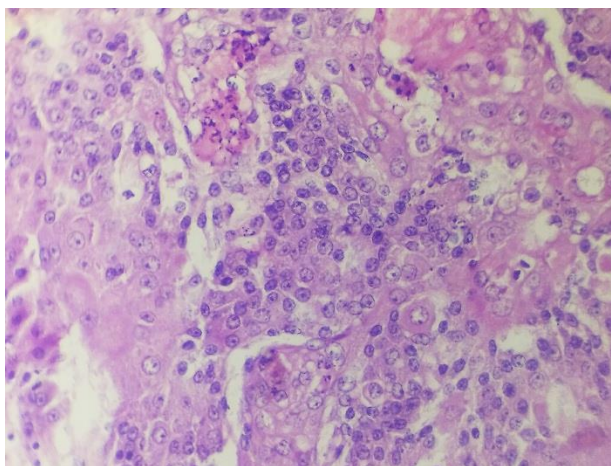


Fig. 3: Marked pleomorphism, large nuclei, and prominent nucleoli, admixed with haphazard reserve cells H&E 40x

These findings indicated hepatoid gland carcinoma. Hepatoid gland tumors are more common in older, intact dogs, possibly linked to higher androgen receptor levels in neoplastic glands (Berrocal et al.,1989, Bettini et al.,2005; Pieper et al.,2015). The incidence, gross and histopathological findings were in correlation to the previous authors. Metastases are rare in these tumors, and surgical removal typically yields favorable outcomes. Clinically, these tumors are associated with signs of polyuria and difficulty in defecation in dogs (Jardim et al., 2018, Pisani et al.,2006, Wellman et al.,1990, Pieper et al.,2015), but in this case study there were no such signs as the tumor mass involved tail region.

Surgical excision with wide margins is effective for managing non-metastatic and non-recurrent tumor growth in small animals, particularly dogs. Combining surgical excision with chemotherapy may offer benefits for early-diagnosed metastatic tumors as well.

CONCLUSION

Metastasis is typically uncommon in hepatoid gland tumors, and surgical removal generally leads to favourable outcomes. In the current case examined, no metastases or postoperative complications were observed. Symptoms resolved following tumor excision. Grossly, though hepatoid tumors exhibit similar features, while histopathological analysis aids in distinguishing between various types of hepatoid gland tumors. This underscores the significance of histopathological examination in distinguishing between benign and malignant variants and understanding their biological characteristics which is crucial for disease progression.

REFERENCES

- [1] Jardim J, Kobayashi PE, Cosentino PD, Alcaraz A, Laufer-Amorim R, Fonseca-Alves CE. Clinicopathological and immunohistochemical description of an intrapelvic hepatoid gland carcinoma in a 14-year-old Teckel dog. *Veterinary Quarterly*. 2018, 38(1):9-13.
- [2] Berrocal A, Vos JH, Van Den Ingh TS, Molenbeek RF, Van Sluijs FJ. Canine perineal tumours. *Journal of Veterinary Medicine Series A*. 1989, 36(1-10):739-49.
- [3] Genevois JP. Pathologie ano-rectale et perineale. I. Circumanalomes. *Revue de medecine veterinaire*. 1980; 131(10).
- [4] Goldschmidt MH, Hendrick MJ. Tumors of the skin and soft tissues. 2002, 45-117.
- [5] Pisani G, Millanta F, Lorenzi D, Vannozzi I, Poli A. Androgen receptor expression in normal, hyperplastic and neoplastic hepatoid glands in the dog. *Research in Veterinary Science*. 2006, 81(2):231-6.
- [6] Wilson GP, Hayes Jr HM. Castration for treatment of perianal gland neoplasms in the dog. *Journal of the American Veterinary Medical Association*. 1979, 174(12):1301-3.
- [7] Suvarna KS, Layton C, Bancroft JD. Bancroft's theory and practice of histological techniques E-Book. Elsevier health sciences; 2018, 27.
- [8] Bettini G, Morini M, Campagna F, Preziosi R. True grit: the tale of a subcutaneous mass in a dog. *Veterinary clinical pathology*. 2005, 34(1):73-5.
- [9] Wellman ML. The cytologic diagnosis of neoplasia. *Veterinary Clinics of North America: Small Animal Practice*. 1990, 20(4):919-38.
- [10] Pieper JB, Stern AW, LeClerc SM, Campbell KL. Coordinate expression of cytokeratins 7 and 14, vimentin, and Bcl-2 in canine cutaneous epithelial tumors and cysts. *Journal of Veterinary diagnostic investigation*. 2015, 27(4):497-503.