

APOCRINE GLAND ADENOMA IN A 4-MONTH OLD GOLDEN HAMSTER (*Mesocricetus auratus*)

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SUMMARY: Hamsters are popular as pets. Although there are many reports on tumours in laboratory hamsters, tumours in pet hamsters are infrequently reported. The present report describes successful diagnosis, treatment and treatment outcome of apocrine gland adenoma, an uncommon cutaneous neoplasm, identified in the ventral neck region of a 4-month old Golden hamster (*Mesocricetus auratus*). The initial diagnosis was attempted by cytology. The cytology of benign apocrine glands in hamsters has not been previously described in the literature. Histopathology of the neoplasm was consistent with an apocrine adenoma and positive PAS staining confirmed the secretory nature of the neoplasm. The tumour was surgically excised under local anaesthesia. There was no tumour recurrence or metastasis detected after one year.

Keywords: Golden hamster, apocrine gland adenoma, cytology, histopathology

INTRODUCTION

Hamsters are rodents belonging to the subfamily Cricetinae (Lennox and Bauck, 2012). Among the many hamster species, Golden hamsters (*Mesocricetus auratus*) are the most popular species as pets (Lennox and Bauck, 2012). A variety of tumours are diagnosed in laboratory hamsters. However, reports on tumours in pet hamsters are limited (Vairaktaris *et al.*, 2007). Further, clinical case reports with successful diagnosis and treatment of tumours in hamsters are even limited (Kim *et al.*, 2022; Urayama *et al.*, 2001). Apocrine glands are simple or coiled tubular glands present throughout the hairy skin of many animal species (Clifford *et al.*, 2001). Although uncommon, apocrine gland neoplasms have been reported in many animal species (Clifford *et al.*, 2001). Currently, only two complete clinical case reports of apocrine gland tumours in hamsters with diagnosis, treatment and treatment outcome are available in the literature (Kim *et al.*, 2022; Urayama *et al.*, 2001). Both these previous reports describe malignant apocrine gland tumours and to the author's knowledge, there are no detailed reports on benign apocrine gland tumours in pet hamsters. Confirmative diagnosis of an apocrine gland tumour can be made by histopathology (Kalahar *et al.*, 1990). Benign apocrine gland tumours are well circumscribed, well differentiated and show minimal cellular and nuclear pleomorphism compared to malignant apocrine

gland tumours. The present report describes the complete diagnostic work up including fine needle aspiration cytology, histopathology, special staining techniques and successful treatment of an apocrine gland adenoma in a 4-month old pet golden hamster.

Case description

A 4-month-old intact male pet golden hamster weighing 45g with a swelling in the ventral neck was presented to the Veterinary Teaching Hospital, University of Peradeniya, Sri Lanka. The hamster lived in a plastic cage but was allowed to free roam within the house in the presence of the owner. He was fed *ad libitum* with a commercial diet for small mammals and occasional treats. The owner first noticed the mass approximately three weeks before the presentation to the hospital. Other than intermittent feed regurgitation, no changes in appetite, urination or defaecation were detected by the owner. On general clinical examination, the heart rate was 254 beats/min, and the body condition score (BCS) was 3 out of 5 based on the BCS index for laboratory rats. A freely movable subcutaneous mass with a firm and flocculant mixed consistency was identified in the ventral neck area of the hamster (Fig. 1). The differential diagnoses were abscess, foreign body granuloma and neoplasia. A fine needle aspirate (FNA) obtained from a fluidly area of the

mass revealed a population of large, discrete mononuclear cells which could be macrophages in a granular proteinaceous background (Fig. 1). The mononuclear cells had eccentric nuclei and dark basophilic cytoplasm. The second FNA obtained from a firm area of the mass revealed a population of round to polygonal cells that formed tightly cohesive, variably sized epithelial cell clusters (Fig. 1). The cells had distinct cell borders, a moderate amount of basophilic cytoplasm, centrally placed round nuclei with coarsely clumped chromatin. Nucleoli were mostly inconspicuous but occasionally some cells contained 1-2 prominent nucleoli. There was mild to moderate anisocytosis and anisokaryosis. The cells in the centre of many clusters had deeply basophilic cytoplasm compared to the cells at the periphery. According to cytology, the mass was tentatively diagnosed as an epithelial neoplasm and surgical excision was performed.

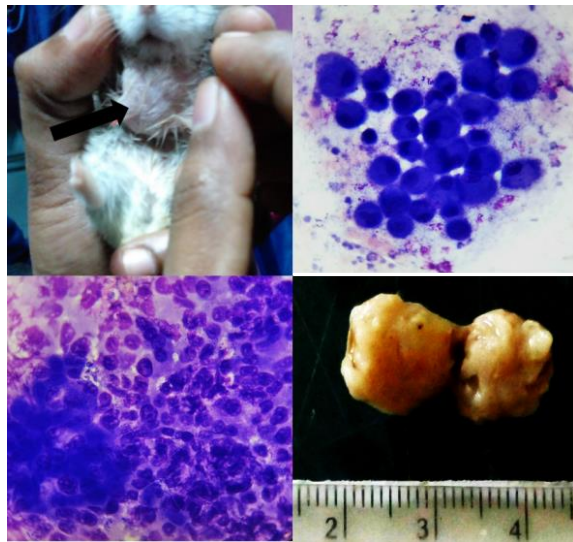


Figure 1: Top left: The four-month-old Golden hamster with a mass in the ventral neck area (arrow). Top right: Cytology of the fluid area of the mass. Note the mononuclear cells with dark blue cytoplasm in a granular protein-stained background (x100, oil immersion, Diff-Quik). Bottom left: Cytology of the mass from a firm area. Note the tightly cohesive clusters of epithelial cells towards the left having a more deeply basophilic cytoplasm than others (x100, Oil immersion, Diff-Quik). Bottom right: Surgically excised tumour showing cut surfaces.

The tumour mass was excised under local anaesthesia. The hamster was premedicated with tramadol 10mg/kg, SC as an analgesic. Lidocaine HCl (2mg/kg, SC) was used as a local anaesthetic and infiltrated around the tumour. Post operatively enrofloxacin (5 mg/kg PO twice daily), and meloxicam (0.5mg/kg PO once daily,) were prescribed for 5 days to prevent possible bacterial infection and pain respectively.

The resected mass was 1.1 cm x 0.6 cm x 0.4 cm, soft, lobulated, cystic, grey-white, and contained

greasy cut surfaces (Fig. 1). The surgically resected mass was fixed in 10% neutral buffered formalin, processed, sectioned and stained with Hematoxyline and Eosin (H&E). Histopathology revealed a multi lobulated, unencapsulated, well circumscribed, densely cellular tumour composed of variably sized ducts separated by variably thick fibrovascular connective tissue (Fig. 2). The surgical margins were complete but not wide. Owing to the location of the neoplasm it was difficult to obtain wide surgical margins. The variably sized ducts were lined by two layers of epithelial cells. The luminal epithelial cells had small, basally located, hyperchromatic nuclei and a moderate amount of pale eosinophilic cytoplasm that frequently produced cytoplasmic blebbing along the luminal border. The basal cells were more fusiform and had little cytoplasm and a euchromatic nucleus. Anisocytosis and anisokaryosis were mild to moderate and mitotic figures were less than 1 per 10, 40x high power fields. Frequently ducts were ectatic and lumens contained amphophilic granular secretory material and secretory product-laden macrophages. The histopathological features were consistent with an apocrine gland adenoma. Periodic acid-Schiff (PAS) staining was performed on thin tissue sections of the mass that showed positive staining in the apical blebs of the luminal cells confirming the secretory nature of the neoplasm (Fig. 2).

The surgical wound healing was uneventful, and the sutures were removed 14 days post operatively. The hamster was followed up in three months, six months and one year post operatively and no tumour recurrence or clinical signs related to tumour metastasis were detected.

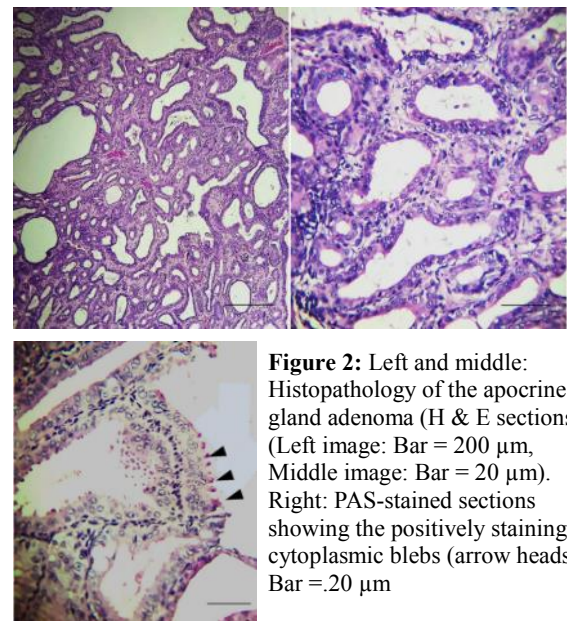


Figure 2: Left and middle: Histopathology of the apocrine gland adenoma (H & E sections) (Left image: Bar = 200 µm, Middle image: Bar = 20 µm). Right: PAS-stained sections showing the positively staining cytoplasmic blebs (arrow heads) Bar = 20 µm

DISCUSSION

This report describes the diagnosis of an apocrine gland adenoma in a Golden hamster using cytology, histopathology (Meuten, 2017) and special staining. The tumour was identified in the ventral neck of this hamster. According to a previous retrospective survey on tumours in pet hamsters, thorax and abdomen were identified as the most frequent sites of apocrine gland tumours (Rother *et al.*, 2021). Therefore, the tumour site of the hamster described in this report seems to be an uncommon site for apocrine gland tumours in hamsters.

The hamster described in the present report was only 4 months old. In a previous retrospective study on tumours in pet hamsters, the median age of hamsters with integumental tumours was 12 months (range 4–36 months) while the median age of Golden hamsters was 13 months (Rother *et al.*, 2021). Therefore, it is likely that the hamster described in this report developed the apocrine gland neoplasm at a relatively young age. Neoplastic conditions in young animals are uncommon and it is not known why this hamster developed a tumour at a relatively young age. Also, it is unknown whether young hamsters are more prone to develop benign apocrine tumours while older hamsters tend to develop malignant apocrine gland tumours and more case reports are necessary for confirmation.

In the hamster described in this report, a tentative diagnosis of an epithelial cell tumour was made by FNA cytology. However, the first aspirate obtained from a flocculant area of the tumour that may represent an ectatic duct only showed a population of mononuclear cells. These cells could be secretory product-laden macrophages present in the lumens of ducts identified by histopathology. Only the second FNA was useful in diagnosing the mass as an epithelial neoplasm. These findings suggest the importance of multiple sampling for cytology in this type of tumour.

In summary, this report describes the complete diagnostic work-up and successful surgical excision of an apocrine gland adenoma in a young pet hamster. This is the first time the cytology of a

benign apocrine gland tumour of a pet hamsters has been reported.

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