Meibomian adenoma in a Syrian hamster (*Mesocricetus auratus*): a case report

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ABSTRACT: A two-year old male Syrian hamster (*Mesocricetus auratus*) was brought to the Surgery Clinic at the Istanbul University, Veterinary Faculty, Research and Practice Hospital, with a non-healing wound on the right upper eyelid. An ulcerated, bleeding wound was observed and diagnosed as an eyelid mass. The eyelid mass was excised and submitted for histopathological examination, which resulted in a diagnosis of meibomian adenoma. After excision of the mass, the right upper eyelid became deformed and adopted an abnormal shape. The surgical site was examined two weeks later. No abnormality was observed and the appearance of the right eyelid had returned to normal. Although there are many reports on benign tumours such as polyps, adenomas, haemangiomas and papillomas in hamsters, to the authors' knowledge, this is the first report on a meibomian adenoma in a Syrian hamster which was resolved by surgery.

Keywords: tumour; eye; meibomian adenoma; hamster

Syrian hamsters have been used in various medical research fields, particularly in carcinogenesis studies (Handler 1958; Bloom at al. 1967; Yanagi et al. 2000; Kondo et al. 2008). However, reports on spontaneous tumours in domestic hamsters are scarce (Kondo et al. 2008).

Reported neoplasms of the Syrian hamster include intestinal polyps, adrenal adenomas, splenic haemangiomas, islet cell pancreatic tumours, hepatic adenomas, squamous papillomas of the forestomach, fibroadenomas (Hankenson and Van Hoosier 2002), plasmacytomas, lymphomas, adrenocortical adenocarcinomas, haemangiomas, uterine leiomyosarcomas (Kondo et al. 2008) and adenocarcinomas of the mammary gland (Kondo et al. 2009).

The meibomian (tarsal) glands are large sebaceous glands that can be viewed through the conjunctiva as white parallel streaks near the lid margin. Secretion from the meibomian glands provides nutrition to the cornea and forms the lipid layer of the pre-corneal tear film (Lackner 2001; Martin 2005), which prevents evaporation and the spilling of tears onto the face. Alterations in secretion may lead to lid and corneal pathology (Martin 2005).

In this report, a case of a meibomian adenoma in a hamster is described. To the authors' knowledge, the following report represents the first case in which a meibomian adenoma in a hamster was diagnosed and successfully treated.

Case description

A two-year old male Syrian hamster was brought to the Surgery Clinic at the Istanbul University Veterinary Faculty, Research and Practice Hospital with a complaint of a non-healing, bleeding wound on the eyelid (Figure 1). Upon examination, an ulcerated mass was identified on the right upper eyelid.

Following sedation of the patient using medetomidine hydrochloride (0.2 mg/kg, intramuscularly, Domitor®, Pfizer, Germany), the surgical site was shaved and prepared for excision of the mass. General anaesthesia was then achieved using ketamine hydrochloride (100 mg/kg, intramuscularly, Alfamine®, Alfasan, Holland). Under general anaesthesia, the mass was lifted upwards and excised. The surgical wound was sutured with simple interrupted sutures using 6/0 Vicryl (Ethicon, Johnson

Figure 1. Ulcerative mass observed on the right upper eyelid

and Johnson Medical Ltd., UK). The retrieved mass was then submitted to the pathology laboratory for histopathological investigation.

In the immediate post-operative period, a deformation was observed in the right upper eyelid due to surgery (Figure 2). However, in the follow-up examination one week later, this surgery-related deformation was seen to have partially resolved. In the check-up two weeks after the operation, the deformation had completely disappeared and the right upper eyelid had the same appearance as the left upper eyelid (Figures 3 and 4).

With regard to histopathological findings, a large amount of glandular structure in the form of islets surrounding basal cells was observed. These were composed of foamy, eosinophylic, uniform sebaceous cells in the dermal layer. Focal squamous metaplasia was detected in the centre of several glands. Light lymphoplasmocytic infiltration of some circumglands was also observed. A comedone structure, which was filled with keratin, lipid and a small amount of mononuclear cells, was detected in the centre of the tumour mass. On the basis of the localisation of the mass and of the typical histological findings, the mass was diagnosed as a meibomian adenoma (Figures 5 and 6).

Figure 2. Deformation in upper eyelid in the immediate post-operative period

Figure 3. Complete healing of right upper eyelid two weeks after operation

DISCUSSION AND CONCLUSIONS

The age at which hamsters develop neoplasms varies widely. The normal lifespan of hamsters is between 18 and 24 months. According to the study of Kondo and colleagues, the mean age of hamsters with neoplasms was relatively high with respect to their lifes-

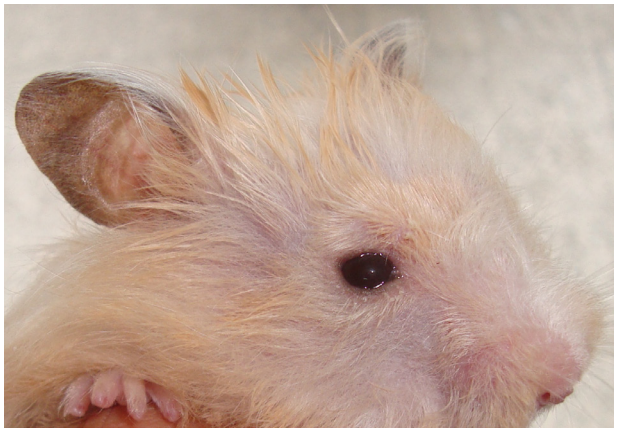

Figure 4. Complete healing of the right upper eyelid two weeks after operation

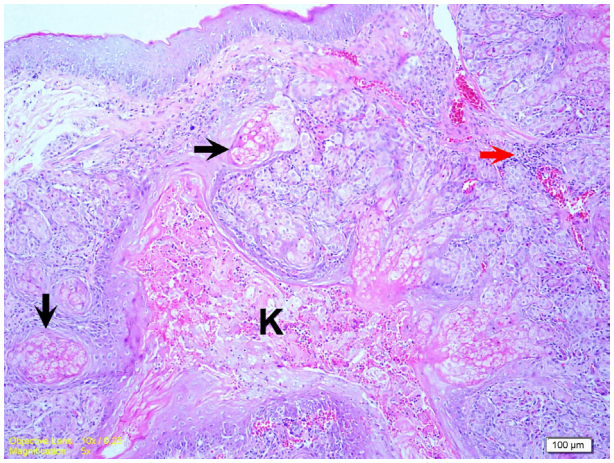

Figure 5. Gland islets formed by sebaceous and basal cells located in the dermis. Gland islets and squamous metaplasia (black arrow), comedone structure opening onto epidermal surface (K), lymphoplasmocytic infiltration (red arrow)

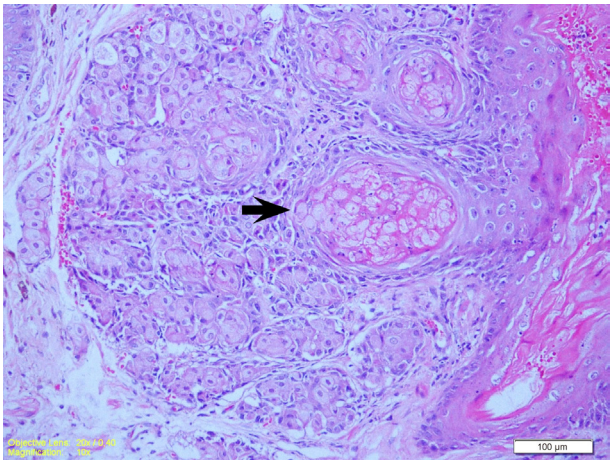

Figure 6. Gland islets formed by sebaceous and basal cells located in dermis and squamous metaplasia lesions in the centre of glands

pan (Kondo et al. 2008). Thus, the fact that in this case the hamster was two years old is in accordance with the results of this earlier study (Kondo et al. 2008).

Eyelid tumours are seen frequently in dogs but rarely in cats (Willis and Wilkie 2001; Aquino 2008). Further, these tumours are mostly benign in dogs (Aquino 2008; Wiggans et al. 2012), while in cats they are generally malignant (Willis and Wilkie 2001; Cantaloube et al. 2004). The most common eyelid tumours reported in dogs are meibomian adenomas (Vascellari et al. 2005; Kafarnik et al. 2010), whereas in cats the most frequently described tumours are squamous cell carcinomas (Willis and Wilkie 2001). The rate of spontaneous tumour formation in hamsters has been reported to be higher in Siberian hamsters compared to Syrian hamsters (Kondo et al. 2008). However, we could find no information on the incidence of eyelid tumours or on the types of tumours in hamsters. Nevertheless, the eyelid tumour observed in the hamster in this case showed similarities to the general properties of eyelid tumours observed in cats and dogs (Aquino 2007).

In dogs, in cases of eyelid masses where there is a rapid growth, ulceration or corneal irritation, removal of the mass is indicated. Following total excision, prognosis is excellent for eyelid adenomas (Aquino 2007). Likewise, we observed excellent post-operative healing in the upper eyelid of the hamster after surgical excision of the eyelid tumour.

Amongst the aims of the eyelid reconstructive surgery is the provision of normal palpebral opening as well as normal eyelid movement (Hagard 2005). In this case, simple interrupted sutures were used for closure of the wound following surgical excision of the tumour, without the need to resort to palpebral reconstructive surgical techniques. Thus, normal eyelid movement together with normal palpebral opening was achieved in the post-operative period. In sources reporting on eyelid surgery (Lackner 2001; Aquino 2008), as a general rule, it has been reported that a reconstructive procedure is not necessary for the formation of a new margin in the resection of one third of the length of the eyelid. In order to remove the mass on the eyelid of the hamster in this case, approximately two-thirds of the eyelid margin was resected. However, the eyelid re-adopted its normal structure and healed without the need for any reconstructive techniques. We believe that this speedy recovery may have been due to the fact that the eyelid skin is fine and very mobile, as mentioned by Lackner (2001).

In conclusion, a two-year old male Syrian hamster brought to our clinic with an eyelid tumour was diagnosed with a meibomian adenoma. Based on the course of recovery in this case we are of the opinion that surgical excision represents a very suitable treatment method in cases of eyelid tumours in hamsters. We hope that this case report will contribute to an understanding of eyelid tumours in hamsters.

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