

CASE REPORT

Conjunctival dermoid in two guinea pigs: a case report

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Abstract

Clinical and histologic findings of conjunctival dermoids in two unrelated guinea pigs are described. The dermoids were treated surgically by resection with superficial lamellar keratectomy and corneal epithelial debridement. Histologically the dermis underneath a stratified squamous keratinized and variably pigmented epithelium consisted of multiple hair follicles, with clearly visible arrectores pilorum muscles, sebaceous glands and loose vascularized fatty tissue.

Key Words: conjunctiva, dermoid, guinea pig

INTRODUCTION

Dermoids are congenital lesions characterized by focal skin-like differentiation representing choristomas (normal tissue in an abnormal location).¹ The degree of differentiation varies. Most dermoids consist of stratified squamous keratinized epithelium overlying an irregular dermis, with hair follicles, sweat glands, sebaceous glands and adipose tissue. Cartilage and bone are rarely seen.²

Dermoids are described in the orbit³ and different ocular locations in a variety of species. They may occur on the lids, the conjunctiva or the cornea, or as an inclusion cyst within the orbit. Depending on the irritation caused on the ocular surfaces the clinical signs are variable.

CASE REPORTS

Case 1

A 1-year-old female guinea pig was presented for long-standing ocular problems. The owner had noticed some long hairs on the lids that were growing towards the cornea. She had cut these hairs several times. According to the owner an antibiotic ointment was applied over some weeks without any improvement.

The ophthalmologic examination revealed an extensive dermoid in the palpebral conjunctiva of the upper right lid. A bristly bunch of hairs oriented towards the corneal surface had caused a chronic ulcerative keratitis with intense vascularization and thickening throughout the entire cornea (Fig. 1a,b). The margins of the corneal ulceration were characterized by large lips of loose hypertrophied epithelium. Due to the loss of corneal transparency, inspection of the

anterior chamber and the intraocular structures was impossible. There was a large amount of mucopurulent discharge as well as blepharospasm and photophobia.

Treatment consisted of surgical resection of the entire dermoid followed by corneal epithelial debridement. General anesthesia was accomplished with ketamine hydrochloride (Ketaminhydrochlorid 10%, Heinrich Fromme GmbH, Warburg, Germany, 50 mg/kg IM) and xylazine chloride (Xylazin 2%®, Alvetra, Neumuenster, Germany, 4 mg/kg IM). Preoperative treatment consisted of atropine (Atropinsulfat Braun 0.5 mg, Braun, Melsungen, Germany, 0.1 mg/kg SC) methylprednisolone (Solu-Decortin H®, Merck, Darmstadt, Germany, 10 mg/kg SC) and lactated Ringers solution (30 mL/kg SC). The dermoid had a remarkable thickness. The conjunctival defect was not sutured. Postoperatively, triple antibiotic ointment was applied (Polyspectran®, Alcon Pharma, Freiburg, Germany) twice daily over 5 days. Healing was uneventful. Three weeks after surgery the cornea had cleared and the eye was visual. The intraocular structures showed no abnormalities.

Case 2

An 8-month-old female guinea pig was referred for surgical therapy of an ocular dermoid. There was no known relationship between case one and two. Ophthalmologic examination revealed a 2 × 2 mm-large dermoid with long hairs in the left eye which prevented the lids from closure. The dermoid was located on the left cornea ventrotemporally adjacent to the limbus. There was minimal irritation (Fig. 2a,b,c).

Superficial lamellar keratectomy of the area of the dermoid was performed under general anesthesia. Anesthesia was

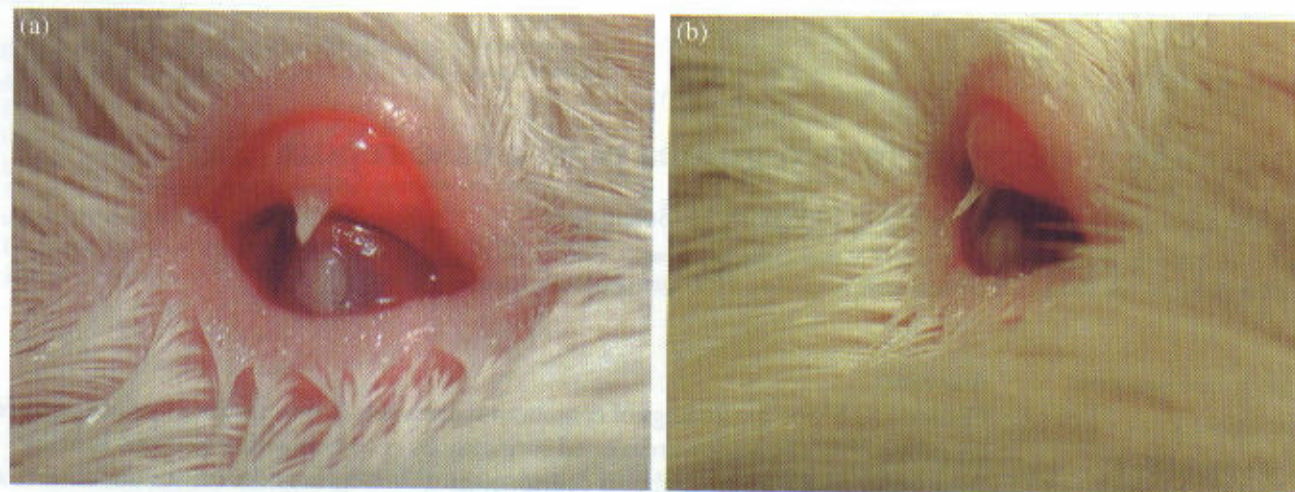


Figure 1. (a) and (b): appearance of the right eye of case 1. The conjunctival dermoid is causing severe ulcerative keratitis.

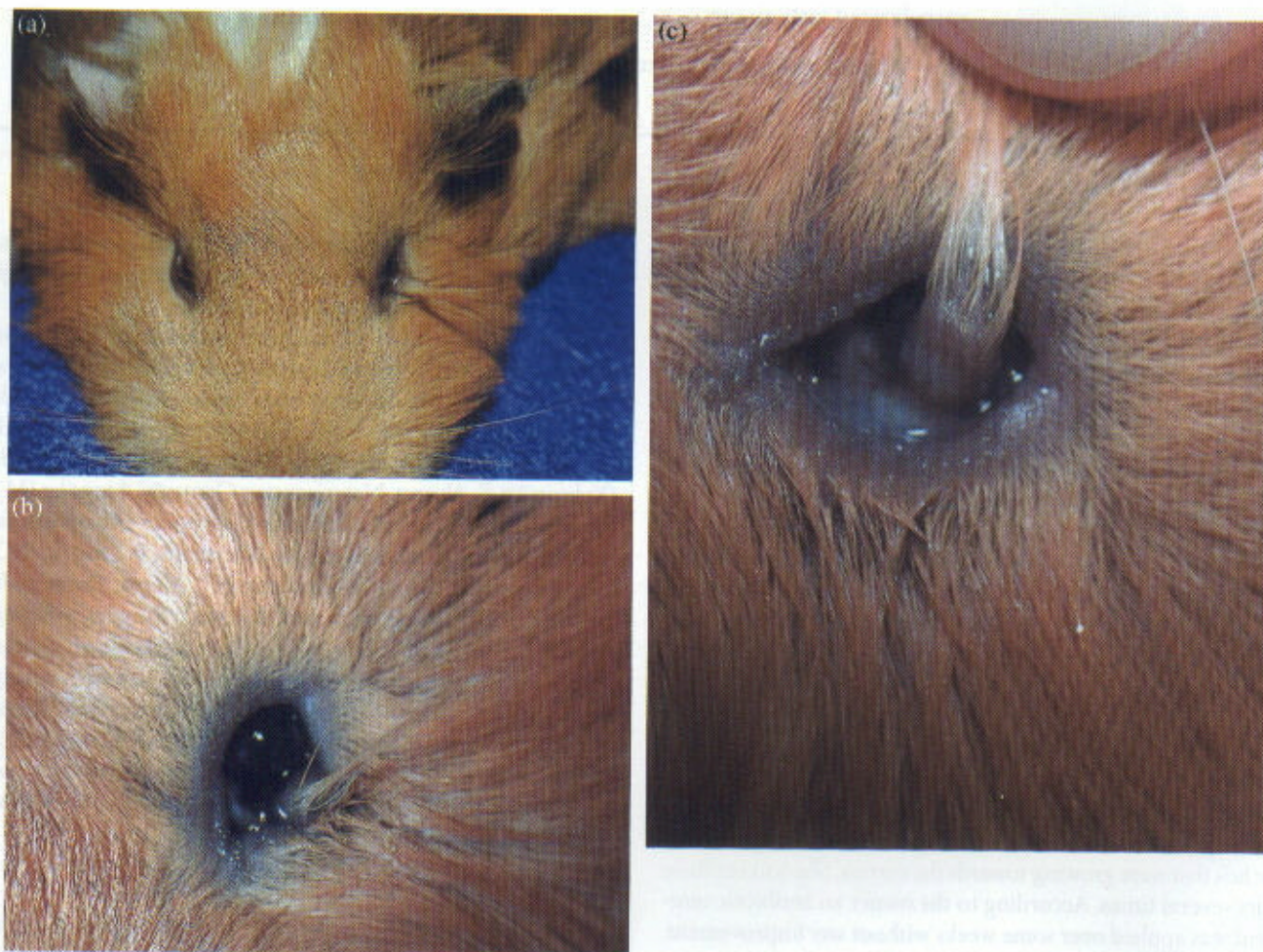


Figure 2. (a): case 2. Dermoid of the left eye. (b): close up of the left eye of case 2: conjunctival dermoid with long hairs. (c): case 2, left eye: the conjunctival dermoid is located on the inferior cornea close to the limbus.

carried out as described for case 1. The conjunctival defect was not sutured. Postoperatively, triple antibiotic ointment (Polyspectran®) was applied twice daily over 5 days. One week after surgery the defect was epithelialized with minimal scarring.

Histopathologic findings

Both dermoids have basically the same structure. In a focal area of conjunctiva the mucous membrane is transdifferentiated to stratified squamous keratinized and variably pigmented

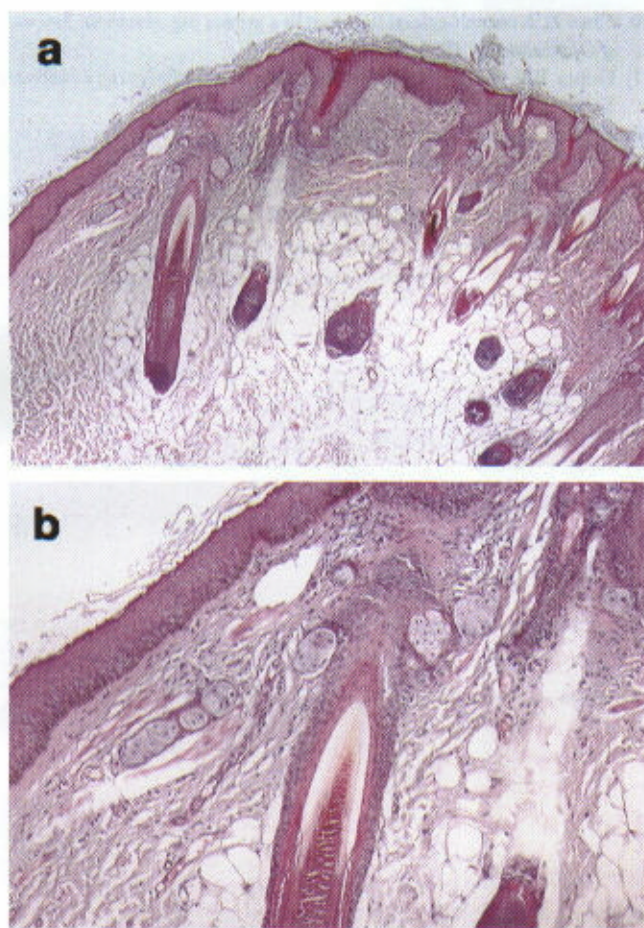


Figure 3. (a) Dermoid of the conjunctiva (case 2) consisting of stratified squamous keratinized and variably pigmented epithelium, hair follicles with arrectores pilorum muscles, sebaceous glands and loose vascularized fatty tissue; no sweat glands. H&E scale bar: 100 µm, DIC (differential-interference-contrast). (b): hair follicle with sebaceous glands and arrector pili muscle embedded in loose fatty tissue covered by keratinized stratified squamous cell epithelium (case 2). H&E scale bar: 100 µm.

epithelium. In the dermis (corium) underneath the epithelium there are multiple hair follicles with clearly visible arrectores pilorum muscles and sebaceous glands. The deeper dermis (corium) consists of loose vascularized fatty tissue. There are no sweat glands (Fig. 3a,b).

DISCUSSION

Ocular dermoids are described in the dog,⁴ cat,⁵ rabbit,⁶ rat,⁷ parrot,⁸ goose,⁹ cow,¹⁰ sheep,¹¹ pig,¹² horse,¹³ donkey,¹⁴ gnu¹⁵ and lion,¹⁶ as well as the guinea pig.^{17–20}

In the guinea pig five cases of ocular dermoids have been published. Corneal location was most common.^{17–19} A corneoscleral²⁰ and a scleral dermoid²¹ have also been reported. The latter seemed to originate from the scleral and palpebral conjunctiva. Both our cases were of conjunctival origin even though the dermoid was located on the cornea close to the limbus in case two.

Surgical therapy consisted of simple resection which included superficial keratectomy in case two. Heritable predisposition is described in some dog breeds, for example, the German Shepherd and the Dachshund, as well as the Burmese cat.²² In Hereford cattle dermoids have genetic characteristics of autosomal and polygenic inheritance.¹⁰ Otto and coworkers (1991) suggested a genetic disposition for the guinea pig as well, although Gupta (1972) examined three litters with nine piglets of an affected mother and did not find gross ocular abnormalities in the offspring. Our two cases were not related. Considering the large quantity of guinea pigs which are bred as pets and for research and the infrequent case reports of ocular dermoids, the speculated hereditary disposition seems to be unlikely in guinea pigs.

An ocular dermoid occurs when a focal area of epithelium is characterized by skin-like differentiation which may histologically approximate regular-haired skin.²³ Although rare in rodents and small laboratory animals, dermoids should be considered in the differential diagnoses of conjunctival and corneal abnormalities and treated by simple resection to reduce irritation and improve vision of the affected eyes.

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