A CASE OF ACTINIC KERATOSIS IN A RABBIT

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Abstract

Actinic keratosis is well described in humans, dogs, and cats as a precancerous skin growth caused by ultraviolet light–induced DNA damage. This report describes a case of early actinic keratosis in a 6-year-old rabbit (*Oryctolagus cuniculus*). On dermatological examination, erythema and yellow adherent scales were observed on the external aspect of the pinnae. Mild pruritus was also present on the initial presentation. Histopathology revealed segmental epidermal hyperplasia with loss of polarity in the basal layer. Mild nuclear atypia and marked orthokeratotic hyperkeratosis were present. The superficial dermis had marked reticular fibrosis with thickening of collagen fibrils. Topical treatment with diclofenac resulted in clinical resolution of the disease. Copyright 2014 Elsevier Inc. All rights reserved.

Key words: actinic keratosis; dermatology; diclofenac; rabbit; ultraviolet light

Actinic keratosis (AK), or solar keratosis, has been documented in humans, dogs (*Canis familiaris*), and cats (*Felis catus*). AK represents the initial intraepidermal manifestation of abnormal keratinocyte proliferation.[1,2] Further progression of this disease can lead to squamous cell carcinoma (SCC). As ultraviolet (UV) light is believed to be the causative agent, AK is categorized as a solar-induced dermatological condition. To the authors' knowledge, this is the first case report of AK in the rabbit (*Oryctolagus cuniculus*).

CASE REPORT

A 6-year-old male, intact, 9.6-kg white Flemish giant rabbit was referred to the Advetia Veterinary Hospital (Paris, France) with a 4-month history of bilateral scaling and mild pruritus of the ear pinna. The rabbit was housed indoors, with access to a veranda and garden. The patient had been presented to the referral practitioner 1 month before ear pruritus. No additional testing was done by the referring veterinarian. A treatment consisting of carbamate dusting powder for *Cheyletiella* spp. was prescribed by the veterinarian to be applied for 30 days (1 application on the whole body weekly). The rabbit was presented to the Advetia Veterinary Hospital owing to a lack of treatment response.

Except for the auricular lesions, there were no other external clinical abnormalities present. The auricular lesions affected 50% of the convex surface of both pinnae. The skin on the peripheral surface of the pinnae remained intact. Other skin regions of the ear, including the concave surface of the ear pinna, were considered normal. Dermatological examination of the affected area revealed marked hypotrichosis, areas of alopecia, mild erythema, and yellow adherent psoriasiform scales running parallel to the central auricular vessel (the intermedial branch of the caudal auricular vein) (Fig. 1). Based on the history and clinical findings, the list of differential diagnoses included seborrheic dermatitis, ectoparasitic infestation (*Cheyletiella parasitivorax*), dermatophytosis, *Malassezia* dermatitis, superficial pyoderma, paraneoplastic dermatitis, AK, and cutaneous lymphoma.

Microscopic examination of superficial skin scrapings (in mineral oil) and surface cytology (scotch tape test stained with Diff-Quik) were unremarkable. Fungal culture of the affected area

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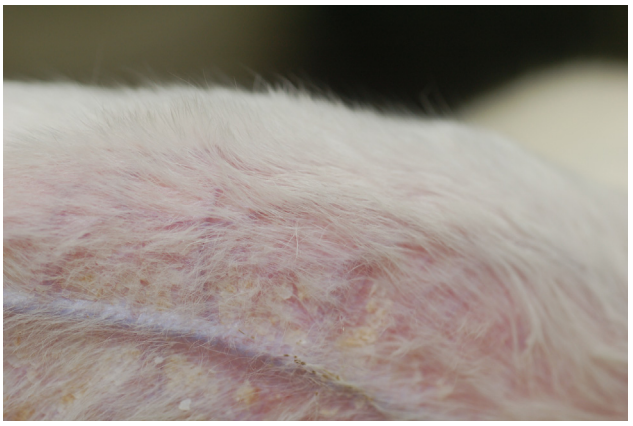

FIGURE 1. View of the left external pinna of a rabbit with actinic keratosis. Note scales and crusts.

(SAB/DTM/ESA, Kit MCM3, Labarthe-Inard, France) was negative. Based on the negative findings from the initial diagnostic tests, a cutaneous biopsy for histology submission was proposed. The biopsy was performed 2 weeks following the initial presentation to the referral hospital. The patient was preanesthetized with medetomidine hydrochloride (0.125 mg/kg intramuscular, Domitor; Elanco Lab, Suresnes, France) and then induced with 3.5% of isoflurane gas (Isoflurane Vetflurane, Virabc, Carros, France) and 1.5-L flow oxygen by mask. Anesthesia was then maintained for the duration of the procedure with a concentration of 2% isoflurane gas and 1.5-L oxygen flow. A 8 mm × 2 mm biopsy was obtained from the affected areas on the dorsal aspect of both ear pinnae.

Histopathological examination of the samples revealed segmental multifocal epithelial hyperplasia characterized by loss of polarity in the basal layer, mild nuclear atypia showing nuclear enlargement, nucleolar prominence, hyperchromasia, and mild anisokaryosis. The basement membrane was intact. Mitotic activity was not increased. There was marked orthokeratotic hyperkeratosis. The superficial dermis revealed mild superficial laminar fibrosis (Fig. 2). Collagen fibrils were thickened and hyalinized, with altered contours and faded aspect. Hyperplasia and dysplasia were minimally observed in the hair follicles. Histopathological examination indicated early stage of AK.

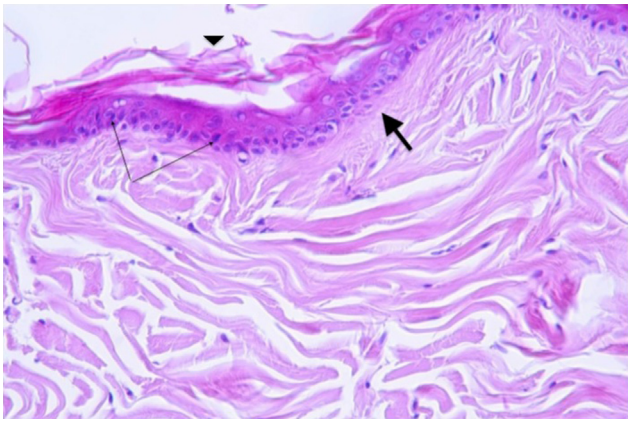

FIGURE 2. Histopathological section of the ear of a rabbit with actinic keratosis. Note hyperkeratosis (arrow head), mild superficial dermal laminar fibrosis without inflammation (bold arrow), and mild basal dysplasia (2 small arrows). Stain: Hematoxylin and Eosin; magnification, ×200.

Based on the history, clinical signs, and histopathology, diagnosis of AK was established. Diclofenac 3% gel (Solaraze, Shire, France) was applied daily to the left pinna only for 1 month. Treatment was limited to 1 ear to limit drug exposure in case of adverse side effects. On re-examination, 30 days later, the lesions affecting the left pinna had improved by 85% (Fig. 3), but the right pinna remained unchanged. Based on positive treatment results, the owner was instructed to begin the same treatment on the right pinna and to continue daily application on the left pinna. One month later, lesions showed improvement on the right pinna and clinically resolved on the left. The topical treatment was then discontinued on the left pinna and pursued for one more month more on the right pinna.

The patient was then monitored every 30 days for 2 months. During this period, there was no evidence of disease reoccurrence. The rabbit presented with pleural effusion 7 months after the initial presentation. Cardiac ultrasonography was performed and revealed dilated cardiomyopathy with severe bilateral atrial dilatation and pleural effusion. Despite treatment, the rabbit died the following day.

DISCUSSION

In humans, AK is commonly seen in middle-aged or elderly people with fair skin (referred to as skin type I or II). AK commonly affects the face, scalp, neck, and arms. These areas on which AK is often diagnosed have prolonged exposure to the sun.[2,3] These affected areas develop redness, scaling papules, and plaques. AK also occurs in dogs and cats, and in these species the diagnosis is based partially on the typical anatomical distribution of lesions affecting the sparsely haired, nonpigmented areas most likely to have higher UV exposure.[1] In cats, AK is most frequently diagnosed on the pinnae, nose, and eyelids, whereas in dogs areas also include the ventral or lateral abdomen, flanks folds, and inner thighs.

The clinical appearance of this dermal disease is highly variable, depending on the stage of