TOPICAL RETINOIC ACID
IN THE TREATMENT OF FELINE TAIL GLAND HYPERPLASIA
(STUD TAIL): A PROSPECTIVE CLINICAL TRIAL

KEREM URAL, ABUZER ACAR1, MURAT GUZEL2,
MEHMET CAGRI KARAKURUM3, AND CENKER CAGRI CINGI1

Board of High Stewards, Ministry of Agriculture and Rural Affairs, 06440 Ankara, Turkey
1Department of Internal Medicine, Faculty of Veterinary Medicine, Afyon Kocatepe University, 03200 Afyonkarakisar, Turkey
2Department of Internal Medicine, Faculty of Veterinary Medicine, Mustafa Kemal University, 31040 Hatay, Turkey
3Department of Internal Medicine, Faculty of Veterinary Medicine, Mehmet Akif Ersoy University, 15100 Burdur, Turkey
uralkerem@gmail.com

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Abstract

The purpose of this prospective, double-blinded, and placebo-controlled clinical trial was to investigate the efficacy of topical cream, containing 0.1% retinoic acid for the treatment of tail gland hyperplasia in cats. Nineteen privately owned cats diagnosed with tail gland hyperplasia, based on history and clinical findings were randomly assigned to either a placebo or an active ingredient treatment group. Clinical evaluations were done by the same investigator, who scored clinical healing, at the beginning, during, and at the end of the treatment. Both owners and investigators were blinded to the allocation to the groups. It was demonstrated that retinoic acid gel treatment significantly decreased (P<0.05) the investigator’s clinical scores while no significant changes were detected in the placebo treatment group. In conclusion, treatment with 0.1% retinoic acid cream was effective for the topical management of tail gland hyperplasia in the cats included in the study.

Key words: cat, tail gland hyperplasia, retinoic acid.

In cats, an increased concentration of sebaceous and apocrine glands is located along the dorsal tail, also called supracaudal organ (4, 6). Most of these glands are in association with hair follicles, producing an oily secretion, called sebum. The sebum maintains the suppleness of the skin as a result of waterproofing of the hairs (6). The over activity of the glands located at the base of the tail is often known as “stud tail” or tail gland hyperplasia. The disease is characterised by surface deposition of a waxy material leading to hair thinning and matting, scales and crust formation, and hyperpigmentation, and is accompanied by secondary bacterial folliculitis (6).

Material and Methods

Animals and study design. This study was designed as a prospective, randomised, placebo-controlled, and double-blinded clinical trial. Medical records of cats referred to the veterinary services for the evaluation of dermatological cosmetic problems occurring in the tail between 2000 and 2007 were reviewed. In the presented study conducted over seven years, only cats with dermatologic problems confined to the tail and without any previous drug application or therapy were included.

Evaluation of the lesions. All the presented cats were evaluated by use of physical examination, history, skin scrapings, haematological and biochemical examinations (available in 14 cases), and
microbiological and fungal cultures (only in seven cases). Tail gland hyperplasia was diagnosed in 19 cats (11 males and 8 females, at the age of 2 to 7 years, of different breeds (2 Siamese, 1 Van, 5 Persian, and 11 mixed-breeds with body weight ranging from 1.9 to 5.1 kg.}

**Allocation to treatment and owners’ evaluation.** The cats were randomly divided into two groups. Both owners and investigators were blinded regarding the allocation to groups. One group, consisting of 12 cats, was treated with topical retinoic acid (Acnelyse cream® 0.1%, Abdi Ibrahim, Turkey) receiving four applications per day for 28 d onto the lesions, while the other group, consisting of seven cats, received the vehicle (placebo group). The placebo included purified water. Owners were instructed to apply the product liberally to all affected areas. No restriction in the daily amount was made.

**Investigator’s evaluation of clinical lesions.** On days 0, 4, 7, 14, 21, 60, and 90 the cats were clinically scored. Clinical scoring consisted of assessing the severity (absent = 0, mild = 1, moderate = 2, severe = 3, advanced = 4) of the types of skin lesions (alopecia, scaling, thickening, comedones, papules/pustules, crusts/erosions, and alopecia) localised on the tail. The lesion scoring was carried out by an investigator blinded to the treatment the animals had received. While being handled for clinical scoring, the cats were also checked for localised and systemic signs of any adverse reactions to the treatment. For the duration of the treatment, all the cats were checked daily from a close distance for evidence of adverse reactions to treatment.

**Statistical analysis.** Differences in the clinical score between two groups were assessed by the Student t-test. Clinical success rate of the treatment were compared between groups by using the $\chi^2$-square test (Windows version of SPSS 13.0).

**Results**

Tail gland hyperplasia occurred in a diffuse pattern of aggregated papular lesions involving solely the tail. The lesions were cosmetically unfavourable and were characterised by accumulations of a waxy secretion resulting in scaling and generalised crusting. Comedones were evident in all cases, but pustules were absent.

As a common finding, there was no history of previous medical problems other than dermal changes located on the tail in all cases, and all of them were roaming indoors with limited permission to access outdoor. In addition, none of the cats was allowed to relate with other cats nor had a history of diet changes, as all the cats were nourished with commercially available professional cat foods suitable for their ages.

Prior to diagnosis and treatment all the cats were subject to physical examination, which did not reveal other signs than dermal changes strongly suggestive of tail gland hyperplasia. Skin scrapings taken from the lesions were negative for any ectoparasites. Haematological and biochemical examinations, though only available in 14 cases, revealed no abnormalities. Microbiological and fungal cultures (only in four cases) were negative for pathogenic microorganisms. On the basis of history, clinical signs, physical examination, skin scrapings, and negative culture results, a diagnosis of tail gland hyperplasia was made for all cases. Bacterial folliculitis was not observed.

Clinical recovery was deemed the resolution of clinical signs related to tail gland hyperplasia. Topical treatment with retinoic acid resulted in remarkable improvement and clinical recovery within a few weeks in all 12 cats treated. Mean recovery time (from time of onset of treatment to resolution of clinical signs) was 20.1± 0.9 d.

![Fig. 1. Investigator’s clinical scores between days 0 and 90. Nineteen cats were included; 12 cats in retinoic acid group and seven cats in the placebo group. A comparison of the two groups revealed that the clinical scores did not differ between the groups on day 0 while the retinoic acid group showed a significantly lower clinical score than the vehicle group on days 7, 14, 21, 28, 60 and 90 (P<0.05). *Indicates the time at which the two groups were significantly different (P<0.05).](image-url)
The Student t-test yielded a grouped effect, reflecting greater improvement in the retinoic acid group than in the placebo group. As a function of time, retinoic acid group showed significant improvement in scores from day 0 to day 28 (P<0.05) while the vehicle group showed no significant changes in scores during this period. A comparison of the two groups revealed that the clinical scores did not differ between the groups on day 0, whereas the retinoic acid group showed a significantly lower clinical score than vehicle group on days 7, 14, 21, 28, 60 and 90 (P<0.05).

Discussion

In this study, a gel containing 0.1% retinoic acid was found to be effective in decreasing the investigator’s clinical scores in cats with tail gland hyperplasia. The beneficial effect of the gel is in keeping with the inhibitory effect of retinoic acid, as was reported in human medicine (1, 3, 5). In an attempt to mimic the clinical practice, clinical evaluations including scoring was the main resultant measure considered in this clinical trial. The scoring system used in this study had not been previously validated to the present author’s knowledge, because there are very few clinical trials in veterinary medicine on cats with dermato-cosmetical disease. This scoring system, however, was purposely designed to capture both the extent and severity of the disease as in other scoring systems accepted in veterinary and human medicine. A comparison of the two groups revealed that the clinical scores did not differ between the groups on day 0, while the retinoic acid group showed a significantly lower clinical score than vehicle group on subsequent days.

Although topical preparations have been reported with a limited value for severe cases because of licking and cleaning behaviour of the animals, topical retinoid may be considered for long-term control of mild cases (6). According to the authors’ experience, topical treatment with retinoic acid resulted in a remarkable clinical improvement and complete remission of clinical signs within a few weeks in all cats. This may be due to the fact of early diagnosis of the disease and to the nature of the disorder, as all of the cats were not severely affected. The results of the present case control study indicated that topical retinoic acid had a therapeutic efficacy for tail gland hyperplasia in cats. We suggest this type of seboglandular proliferative disorders located on the tail in cats, mimicking sebaceous gland hyperplasia in humans, to be classified as tail gland hyperplasia. We suggest also that veterinary dermatologists and clinicians should bear in mind that topical retinoic acid should be used effectively in therapy.

In a previous clinical trial on 15 cats with cancerous (squamous cell carcinoma) or precancerous lesions on the head, 13-cis-retinoic acid was given to the affected cats once a day at a dose of approximately 3 mg/kg orally. According to the results, the compound did not show any therapeutic efficacy for the lesions (2). In another clinical trial on humans, the effects of 13-cis-retinoic acid therapy on the sebaceous glands were discussed (7). The effects of 13-cis-retinoic acid, previously reported to be clinically effective in the treatment of severe acne or sebaceous gland hyperplasia, were studied previously in humans (5). In that study, a marked decrease in the sebaceous glands size, up to 90% of the pre-treatment values was detected after 12 weeks of treatment. We suggest that the improvement in all of the presented cats with topical retinoic acid therapy may be due to a decrease in the sebaceous glands size, as previously described (5).

In conclusion, the results of the present study suggest that topical retinoic acid have a therapeutic efficacy for tail gland hyperplasia in cats. The cream formulation made its use easier for owners and allowed spot treatment, which was very helpful in animals with localised lesions. These favourable aspects of the treatment were highlighted by all the owners of the cats registered in the study. As a limited number of cats were used in this study, larger cat populations may be necessary for further studies warranting the effects and safety of retinoic acid application in cats with tail gland hyperplasia.

References