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Treatment and Prevention of 95% of Cases of Otitis Externa in Dogs Caused by Malassezia Spp., with a Boric Acid, Glycolic Acid and Ceramides Solution (GlycoZoo® ABELIA)

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OBJECTIVES OF THE WORK

The aim of this study was to test the efficacy of GlycoZoo® [Otic] ABELIA in the treatment and prevention of otitis caused by Malassezia spp. in the dog.

INTRODUCTION

Otitis externa, an inflammation of the external ear canal and, sometimes, the pinna, is a common pathology in small animals. It occurs in 4.6% of the population (11). 40-50% are atopic dogs (8). Within this group, in 43%, the owners describe otitis as the first observed clinical sign (9).

Otitis externa has a multifactorial etiology and treatment may be difficult in some cases. The most commonly isolated organisms in dogs with otitis externa are Staphylococcus spp, Pseudomonas spp, Streptococcus spp, Proteus spp, Escherichia coli spp, Klebsiella spp, Bacteroides spp, Pasteurella spp and Malassezia spp.

Otomycosis accounts for 26.7% of diagnosed cases of otitis (11). The most common microorganism in dog otomycosis is Malassezia pachydermatis. Malassezia pachydermatis is a lipophilic yeast that is part of the normal cutaneous microflora of many warm-blooded vertebrates. Alterations in the microclimate of the cutaneous surface or in the host defenses help the proliferation of Malassezia (5). Since this microorganism is located in the stratum corneum, topical therapy may be sufficient to resolve clinical signs of infection (5).

GlycoZoo® [Otic] ABELIA is an aqueous otic solution for dogs, cats and horses containing Boric acid, Glycolic acid and Ceramides. It has antimicrobial, ceruminolytic, keratolytic, lipolytic, drying, non-irritating and regenerating properties.

Boric acid has drying action and is effective against Malassezia infections (6). The mechanism of action of boric acid is not well known. It has been proposed that boric acid can inhibit the ability of fungi to carry out their metabolism.

Glycolic acid is a very small molecular chain alpha hydroxy acid (AHA), allowing it to easily penetrate the deeper layers of the skin. It is exfoliating, keratolytic and lipolytic. Its exfoliating effect favors the detachment of the most superficial cells of the

epidermis, favoring normal keratinization and hydration. In addition, by eliminating dead cells, it allows a greater contact of the active ingredients with the epithelium (12).

Ceramides are a complex of sphingolipids found in the stratum corneum of the skin. Their function is to join the cells together. Their presence contributes to maintain the barrier effect, to repel aggressions and to avoid that microorganisms and allergens penetrate the skin. They promote regeneration and repair of the skin and help restore its natural hydration.

MATERIALS AND METHODS

This is an open, uncontrolled field study in which all patients received the same treatment. The study included 40 dogs diagnosed with Malassezia spp. By cytology. The retrospective study was carried out over 10 months. The treatment that was applied was an otic solution with antimicrobial, ceruminolytic, keratolytic, lipolytic, drying and regenerative properties, based on boric acid, glycolic acid and ceramides. In the initial phase of treatment, the owners applied GlycoZoo® [Otic] ABELIA every 12-48 hours depending on the physical examination or the anatomical characteristics and morphology of the patient's ear. In the maintenance phase, the product was applied every 7 days. Data on breed, sex, age, date of otitis appearance, unilateral versus bilateral, associated pathologies, physical examination, cytological findings, previous treatments and clinical response are attached in Table I. All dogs were reviewed weekly during the initial phase of treatment and every 2-4 weeks in the maintenance phase. The criterion to consider a patient cured and to move to the maintenance phase was based on the resolution of clinical signs: pruritus, pain, ulceration, erythema, characteristic odor to Malassezia, brown ceruminous remains, hyperkeratosis thickening of the folds of the pinna, stenosis-duct hyperplasia and subsequent cytology confirming the decrease or disappearance of the population of Malassezia (1), considering a count of less than 5 Malassezia spp. per field of 40x. (10).

RESULTS

In 95% of the dogs the clinical signs were resolved favorably. Citologies showed a decrease or elimination of Malassezia spp. The response to treatment was faster in young animals in which Malassezia spp overgrowth had been diagnosed for the first time; in these cases the average duration of the treatment phase was

15 days. In the more chronic cases, the mean duration of the initial phase of treatment, to reach clinical and cytological resolution, was 45 days. The two refractory cases were very chronic cases with ductal stenosis and hyperplasia; even so, in one of them there was a partial improvement. The product was tolerated perfectly in all cases, provided immediate comfort from the first application and was not irritating.

DISCUSSION AND CONCLUSIONS

In the past, when I was facing otitis externa, after cytology, I used to start a cleansing treatment. In most cases, this was not enough to improve the clinical signs and control the overgrowth of *Malassezia* and bacteria, so I had to use topical “cocktail” products combining antibiotics, antifungals and steroids (6). The existing commercial product available in our market do not combine all the GlycoZoo® [Otic] ABELIA properties: if they have great antimicrobial power, they are irritating; and if they carry sphingolipids or ceramides they are not good cleansers and antimicrobials. GlycoZoo® [Otic] ABELIA prevents and treats otitis externa caused by *Malassezia* without adding antibiotics, antifungals or steroids.

In human medicine, the use of topical antibiotics and steroids has been reported among the predisposing causes of otomycosis (7). Much remains to be learned about the antimicrobial composition and susceptibility of microbiome of the dog’s skin (2). It is not clear that the alteration of the microbiome is the cause or the consequence, but the restoration and stabilization of the microbiome, are key objectives to treat or prevent the disease (2). We must prevent the manipulation of the microbiome of the ear and the skin of the dog avoiding the use of antibiotics and antifungals. The conventional antibiotic treatments we use are destroying most of that microbiome, and destroy both beneficial microorganisms and pathogens. The objective would be not to eliminate them in such an indiscriminate way (2). To understand the role of the microbiome, in health and in the disease, it is really important to know the complex interactions between its different bacterial components, between bacteria and other microorganisms, and between the microbiome itself and the immune system (3).

Traditionally, to treat infections in the skin of animals, we focused on using antibiotics to treat the pathogen found in the culture (4). But in practice, the elimination of this is unlikely, since clinical cure and cure are not the same. In addition, most of the microorganisms treated are the same as those found in healthy skin (5).

Since we are aware of the spread of multi-drug resistant organisms, such as methicillin-resistant *Staphylococcus*, conventional antibiotic therapies are no longer considered effective or safe.

A high percentage of dogs with otitis externa are atopic (8,9). These have a fewer species in their microbiome and develop dysbiosis of the same when they face the allergens to which they are sensitized (3). That is why we should look for treatments that minimally alter the microbiome.

GlycoZoo® [Otic] ABELIA is a promising alternative to conventional treatments for otitis due to its effectiveness against *Malassezia* because it does not alter the dog’s ear microbiome and because of the low possibility of inducing fungal resistance.

REFERENCES

1. Nuttal T, Bensignor E. A pilot study to develop an objective clinical score for canine otitis externa. *Vet Dermatol* 2014; 25:530-e92.
2. J Scott Weese. The canine and feline skin microbiome in health and disease. *Vet Dermatol*, 2013; 24: 137.
3. F Pierezan et al. The skin microbiome in allergen-induced canine atopic dermatitis. *Vet Dermatol*, 2016; 27: 332-339.
4. Lyskova P, Vydralova M, Mazurova J. Identification and antimicrobial susceptibility of bacteria and yeasts isolated from healthy dogs and dogs with otitis externa. *J Vet Med A Physiol Pathol Clin Med*, 2007; 54: 559-563.
5. Negre A, Bensignor E, Guillot G. Evidence-based veterinary dermatology: a systematic review of interventions for *Malassezia* dermatitis in dogs. *Vet Dermatol*, 2008; 20: 1-12.
6. Mueller RS, Bergvall K, Bensignor E et al. A review of topical therapy for skin infections with bacteria and yeast. *Vet Dermatol*, 2012; 30-e62.
7. Prasad SC, Kotigadde S, Shekhar M et al. Primary otomycosis in the Indian subcontinent: predisposing factors, microbiology and classification. *Int J Microbiol* 2014, Article ID 636493,9 Pages.
8. Saridomichelakis M, Farmaki R, Leontides L, Koutinas A. Aetiology of canine otitis externa: a retrospective study of 100 cases. *Vet Dermatol*, 2007; 18: 341-347.
9. Favrot C, Steffan J, Seewald W, Picco F. A prospective study on the clinical features of chronic canine atopic dermatitis and its diagnosis. *Vet Dermatol*, 2010; 21: 23-31.
10. Ginel P, Lucena R, Rodriguez J, Ortega J. A semiquantitative cytological evaluation of normal and pathological samples from the external ear canal of dogs and cats. *Vet Dermatol* 2002; 13: 151-156.
11. Kuttin ES, Glas I. Micotic otitis externa in animals. *Mycoses* 1985; 28:61-68
12. Basset RJ, Burton GG, Robson DC, Hepworth G. Efficacy of an acetic acid and boric acid ear cleaning solution for the treatment and prophylaxis of *Malassezia* sp. otitis externa. *Aust Vet Practit* 2004 Jun; 34 (2):79-82
13. Bernstein EF et al. Glycolic acid treatment increases type I collagen mRNA and hyaluronic acid content of human skin. *Dermatol Surg* 2001