

EVALUATION OF THE ANTIMICROBIAL EFFECT OF THE TWO SUBSTANCES USED IN OTITIS EXTERNA IN DOGS

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Abstract

Otitis externa is about 20% of diseases in dogs. Correct evaluation of the type of otitis is a very important and essential in successful management of this disease. Study was conducted on a total of 36 dogs with specific signs of otitis externa, examined and selected according to strict criteria in two private medical offices. Diagnostic methods used clinical examination, otoscopic exam and complementary cytological examination on ear secretions. Cytological examination revealed cultures of Malassezia pachydermatis, Staphylococcus spp. and Pseudomonas aeruginosa. The objective of the study it was the two comparative assessment topical antimicrobials selected by the same composition of active substances used in the treatment of otitis externa and otitis media of dogs - Easotic® and Mitex®. Easotic administered in the form of sprays, spray daily (1 ml) for 5 days, and Mitex administered in the form of drops, 3-5 drops of 2 times/day, a period that varied between 7-10 days. Throughout the study was evaluated the efficacy, following the elimination of ear secretion by decreasing the number of microorganisms, eliminate erythema and pain sensitivity. The results revealed a beneficial therapeutic effect under the action both of substances, but it was advantage Easotic treatment because of the ease of administration, the short period of use and quick efficacy.

Keywords: otitis externa, topical effect, ear disorders, antimicrobial efficacy

Introduction

Otitis is acute or chronic inflammatory disorders of the ear canal or internal ear. Otitis externa is one of the most common ear disease encountered at carnivores, with higher rates in dogs (Gotthelf, 2005). Otitis can occur at any age and any species but has an increased incidence in certain breeds of dogs because of their predisposition to disease (Gotthelf, 2005; August, 1988). The main symptoms that can observe the pet owner are intense scratching around the ear, constantly shaking his head, agitation and abundant secretions. The condition may be present in one or both ears and the otitis if not treated on time, this imbalance can become chronic and even inducing hearing impairment of the animal.

Clinical manifestations of otitis is largely due to the effects of the inflammatory process and are directly proportional to the severity of it (Kiss et al., 1997). If otitis externa is untreated or treated surface it evolves and structures may include middle ear (otitis media or internal), resulting in some situations and impaired general condition of the dog (Rosser, 2004). Overlapping bacterial or fungal infections over ear inflammatory lesions, greatly complicate the clinical manifestations and makes it difficult healing ear (Griffin et al., 2007).

Healing otitis starts mostly from causes and treatment of complications. The lightest cases of otitis can be treated by simply cleaning the ear cerumenolytic made with special solutions (alcohol boric acid or salicylic acid) (Rosser, 2004). But in cases of moderate or severe otitis resorting to complex treatments with antibiotics, antifungal and anti-inflammatory form of ear drops.

Material and method

The studies were conducted over a period of two years, it was included 36 dogs, 15 females and 21 males, aged between eight months and 14 years weighing between 2 and 38 kg, selected from the cases presented at the consultation in two private veterinary practices. The dogs were examined for diagnosis and confirmation of otitis was made based on history, clinical examination, physical examination with an otoscope local and through complementary cytological examinations. Clinic have found various symptoms such as frequent head shaking, itching,

increased local temperature and tenderness. Also observed were injuries due to scratching, this was secretions and examined the quantity, colour, smell and consistency of them.

In the study were included only patients who had symptoms common such as: redness, runny ear abundant and tenderness, were excluded from the study cases of otitis untreated which appeared severe complications and were manifested by facial nerve paralysis, loss of balance due locality condition the structures vestibular canal stenosis, auricular hematoma by the accumulation of blood in the outer ear, the cause being induced by excessive scratching and shaking.

The samples were processed for cytological diagnosis in Microbiology Laboratory of the Faculty of Veterinary Medicine.

To assess the effectiveness of pharmacodynamics the two solutions antimicrobials otic, 36 dogs were randomly divided into two groups according to their attendance at consultation: 18 were treated with Easotic in a cabinet and other 18 were treated with Mitex in another cabinet. The choice of medicinal products for topical was influenced by the difference in composition of active substances that products combine constituted by 3 drugs from different classes (an antibiotic, antifungal and anti-inflammatory steroid) brand products, but also the need polymorphism etiologic.

Before applying the medication was necessary to clean ear canal using the solution of the ear canal cleaning and hygiene product specific veterinary cerumenolytic Otoprof.

Clinical status of the auditory canal was assessed on the first day (day 0), when the diagnosed condition and was started treatment, and evaluation of continued daily until the fifth, seventh or 10th day. The assessment was based on three criteria: reduction to lack full amount of ear discharge, reduction / lack of erythema, reduction / absence of pain sensitivity.

The two solutions were administered according to label instructions, namely: Easotic required a spray / day for 5 consecutive days, and Mitex required application of 3-5 drops / twice / day for 7 consecutive days, and there where improvements were not total, treatment continued for 2-3 days after disappearance symptoms.

Results and discussions

In otitis externa at carnivores clinical diagnosis has an indicative value, the appropriate choice of therapeutic methods is contingent preclinical diagnosis tests imposed by etiologic polymorphism.

Cytological examination carried out on samples taken have facilitated the isolation rate of microorganisms (bacteria and yeasts) and their involvement in the emergence of different clinical forms of otitis.

Clinical examination of the ear canal revealed that in 70% (n = 25) of cases of otitis was erythematous-wax and 30% had type suppurative (n = 11) (Figure 1). The location of most cases of otitis was bilateral, 29 patients (80%) and a small percentage (20%) was unilateral, 7 of the dogs (Figure 2).

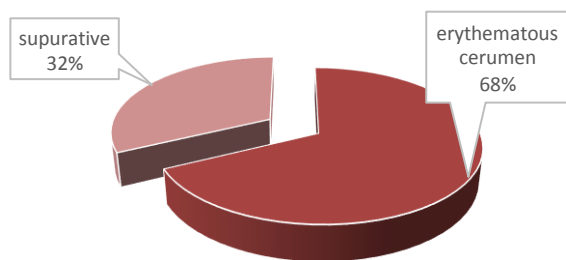


Fig. 1. The types of otitis diagnosed

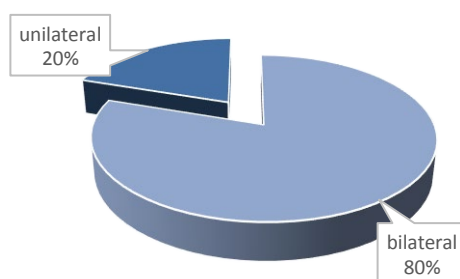


Fig. 2. Location otitis

Collection of samples ear secretions and their assessment allowed us to clarify certain aspects of otitis ethiopathogenetic, on both the quantity and color exudate examined (Fig. 3).

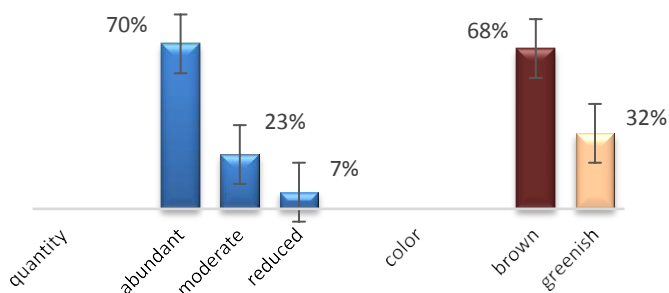


Fig. 3. Appearance otic exudate

Centralization of results of the 36 samples revealed that the ear canal to most dogs are both commensal bacteria and conditioned pathogenic, so bacteria isolated and identified new samples ear harvested have not confirmed the determining role in the occurrence of otitis externa but its role favouring induction.

Cytological examination of stained smears of exudate collected from the horizontal portion of the external auditory canal could provide immediate diagnostic information, helping to determine the number of types of infectious agents and infectious agents present in the ear canal. Examination of smears with immersion objective outlined a complication that occurs frequently in the case of otitis, bacterial and fungal infections by overlapping, over inflammatory lesions, thus greatly complicating the clinical picture. About 70% of the patients was found the presence of *Staphylococcus spp.* and cultures of *Malassezia pachydermatis* and in 30% of cases were isolated germ of *P. aeruginosa* and *Malassezia pachydermatis*.

As intensity of infection in the 36 cases studied, the results of cytological examination from day revealed 25 cases results strongly positive (68%), 8 cases resulting moderately positive (24%) and 3 cases weakly positive (8%) (figure 8A).

Therapy with the products studied - Easotic and Mitex, decreased significantly with each application, inflammation, itching, discharge and redness of the ear canal in patients affected Both products have proven their effectiveness in dogs groups formed randomly proved by the results of clinical examinations and by cytology 5 (Easotic), 7 and 10 days (Mitex).

It has been found yet in the 4-day a significant reduction in pain sensitivity, itching, erythema and the amount of discharge, which shows the effectiveness of the products. There were no reported adverse local or general. Cytology repeated in the 5th day of therapy revealed in the group treated with Easotic negative results in 94% of patients (n = 15) and weakly positive in 6% of them (n = 3), the latter showing a infection insignificant (<5 microorganisms / field immersion) (fig 4B).

The advantages of this product are the ease of use, accuracy of dosing which was a day administration, short therapy and therapeutic efficacy Mitex treated group was observed reduction ear diseases by over 67% since the first days and decreased with each application, as witnessed by cytological examination results (Fig 4C). The only drawback of the two products studied, from our point of view, was that Mitex required application by drops, 2 times / day for 7-10 days more technically difficult to apply to dogs the first days of therapy, due to their agitation (sometimes aggression) because of the pain.

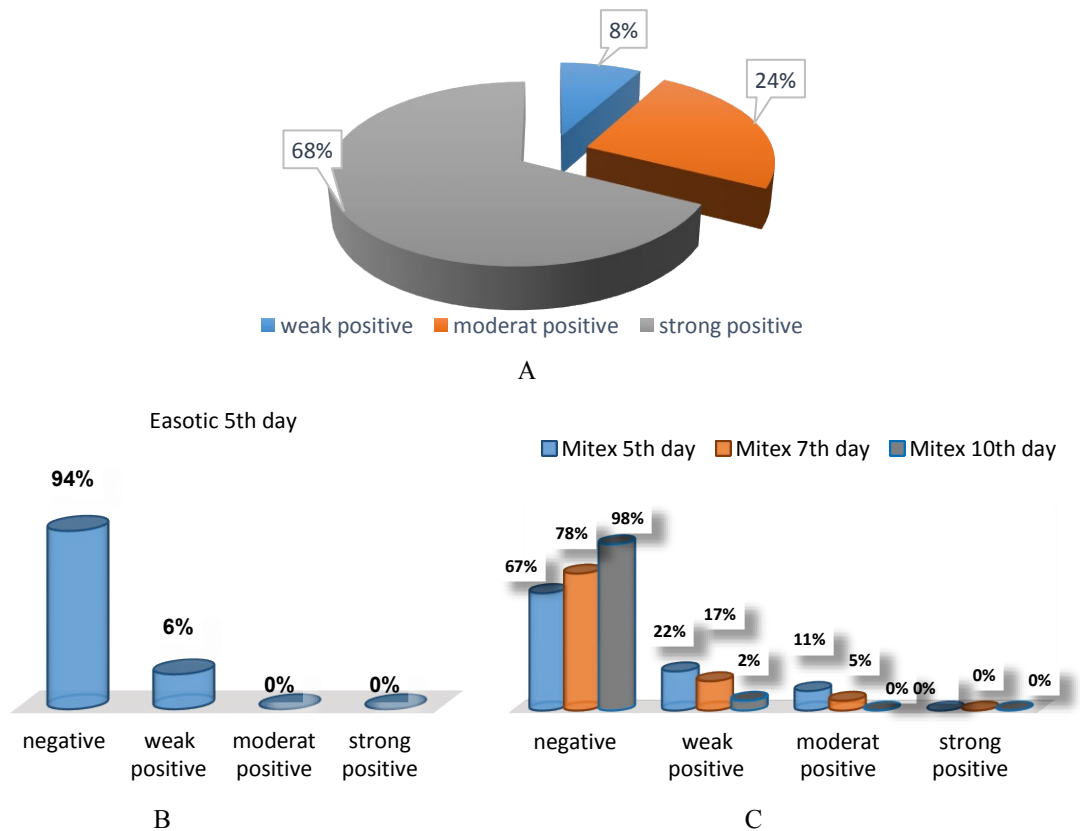


Fig 4. Cytological examination results:
 A - one day; B – therapy with Easotic; C – therapy with Mitex

Treatment of otitis can be time consuming and sometimes very complex, depending on the cause which generated the disease. It is mandatory before applying a therapeutic to perform ear flushing to clean the ear canal. Because otitis is a disease involving pain and the use of anti-inflammatory is frequently included in the treatment regimen because they bring comfort and analgesic effect and patient (Morris, 2004; Murphy, 2001).

The causes that can lead to otitis are diverse and sometimes difficult to determine. These may describe bacterial infections, hormonal imbalances, and foreign substances as shampoo and water entering the ear canal during a bath, inappropriate medications, foreign bodies, accumulation of hair in the external ear canal, air currents when the animal is exposed (Rosser, 2004).

Other causes that can lead to otitis externa can be aggressive ear cleaning, poor hygiene, residual dirt and particles at different ear canal. All this creates the potential causes inflammation in the ear and allows bacteria, parasites and fungi to grow in the ear and complicate the clinical picture and pathological otitis (Tater et al., 2003). In acute suppurative otitis externa, which appears pyogenic flora consecutive grafting ear discharge becomes fluid, appearance and foul smell (Griffin et al., 2007). Regardless of the clinical form of otitis, the animal shakes his head, rubbing his ears surrounding objects, scratched the base of the ear causing complications.

Regarding the prevention of otitis in carnivores, an essential condition for achieving this goal is the periodic cleaning of the ear canal. Otitis externa in carnivores is a condition that can succumb to drug therapy, in relation to clinical stage, but appear lingering unanswered promising forms that require radical surgery.

Conclusion

The types of otitis was diagnosed in 68% of cases erythematous-wax and only 32% of cases, suppurative and location of the disease was predominantly bilateral (80% cases).

For both products used therapeutically, the main criterion for evaluation of efficacy was the reduction in population of microorganisms (yeasts, bacteria) in the external ear canal, reducing inflammation and itching and improving the clinical condition of patients.

The population of microorganisms, by the substances studied - Easotic and Mitex, was reduced considerably and ranged from normal flora within the external auditory canal.

According to this study, the use of drug formulations combining in the same composition as an antibiotic, antifungal agent and a corticosteroid and applied by the clinician according to a protocol manufacturing and the intensity of infection has maximum efficacy in otitis externa in dogs.

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