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COMPARATIVE THERAPIES IN KERATOCONJUNCTIVITIS SICCA IN DOGS

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Abstract

The study aimed to present the importance of the proper treatment in Keratoconjunctivitis Sicca in dogs depending on the evolution stage, approaching all the phases. It highlights the necessity of an urgent and accurate treatment in order to avoid blindness. The study is based on the clinical activity of The Department of Surgery from The Faculty Of Veterinary Medicine of Bucharest, during 18 months. During the analyzed period were evaluated 472 dogs with keratoconjunctivitis Sicca, divided in three groups according to the evolutive stage. The treatment used the following products: for the first phase, artificial tear products based on hialuronic acid and carbomers such as HyCare®, Vidisic® and Xanternet®; for the second phase were used artificial tear products and cyclosporine 2% and for the third phase the treatment consisted in eye drops with prednisolone and ointment with tacrolimus. The healing process was complete in 4 to 24 weeks depending on the perseverance of the owner in administrating the treatment and the severity of the disease.

Key words*: Keratoconjunctivitis Sicca, , tacrolimus, cyclosporine 2%, artificial tears, dog.*

INTRODUCTION

Keratoconjunctivitis Sicca is also known as "the dry eye syndrome". It consists in a qualitative or quantitative alteration of the tear film and it can affect dogs of all ages and breeds, most frequently brachycephalic breeds which tend to have a large orbit which allows the eye to be more exposed, therefore the evaporation of the tear film being faster. (Gelatt, 2007; Ionașcu, 2015; Sheppard, 2003)

The etiology of Keratoconjunctivitis Sicca varies widely from congenital aplasia or hypoplasia to hormonal influence or infectious disease, to trauma or drug-induced and due to the physiological process of aging. (Barnett, 2006; Christof, 2001; Ionascu, 2012; Ionașcu, 2015; Martin, 2010).

The qualitatives or quantitative alteration of the physiological characteristics of the tear film, leads to the drying of the cornea and the conjunctiva. In time, depending on the severity of the alteration, the vascularization on this two structures becomes visible, the cornea becomes opaque and in the final phase, the cornea and in some cases even the conjunctiva are pigmented, leading to blindness. (Gelatt, 2007; Slatter, 2008).

Although the simptomatology of Keratoconjunctivitis Sicca depends on the evolutionary phase, there are some clinical signs which are common to all three stages and include enoftalmia and blefarospasm, dried cornea and muco-purulent secretions which are in fact scraped cells from the cornea. The first phase has minimal clinical signs, but the Schirmer Tear Test can reveal severe alterations, the result being sometimes 0 mm/min. The second phase is characterized by the vascularization and the opacification of the cornea determined by the corneal oedema. The third and final stage is characterised by the pigmentation of the cornea which affects the sight therefore the dog becomes blind. (Ionașcu, 2015; Sheppard 2003; Slatter, 2008)

Diagnosis of Keratoconjunctivitis Sicca's is established after a clinical examination, Schirmer Tear Test, Bengal Pink Test and Fluorescein Test. Each of these steps is important in order to eliminate other lesions such

as corneal ulcers, superficial lesions of the cornea and conjunctiva, or infectious keratoconjunctivitis. The reference test is the Schirmer Tear Test. It reveals both types of qualitative and quantitative alterations, being also useful to evaluate the therapeutic response. (Gelatt, 2007; Ionașcu, 2013)

The therapy has to be specific for each phase in order to stop the evolution. The main goals are to eliminate the secretions for the wellbeing of patient but also for assuring a proper field for drug administration; to stimulate the natural tear film secretion, using products that contain cyclsporin or pilocarpin, and tacrolimus, as well. The cyclosporin and the tacrolimus also help remove pigmentation; to replace the precorneal tear film with artificial tear film products, liquid or ointment, depending on the need; to reduce the local inflammation using eye drops with corticosteroids such as prednisolone; to stop the secondary infections when these appear, using local antibiotic. It is extremely important to evaluate the therapeutic response, therefore a periodic re-evaluation is imperative, specifically when using products containing anti-inflammatory or antibiotics. There are also other treatments which include androgens eye drops when considering a hormonal etiology or surgery: partially or completely close the tear ducts, the submandibular gland duct transposition in severe cases. (Berdoulay, 2005; Geerling, 1998; Gelatt, 2007; Gumus, 2009; Ionașcu, 2015; Lemp, 2000; Moore, 2001; Pflugfelder, 2004; Slatter, 2008; Strong, 2005;)

MATERIALS AND METHODS

In a period of 18 months, at the Surgery Department of The Faculty of Veterinary Medicine Bucharest were diagnosed with Keratoconjunctivitis Sicca a number of 472 dogs. The patients were brought for medical care in different stages of the disease, therefore 159 dogs were diagnosed in the first stage, 30 patients were in the second phase and the majority (283 dogs) were in the last stage.

Diagnosis of Keratoconjunctivita Sicca's was established following a certain protocol that includes a clinical examination in order to evaluate the periorbital, palpebral, conjunctival and corneal lesions; the Schirmer Tear Test as a refference method for qualitative and quantitavine alterations, used for diagnosis and therapeutic response evaluation; Fluorescein Test used for differential diagnosis (the lessions on the cornea remain stained with green if present). The next step to follow is the differential treatment according to each stage of the disease. (Table 1.)

Table 1. Therapeutic protocol in Keratoconjunctivitis Sicca according to each phase

Stage	Number of dogs	Therapeutic protocol				
		Artificial tears	Stimulation of lacrimal secretion	Stimulation of lacrimal secretion and depigmentation	Anti-inflammatory	Antibiotics
Phase I	159	+	-	-	-	+/-
Phase II	30	+/-	+	-	+/-	+/-
Phase III	283	-	+	+	+/-	+/-

RESULTS AND DISCUSSIONS

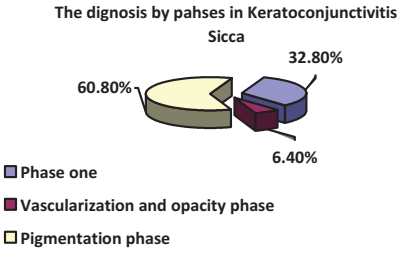

Figure 1. The diagnosis by phases in KCS

The patients in this study were from 1-year-old to 12 years of age, Keratoconjunctivitis Sicca having diverse etiology (Figure 2.).

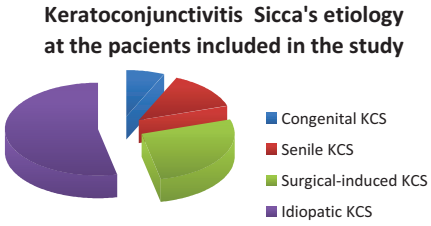

Figure 2. Etiology of Keratoconjunctivitis Sicca

The dogs with idiopatic Keratoconjunctivitis Sicca are brachycephalic and tend to have a wide pathology which demonstrate the existence of an immune-mediated mechanism that subjects the organism to constant metabolic disorders (Peterson- Jones, 2002; Slatter, 2008).
The role of testosterone in determining Keratoconjunctivitis Sicca is not yet established, but regarding the patients from this study, there has been a higher incidence in males than in females (Figure 3) (Peterson-Jones, 2002)

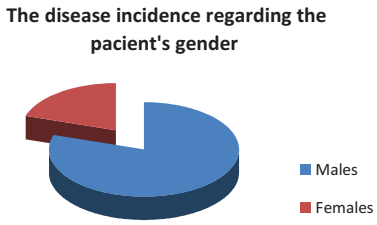

Figure 3. The incidence
of the disease regarding the gender

Unlike other studies, this study approaches all the stages of Keratoconjuctivitis Sicca in therms of differential diagnosis and treatment according to the local pathogenetic processes.
First stage of Keratoconjunctivitis Sicca was diagnosed at a lower number of patients compared with the other two phases, because of the minimal clinical signs. The best results in this phase were obtained using artificial tears products, mainly HyCare. If untreated, the degenerative processes continue towards more severe stage, therefore the diagnosis is frequently between-phases.
The patients diagnosed with phase two of keratoconjunctivitis Sicca had a satisfying recovery following the treatment with Ciclosporin 2% and HyCare. When the diagnosis was between-phases, the dogs recived an additional treatment, the one for the third phase that included Tacrolimus and Prednisolone.
The recovery in first stage patients was from 4 to 8 weeks, whereas for the third phase patients the recovery lasted from 20 to 24 weeks.
It is necessary for the treatment to be administrated for a long period of time, sometimes for the entire life of the dog because the lesions of lacrimal apparatus could be irreversible.
Recurrences are frequent in patients who stop the treatment or in case of an improper administration.

CONCLUSIONS

The treatment in Keratoconjunctivitis Sicca must be administrated according to each stage in order to stop the degenerative processes that can lead to blindness.
The simptomatology can be reduced in 4 to 24 weeks, the therapeutic response being conditioned by the time elapsed until diagnosis and the owner's accuracy in administrating the treatment.
The clinical signs improvement rate is up to 66.6% in the cases from this study, but the other 33.3% of the patients in witch the clinical signs were aggravated had other associated ophthalmological pathology or the treatment was not properly administrated, the treatment response also depending on the owner consistency in following the treatment.
The treatment initiated in the first stage had satisfying results, but the minimal clinical signs do not alarm the owner.
It is essential for the treatment to be administrated for the entire life of the dog because of the irreversible lesions on the lacrimal apparatus that induce the relapse.
A very important step in therapeutic protocol of Keratoconjunctivitis Sicca l, is the removal of the cellular debries which by the hydrophilic properties absorbes the local administrated products, lowering the disponibility of these products for the eye structures.
The associated pathologies to the ocular adnexa that involve the cornea determine the exacerbation of the simptomatology.

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