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A SURVEY ON CANINE KERATOCONJUCTIVITIS SICCA IN WAYANAD DISTRICT KERALA

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ABSTRACT

A prospective study of ocular conditions was carried out in 80 dogs of various breeds consulted at teaching veterinary clinical complex, Pookode, over a period of one month. STT strips were used to measure tear production in each breed. Abnormalities of tear production was noted down, including the inciting causes and systemic infections responsible. Tear production of eyes of all breeds were tabulated and an overall generalisation of tear production based on age, sex, breed, general condition of the animal, nature of ocular discharge, ocular sensory reflexes and similar other probable factors were considered.

Keywords : KCS, Breed, Age, Sex

INTRODUCTION

Keratoconjunctivitis sicca (KCS) also referred as Dry eye is a chronic inflammatory condition affecting cornea and conjunctiva. The lacrimal gland, accessory lacrimal gland in conjunctiva and gland of nictitating membrane are playing a major role in tear production (Sansom and Barnett, 1985). The most common clinical signs of KCS are thick, ropy, ocular discharge along with dry appearance of cornea, corneal ulceration, corneal neo vascularisation and pigmentary keratitis (Maggs *et al*. 2008). Reduction in tear production leads to keratitis and finally permanent damage that may cause blindness (Claude *et al*.2006).

Schirmer tear test is a semi quantitative method of measuring aqueous portion of precorneal tear film. The purpose of this study report is to randomly evaluate the tear production and dry eye by using Schirmer tear test and associate difference in breed, age and sex in canine species. Although this survey may help to increase the awareness and importance of canine KCS among the veterinary practitioners and the pet owners.

MATERIALS AND METHODS

The examination was conducted in 80 canine patients of various breeds presented in TVCC Pookode over a period of one month, March 2019. The owners approached the TVCC with different complaints of emaciation, anorexia, skin infection etc. Signalment and anamnesis including age, sex, breed, symptoms and duration were recorded on the day of presentation. General conditions of all animals were visually assessed and categorised as excellent, good, fair or poor. Ophthalmic examination including nature of ocular discharge which is categorised as serous, mucoid, mucopurulent or purulent. Neuro ophthalmic examination including Pupillary light reflex, Dazzle reflex, Menace reflex and Palpebral reflex were performed for each individual patient.

STT 1 of both eyes after general examination were taken from all dogs between 10am to 6pm. To avoid inconsistencies in tear measurement, a single batch number (Madhu instruments Pvt. Ltd A-260, Okhala Indl. New Delhi, India) standard STT strips were used in all animals.

RESULT AND DISCUSSION

STT is a method used to measure production of aqueous portion of the precorneal tear film. STT-1 measures basal and reflex tearing. Reading of less than 10mm in 1 minute is considered diagnostic for KCS. Among the population of 80 dogs, 26 ophthalmologically remarkable dogs were included, of which 14 dogs were affected with keratoconjunctivitis sicca. Out of the 14 cases of KCS, only two owners were bothered about the dryness of eye of their pet. Majority of the peoples were not paying adequate attention towards their pet's eyes.

The general condition was good in all dogs on the day of observation. Pug, Dachshund, Spitz, GSD and ND are accounted for the dryness of eyes from the survey of population. Brachycephalic breed Pug is more prone to the dry eye condition. Around 36% of dry eye were occupied within pugs (Table 1). Pugs and Dachshund with dry eye were having STT values ranging between 3-5mm with thick mucoid ocular discharge. All other breeds were having STT values ranging between 5-10 mm with serous ocular discharge.

Dogs with age 6 years or older were significantly more likely to exhibit deficient tearing regardless of sex (Table 2). In contrast, younger animals of any sex were significantly less likely to be tear deficient except two cases of age less than 60 days with STT value 9mm (Table 2).

Regarding the tear production and sex of animals, males and females with

KCS accounted for 48% and 64% of total survey population respectively (Table 3). So female dogs are more prone to KCS compared to male dogs.

Most of the cases positive for KCS were presented with complaints like anorexia, vomiting, skin infections like alopecia, contact dermatitis etc. 64.29% of total dry eye disease is associated with dogs presented with dermatological conditions (Table 4).

Neuro-ophthalmic tests including Pupillary light reflex, Dazzle reflex, Menace reflex and Palpebral reflex were positive for all the presented animals implying animals were having normal vision.

The tear film is composed of an outer lipid layer, aqueous layer in the middle and an outer mucous layer (Sansom and Barnett, 1985). STT helps in measuring the aqueous portion of tear production of precorneal tear film (Maggs *et al*. 2008).

Table 1: Prevalence of dry eye disease in relation to breeds

BREEDS	TOTAL CASES	OPHTHALMIC CASES	DRY EYE
Spitz	9	5	3
Pug	16	9	5
Labrador retriever	12	5	-
German shepherd	12	2	1
Non-descript	20	3	3
Dachshund	5	2	2
Rottweiler	3	-	-
Boxer	4	-	-
Basset hound	2	-	-

Table 2: Prevalence of dry eye disease in relation to the age of dogs

AGE	TOTAL CASES	OPHTHALMIC CASES	DRY EYE
0-3 month	3	2	2
3-12 month	23	2	1
1-2 year	11	2	-
2-3 year	12	1	-
3-4 year	5	1	-
4-5 year	8	1	1
5-6 year	6	6	2
6-7 year	5	5	3
7-8 year	5	5	4
8-9 year	1	1	1
9-10 year	1	-	-

Table 3: Prevalence of dry eye disease in relation to the gender of dogs

SEX	TOTAL CASES	OPHTHALMIC CASES	DRY EYE
Male	47	11	6
Female	33	15	8

Table 4: Prevalence of dry eye disease in relation to systemic diseases

SYSTEMIC DISEASES	TOTAL CASES	DRY EYE
Contact dermatitis	18	4
Demodicosis	12	2
Parvo viral enteritis	12	2
Flea allergy dermatitis	11	3
Entropion	9	-
Gastritis	9	1
Blepharitis	3	-
Pyometra	3	-
Hypothyroidism	3	2

Previous researchers have reported that Cocker spaniel, Lhasa apso are more likely to predispose to dry eye condition (Kaswan *et al*. 1998). Additionally, Poodles, Pugs, Miniature schnauzers, Blood hounds are also prone to KCS (Maggs *et al*. 2008). According to our survey, out of a total number of 9 canine breeds presented, KCS was observed in Pugs, Dachshunds, Spitz GSD, and a few non-descript breeds. It was also observed that non-descript dog breeds are more susceptible to KCS. This is contradictory with the work of previous researchers who suggested mixed breeds are significantly less likely to be tear deficient (Kaswan *et al*. 1998).

In the present study dogs with less than 5mm STT value were having thick mucoid ocular discharge which is a symptom of dry eye (Sansom and Barnett, 1985).

Skin diseases may accompany Sjorgen's syndrome in humans, which is a general systemic disturbance with significant dry eye condition (Elder, 1974; Krachmer and Laibson, 1974). But according to Sansom (1985) he could not find any correlation between dermatitis and KCS. However, in our study most of the cases positive for KCS were presented with complaints like anorexia, skin infections

like alopecia, contact dermatitis etc. It was also noted that majority of the owners were quite unaware of ocular conditions of their pets and associated diseases.

Another factor significantly affecting tear deficiency is sex. Our study states that females are more prone to KCS compared to males. Other researchers suggested that tear deficiency in males and females have no significant difference in proportion (Kaswan *et al*. 1998; Aguirre *et al*. 1971; Kern and Erb. 1987). But as a contrary, Sansom (1985) reported a female predisposition to canine KCS from his study.

In addition to all these, even more interesting fact regarding the probability of tear deficiency was according to age of dog. In 2006, Claude suggested that STT values decreases with age due to reduction in functional capacity of nictitating and lacrimal glands with respect of eye. Few others were contrary to this discovery states that STT values were not significantly different with respect to age and sex (Hamor *et al*. 2000; Rubin *et al*. 1965). Our study revealed that younger animals are less likely to be tear deficient and dry eye condition increases with increasing age. Study also suggested that neonates below 60 days of age showed decreased tear production. This is in accordance with the study of Da Silva (2012), who suggested that neonates have significantly reduced total tear secretion compared to adults.

SUMMARY

Collectively, the information mentioned in this survey indicates brachiocephalic breeds especially Pugs were most predisposed to KCS. A sexual predisposition for females over males was appreciable along with incidence of the condition increasing with increasing age. Though eyes serve as important organs, their abnormalities are not easily noticed either by owners or attending veterinarian. The purpose of this survey is a proposal for routine practice of STT in predisposed breeds, aged animals etc will helps in the early diagnosis of KCS.

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