

Original Research Article

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## Incidence of Corneal Ulcer in Dogs – A Retrospective Study

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### ABSTRACT

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The retrospective data on corneal ulcer in dogs registered at Veterinary Clinical Complex, AAU, Anand from March, 2019 to February, 2020 was analysed to elicit the incidence of corneal ulcer in dogs based on the Age, Sex, Breed, Symmetry, Affected eyes, Causative factor and Location of ulcer. During the period of present study, out of total of 5129 clinical cases of dogs 220 cases of dogs were found to be affected with various ocular affections. Out of 220 cases of corneal affections, the highest cases of corneal melanosis followed by corneal ulcer and cataract were observed. The highest incidence of corneal ulcer was found in Pug followed by Pomeranian and Mongrels with the maximum cases in young age group.

### Introduction

The eye is a window to the world. It's the only organ of vision at the best and a biological camera (Dutta, 2006). Due to lack of awareness among the pet owners and clinicians, the ocular problems in pet animals are getting worsen day by day (Slatter, 2001). The incidence of ocular affection was found to be high in canine in which, condition of cornea and lens are the most important, since diseases of this structure directly affect the vision (Gelatt and Katz, 2000). Corneal ulcer is one of the most common eye diseases in dogs and most common reasons of an eye to

be painful along with being the most common cause of blindness in dogs, but in most of the cases it is treatable. Hence the objective of the present study was to record incidence of corneal ulcer based on the Age, Sex, Breed, Symmetry, Affected eyes, Causative factor and Location of ulcer.

In India, veterinary ophthalmology is in developing stage and remains the domain of general veterinary surgeon, therefore with few exceptions, the important field remains more or less neglected. So this study was planned to assess the magnitude of corneal ulcer in dogs.

## Materials and Methods

The study was conducted to find out the occurrence of corneal ulcer with respect to Age, Sex, Breed, Symmetry, affected eyes, Causative factor, Location of ulcer and type of ulcer in dogs presented at Veterinary Clinical Complex, AAU, Anand from March, 2019 to February, 2020. General clinical examination and detailed ophthalmic examination including neuro-ophthalmic examination, special diagnostic procedures like, Schirmer tear test, Fluorescein test and Slit lamp biomicroscopy. The incidence of corneal ulcer was recorded and analysed.

## Results and Discussion

During the period of present clinical study, total of 5129 dogs were presented with several ailments at the Veterinary Clinical Complex, Veterinary College, AAU, Anand. Among them 4.28 percent (n= 220) dogs were found to be affected with various ocular affections and 0.64 percent (n=33) dogs were diagnosed with corneal ulcer. Out of 220 cases of ocular affections, the highest cases of corneal melanosis (25%, 55 cases), followed by corneal ulcer (16.81%, 33 cases) and cataract (13.63%, 30 cases) were observed. Out of 33 cases (37 eyes) maximum superficial corneal ulcer was recorded (62.16 %, 23 eyes) followed by Indolent ulcer (18.91%, 7 eyes), Deep ulcer (13.51%, 5 eyes), Descemetocoele (5.40%, 2 eyes). The agewise distribution of cases revealed maximum incidence of corneal ulcer 45.45 percent (n=15) found in the age group of 0 to 3 years (Table 1) followed by 30.30 percent (n=10) incidence of 3 to 6-year-old dog and 24.24 percent (n=8) in >6 year which may have attributed to the playful nature of young one which make them more prone to traumatic injuries. The present findings are in accordance with the observation reported Gouille (2012), Ramani *et al.*, (2013) and

Parulekar (2016), who also reported the highest incidence of corneal ulcer in 1 to 6-year age group. The incidence of corneal ulcer was slightly more in male 51.51 percent (51.51%, 17 dogs) than female (48.48%, 16 dogs) (Table 2). This finding is in accordance with the findings of Venugopal (2011), Gouille (2012), Ramani *et al.*, (2013) and Parulekar (2016). Murphy *et al.*, (2001) reported that there was no sex predilection seen in cases of corneal epithelial defects in dogs and also reported that dogs of any sex could be affected by corneal ulcer. During the period of present clinical study, in total of 33 dogs belonging to seven different breed were diagnosed with corneal ulcer. Among them breedwise maximum incidence was recorded in Pug dogs (51.51%, 17 dogs, 19 eyes) followed by Pomeranian (15.15%, 5 dogs, 6 eyes), Mongrels (12.12%, 4 dogs, 4 eyes), Shih tzu (9.09%, 3 dogs, 4 eye), Lhasa apso (3.03%, 1 dog, 1 eye), Bulldog (3.03%, 1 dog, 2 eyes), Chow chow (3.03%, 1 dog, 1 eyes) (Table 3) and Labrador (3.03%, 1 dog, 1 eye). The over-representation of pug dogs with corneal ulcers may be because of lack many of the protective mechanisms operant in mesocephalic and dolichocephalic breeds (Barrett *et al.*, 1991). The brachiocephalic nature causes excessive protrusion of the eyeballs and predisposes them to trauma. Brachycephalic breeds have characteristics features like lagophthalmos which predispose them to corneal injuries (Kim *et al.*, 2009). Brachycephalic dogs often have a thin lipid layer in the tear film and decreased aqueous coverage in the central cornea as a result of less blinking reflexes (Moore, 2003). Over-representation of pug dogs in this study could be attributed to their increased popularity as a pet (Chinchu, 2010). Out of 33 cases (37 eyes) of corneal ulcer four dogs (12.12%) had bilateral corneal ulcer and 29 dogs (87.87 %) had unilateral corneal ulcer and corneal ulcer was found more in right eye (59.45%, n= 22) than left eye (40.54 %, n=15). Among dogs

(n=33) studied for location of ulcer in eyes (n=37), the highest incidence of ulcers located centrally (Table 4), followed by 21.62 % (n=8) dorso-nasal and 18.91% (n=7) ventro-nasal aspect. The higher percentage of centrally located ulcers might be due to exophthalmia, which prevents normal palpebral apposition and ultimately leads to uneven distribution of the tear film at central region of cornea. Dorbandt *et al.*, (2015) recorded similar findings as of the present study with higher percentage of centrally located ulcer. Based on the history and clinical observation the most common cause

of corneal ulcer was traumatic injury (62.16%, n=23), followed by keratoconjunctivitis sicca (KCS) (27.02%, n=10), entropion (8.10%, n=3) and chemical injury (2.70%, n=1) (Table 5). The inherent lower sensitivity of cornea in brachycephalic dogs breeds negatively affect the function of cornea protective mechanisms, which leads to traumatic injury to the cornea and allow the ulcers in the initial stages to go unnoticed by owners (Hakanson and Merideth, 1987). The results obtained in this study are in accordance with earlier studies of Mandell (2000) (Fig. 1–4).

**Table.1** Agewise distribution of the dogs (n=33) having corneal ulcer

Age groups	No. of dogs	Percent
< 1 year	6	18.18
1 year to 5 years	19	57.58
> 5 year	8	24.24
<b>Total</b>	<b>33</b>	<b>100.00</b>

**Table.2** Sexwise distribution of the dogs (n=33) having corneal ulcer

Sex of dogs	No. of dogs	Percent
Male	17	51.51
Female	16	48.49
<b>Total</b>	<b>33</b>	<b>100.00</b>

**Table.3** Breedwise distribution of the dogs (n=33) having corneal ulcer

Breeds of dogs	No. of dogs	Percent
Pug	17	51.51
Pomeranian	5	15.15
Mongrels	4	12.13
Shih Tzu	3	9.09
Lhasa Apso	1	3.03
Bulldog	1	3.03
Chow Chow	1	3.03
Labrador Retriever	1	3.03
<b>Totoal</b>	<b>33</b>	<b>100.00</b>

**Table.4** Location wise distribution of dogs having corneal ulcer

Location of Corneal ulcer	No. of eyes	Percent
Central	13	35.15
Dorsonasal	8	21.62
Ventronasal	7	18.91
Dorsotemporal	5	13.51
Ventrotemporal	4	10.81
<b>Total</b>	<b>37</b>	<b>100.00</b>

**Table.5** Causative factors in the cases of corneal ulcers

Causative factor	No. of eyes	Percent
Traumatic injury	23	62.16
Keratoconjunctivitis sicca	10	27.04
Entropion	3	8.10
Chemical injury	1	2.70
<b>Totoal</b>	<b>37</b>	<b>100.00</b>

**Fig.1** Superficial corneal ulcer



**Fig.2** Deep corneal ulcer



**Fig.3** Indolent corneal ulcer



**Fig.4** Descemetocoele



Based on the result of the present study, it can be concluded that Corneal ulcers are the common ophthalmic condition of young Pug dogs. Traumas followed by Keratoconjunctivitis sicca were the common causes for the development of corneal ulceration in dogs.

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