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UJ Dubariya
M.V.Sc., Department of Veterinary Surgery and Radiology, College of Veterinary Sciences and Animal Husbandry, Navsari, Gujarat, India

SK Jhala
Associate Professor, Department of Veterinary Surgery & Radiology, College of Veterinary Science & AH, Kamdhenu University, Junagadh, Gujarat, India

SH Zalavadiya
M.V.Sc., Department of Veterinary Surgery and Radiology, College of Veterinary Sciences and Animal Husbandry, Junagadh, Gujarat, India

RM Pathan
M.V.Sc. Scholar, Department of Surgery and Radiology, College of Veterinary Sciences and Animal Husbandry, Junagadh, Gujarat, India

MB Bhesaniya
Assistant Professor, Department of Anatomy, College of Veterinary Science & AH, Kamdhenu University, Junagadh, Gujarat, India

Corresponding Author:
SH Zalavadiya
M.V.Sc., Department of Veterinary Surgery and Radiology, College of Veterinary Sciences and Animal Husbandry, Junagadh, Gujarat, India

Incidence of ulcerative keratitis in dogs

UJ Dubariya, SK Jhala, SH Zalavadiya, RM Pathan and MB Bhesaniya

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Abstract
Retrospective data from March-2020 to February-2023 was analyzed to encounter incidence rate of ulcerative keratitis. Total 267 cases of various ocular problems were observed from 2425 cases registered at VCC during the period of three years of which highest incidence was of corneal affections (n=142). Out of 142 cases of corneal affections, the highest incidence was of ulcerative keratitis followed by superficial keratitis, pigmentary keratitis, corneal lipidosis and dermoid. Among the 55 cases of ulcerative keratitis highest incidence was seen in less than 3 years old animals and more in male group. Pugs were most prone to develop this condition followed by shih tzu, non-decript and others.

Keywords: Ulcerative keratitis (or UK), corneal affections, ocular problems

Introduction
Vision is a key sensory phenomenon that provides a significant survival benefit to the vast majority of species on the planet today (Miller, 2013) [8]. Recent scenario reveled that ocular anomalies in dogs are important and mostly undiagnosed part of veterinary medicine. One of the most frequent extra-ocular diseases found in dogs is corneal ulceration, often known as ulcerative keratitis. When a corneal ulcer was present, the corneal epithelium broke, exposing the underlying corneal stroma (Slatter and Hakason 1993) [14].
The prevalence of ocular affections was found to be high in dogs, with the state of the cornea and lens playing the most significant role because disorders affecting these structures directly influence vision. Animals with corneal ulceration displays varying degree of ocular signs, typical of discomfort such as blepharospasm, epiphora, photophobia and different degrees of corneal opacity (Whitley, 1999) [17]. Illumination by the means of oblique or direct is useful for identifying corneal epithelial loss (Bedford, 1982) [2].
Fluorescein dye test is utmost useful diagnostic procedure for the corneal ulceration and also helps in the assessment of the stromal loss. Along with these neuro-ophthalmic examinations and Schirmer tear test stands to be the important diagnostic procedures (Lassaline *et al.*, 2005) [7]. Present study was conducted to elicit incidence of ulcerative keratitis in dogs presented at the veterinary clinical complex, Navsari veterinary college, KU, Navsari.

Materials and Methods
The primary objective of the study was to determine the frequency of corneal ulcers in relation to age, sex, breed, season, symmetry, impaired eyes, location of ulcer, causative factor and type of ulcer in dogs presented at the Veterinary Clinical Complex (VCC), Kamdhenu University, Navsari.

Results and Discussion
During the period of the present clinical study, a total of 2,425 surgical cases were presented at the Veterinary Clinical Complex (VCC), Kamdhenu University, Navsari, with various anomalies. Among them, 11.01% (n=267) cases were found to be affected with various ocular affections, 5.85% (n=142) cases were affected with different corneal affections, and 2.27% (n=55) dogs were affected with ulcerative keratitis. Out of 267 cases of different ocular affections, the incidence of corneal affections (n=142, 53.18%) was highest followed by

affections of lens (n=39, 14.61%), intraocular anomalies (n=30, 11.23%), 3rd eyelid defects (n=16, 6.00%), periorbital affections (n=16, 6.00%), eyelids problem (n=13, 4.87%) and conjunctiva disease (n=11, 4.12%). Out of 142 cases of corneal affections, the incidence of ulcerative keratitis was highest (n=55, 38.73%) followed by superficial keratitis (n=38, 26.76%), pigmentary keratitis (n=36, 25.35%), corneal lipidosis (n=10, 7.04%) and dermoid (n=3, 2.12%). Similarly, Parikh *et al.* (2012) [10] reported 35% incidence of corneal affections of which corneal ulcer (55%) had the highest incidence.

Out of 55 cases of ulcerative keratitis, age-wise, the highest incidence was seen in animals less than 3 years of age (n=31, 56.36%) followed by 3 to 6 years (n=17, 30.91%) and more than 6 years (n=07, 12.73%). The present findings were in accordance with Patel *et al*. (2020) [11] and Vidhyashree *et al*. (2022) [16] who also reported a higher incidence of ulcerative keratitis in the age group of less than 3 years.

Among the 55 cases, ulcerative keratitis was seen in eight different breeds, which includes pugs (n=21, 38.18%) with highest incidence, followed by Shih Tzu (n=15, 27.27%), Non-descript (n=09, 16.36%), Pomeranian (n=05, 9.09%), Lahssa Apso (n=02, 3.64%) and one case (1.82%) each in Golden Retriever, Labrador Retriever, and American Bully. Startup (1984) [15] stated that Brachycephalic breeds, particularly those with wide corneal surfaces, had a lack of protective eye awareness, which made them more prone to ocular damage and subsequent infection. The present finding supports this statement, and Kim *et al*. (2009) [6] and Vidhyashree *et al*. (2022) [16] observed a higher number of cases in Shih Tzu (a brachycephalic breed) as compared to other breeds.

Sex wise, males (n=31, 56.36%) had the higher incidence than females (n=24, 43.64%). Murphy *et al*. (2001) [9] and Hvenegaard *et al*. (2011) [4] also found that males have higher incidence than the female.

Season wise maximum cases were found during the monsoon (Jun-Sep, n=20, 36.36%), followed by summer (Apr-May, n=13, 23.64%), winter (Dec-Feb, n=13, 23.64%), autumn (Oct-Nov, n=07, 12.73%) and spring (March, n=02, 03.64%). Similarly, Joy (2009) [5] also found more number of cases of ulcerative keratitis in the summer months; however, Sharma (2017) observed highest incidence during the winter (n=12, 42.86%) followed by autumn (n=06, 21.43%), spring and summer (n=05. 17.86% each).

Side wise, 85.45% (n=47) cases had unilateral involvement and the bilateral involvement was seen only in 14.55% (n=08). In the present study, left eye (n=27, 49.09%) was more commonly affected than the right eye (n=20, 36.36%). Costa *et al.* (2019) [3] was also found that unilateral involvement of the eye is more common than bilateral.

Majority of the ulcers were located centrally (n=27, 42.86%) followed by ventro-temporal (n=18, 28.57%), dorso-temporal (n=10, 15.87%), ventro-nasal (n=04, 6.35%) and dorso-nasal (n=04, 6.35%) location. Similarly, Balaji (2016) observed that 61.90% (n=13) of the corneal ulcers were located centrally, followed by 24% (n=05) ventro-nasally and 14% (n=03) dorso-nasally.

In the present study, the causative factor for development of ulceration was unknown in 10 (50.00%) eyes, trauma in 9 (45.00%) eyes and infection in one (5.00%) eye. Similar findings were also observed by Sharma (2017) who found that most common cause for corneal ulcers was unknown followed by trauma due to scratch, metal leash, broom and hitting by a stick.

The mean duration of illness was 4.22 ± 0.82 days (Ranged from 1 to 12 days). Similarly, Prassana (2019) observed that the mean duration of illness was 3.56 ± 0.91 days (Ranged from 1-8 days).

Conclusion

The present study highlights that corneal affections constitute a major portion of ocular diseases in dogs, with ulcerative keratitis emerging as the most prevalent corneal condition at the Veterinary Clinical Complex, Kamdhenu University, Navsari. Young dogs below three years of age, male animals, and brachycephalic breeds-particularly Pugs and Shih Tzus-showed a notably higher susceptibility, reflecting anatomical and behavioral predispositions. Seasonal influence was evident, with the highest incidence occurring during the monsoon, and most cases showing unilateral involvement, predominantly affecting the left eye. Centrally located ulcers were most common, and in many cases the underlying cause remained unidentified, though trauma played a significant role. Overall, the findings underscore the importance of early diagnosis through tools like fluorescein staining and neuro-ophthalmic examinations, along with timely intervention to prevent complications and preserve vision in affected dogs.

Conflict of Interest

Not available.

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