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Clinico-ophthalmic findings of corneal ulcers in dogs

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Abstract

In the present study of diagnostic and therapeutic aspects of corneal ulcers in dogs presents the clinic-ophthalmic signs in dogs suffering with corneal ulcers and screening of 1850 dogs presented to ophthalmic ward of this 52 were diagnosed with corneal ulcers. Among these, 32 were detected as superficial corneal ulcers and 20 were detected as deep corneal ulcers. On visual acuity studies in dogs affected with corneal ulcers 61.82% (34/55) eyes showed normal vision and 38.18% (21/55) showed reduced vision. The clinical findings in (n-52) dogs affected with corneal ulcers were, all showed congestion of eyelids and conjunctiva and ulcerations, 88.46% showed blepharospasm, 86.53% showed ocular irritation, pawing and itching 80.76% showed photophobia, 76.92% showed edema of conjunctiva, 73.07% showed ocular discharges, 53.84% showed edema of eye lids. The ophthalmic findings in dogs (n-52) affected with corneal ulcers were all (100%) had edema and ulcerations of cornea, 96.15% had aqueous flare, 90.38% had opacity of cornea, 50% had dryness of cornea, 40.38% had ciliary flush, 36.53% had miosis, 25% had neovascularization of cornea, 21.15% showed pigmentation of cornea, and 11.53% had congestion of choroid-retina.

Keywords: Corneal ulcers, superficial corneal ulcers, deep corneal ulcers, Age, Breed and Sex

Introduction

Corneal ulcer or ulcerative keratitis is one of the most common eye diseases in dogs, which can lead to loss of vision. It is characterized by superficial or deep erosive processes in the cornea, with loss of epithelium and stromal exposure. The causative agents may be trauma, eyelids defects, lacrimal system disorders, fungal infections, bacteria and viruses. Severe unhealed ulcerative keratitis puts vision at risk due to the development of secondary conditions such as: endophthalmitis, glaucoma and phthisis bulbi, which is a decrease in ocular size and loss of vision. A detailed ophthalmic examination with indirect ophthalmoscope revealed involvement of stroma which was confirmed with the help of fluorescein dye test [13]. Dogs suffering from ulcerative keratitis may present miosis, with pain and photophobia, inflammation; hypotonia due to a reduction in aqueous humor production and corneal edema.

Material and Methods

The present study was carried out to study diagnostic and therapeutic aspects of canine corneal ulcers presents the incidence of corneal ulcers in relation with age, breed, gender and clinical signs and different therapeutic regimens in dogs suffering with corneal ulcers. The study was carried out from December 2020 to August 2021 at Veterinary Clinical Complex, Veterinary Hospital, Bhoiguda and Campus Veterinary Hospital, College of Veterinary Science, Rajendranagar, Hyderabad.

A total of 52 cases were identified with corneal ulcers based on ophthalmic examination and conducting Fluorescein Stain Test on 1850 dogs presented to the ophthalmology ward formed the material for the present study.

In the present study out of 1850 dogs presented to the ophthalmic ward, 52 cases were presented with corneal ulcers. The results of clinical features in 52 dogs affected with corneal ulcers are presented in detail.

Among 52 dogs affected with corneal ulcers, 34 (61.82%) (34/55) eyes had normal vision and 21 S (38.18%) (21/55) had reduced vision. Further, among 32 dogs affected with superficial corneal ulcers, 23 (67.65%) (23/34) eyes had normal vision and 11 (32.35%) (11/34) had reduced vision. Further, among 20 dogs affected with deep corneal ulcers, 11 (52.38%) (11/21)

Eyes had normal vision and 10 (47.62%) (10/21) had reduced vision. The results are presented in table 1.

Among 52 dogs affected with corneal ulcers, all (100%) dogs showed congestion of eye lids and conjunctiva, 46 (88.46%) showed blepharospasm, 45(86.53%) exhibited ocular irritation, itching and pawing, 42 (80.76%) showed photophobia, 40 (76.92%) showed edema of conjunctiva, 38 (73.07%) showed ocular discharges and 28(53.84%) showed edema of eye lids.

Further in the 32 dogs affected with Superficial corneal ulcers, all (100%) showed congestion of eyelids and conjunctiva and ocular irritation, itching and pawing, 29 (90.62%) exhibited photophobia and blepharospasm, 22 (68.75%) showed edema of conjunctiva, 21 (65.62%) had ocular discharges and 20 (62.5%) showed edema of eye lids.

Further in the 20 dogs affected with Deep corneal ulcers, all (100%) dogs showed congestion of eyelids and conjunctiva, 18 (90%) showed edema of conjunctiva, 17 (85%) showed blepharospasm and ocular discharges, 13(65%) exhibited ocular irritation, itching and pawing and photophobia and 8 (40%) showed edema of eyelids. The results are presented in table 2 and fig 1 and 3.

Among 52 affected with corneal ulcers, all (100%) dogs

showed edema and ulcerations of cornea, 50(96.15%) had aqueous flare, 47(90.38%) exhibited opacity of cornea, 26 (50%) had dryness of cornea, 21(40.38%) showed ciliary flush, 19(36.53%) had miosis, 13(25%) showed neovascularization of cornea, 11 (21.15%) exhibited pigmentation of cornea and 6 (11.53%) showed congestion of choroid-retina. The results are presented in table 3.

Further in the 32 dogs affected with Superficial corneal ulcers, all (100%) dogs exhibited ulcers and edema of cornea, 30 (93.75%) showed aqueous flare, 27(84.37%) showed opacity of cornea, 19 (59.37%) had miosis, 15 (46.87%) had dryness, 8 (25%) exhibited pigmentation of cornea, 6(18.75%) showed neo vascularization 4(12.5%) exhibited ciliary flush and 2 (6.25%) showed congestion of choroid retina.

Further in the 20 dogs affected with Deep corneal ulcers, all (100%) dogs exhibited ulcers, edema, aqueous flare and opacity of cornea, 17 (85%) exhibited ciliary flush, 11 (55%) had dryness of cornea, 7 (35%) showed neovascularization, 4(20%) showed congestion of choroid retina and 3(15%) exhibited pigmentation of cornea. The results are presented in table 4 and fig 2 and 4.

Table 1: Details of Visual Acuity in Dogs Affected with Corneal Ulcers

Sl. No.	Eye condition	No. of dogs detected with Corneal Ulcers	No. of eyes Affected	Vision		
				Normal vision	Reduced vision	Blind eyes
1	Corneal Ulcers	52	55	34 (61.82%)	21 (38.18%)	0
1A	Superficial Corneal Ulcers	32	34	23 (67.65%)	11 (32.35%)	0
1B	Deep Corneal Ulcers	20	21	11 (52.38%)	10 (47.62%)	0



a) Edema of eyelids, blepharospasm, photophobia, ocular irritation & discharges in corneal ulcers



B) Congestion & edema of eyelids and conjunctiva, edema, opacity and ulceration of cornea in corneal ulcers.

Fig 1: Clinical Signs of dogs affected with corneal ulcers

Table 2: Clinical Findings in Dogs affected with Corneal Ulcers

Sl. No.	Clinical Signs Observed	No. of cases with Corneal Ulcers n=52		Superficial Corneal Ulcers n=32		Deep Corneal Ulcers n=20	
		N	%	n	%	n	%
1	Congestion of eyelids	52	100	32	100	20	100
2	Congestion of conjunctiva	52	100	32	100	20	100
3	Blepharospasm	46	88.46	29	90.62	17	85.00
4	Ocular irritation, itching and pawing	45	86.53	32	100	13	65.00
5	Photophobia	42	80.76	29	90.62	13	65.00
6	Edema of conjunctiva	40	76.92	22	68.75	18	90.00
7	Ocular discharges	38	73.07	21	65.62	17	85.00
8	Edema of eyelids	28	53.84	20	62.5	8	40.00



Fig 2: Ophthalmic Findings in dogs affected with corneal ulcers

Table 3: Ophthalmic Findings in Dogs affected with Corneal Ulcers

Sl. No.	Ophthalmic Signs	No. of cases with Corneal Ulcers (n=52)	Percentage (%)
I. Cornea			
1	Dryness of cornea	26	50.00%
2	Edema of cornea	52	100%
3	Pigmentation of cornea	11	21.15%
4	Opacity of cornea	47	90.38%
5	Neovascularization of cornea	13	25.00%
6	Ulceration of cornea	52	100%
II. Anterior Chamber			
7	Aqueous flare	50	96.15%
8	Miosis	19	36.53%
9	Ciliary flush	21	40.38%
III. Fundus			
10	Congestion of choroid- retina	6	11.53%

Table 4: Ophthalmic Findings in Dogs Affected with Superficial and Deep Corneal Ulcers

Sl. No.	Ophthalmic Signs	No. of cases. with Superficial Corneal Ulcers (n=32)	Percentage (%)	No. of cases with Deep Corneal Ulcers (n=20)	Percentage (%)
I. Cornea					
1	Dryness of cornea	15	46.87%	11	55.00%
2	Edema of cornea	32	100%	20	100%
3	Pigmentation of cornea	8	25.00%	3	15.00%
4	Opacity of cornea	27	84.37%	20	100%
5	Neovascularization of cornea	6	18.75%	7	35.00%
6	Ulceration of cornea	32	100%	20	100%
II. Anterior Chamber					
7	Aqueous flare	30	93.75%	20	100%

8	Miosis	19	59.37%	-	
9	Ciliary flush	4	12.50%	17	85.00%
III. Fundus					
10	Congestion of choroid-retina	2	6.25%	4	20.00%

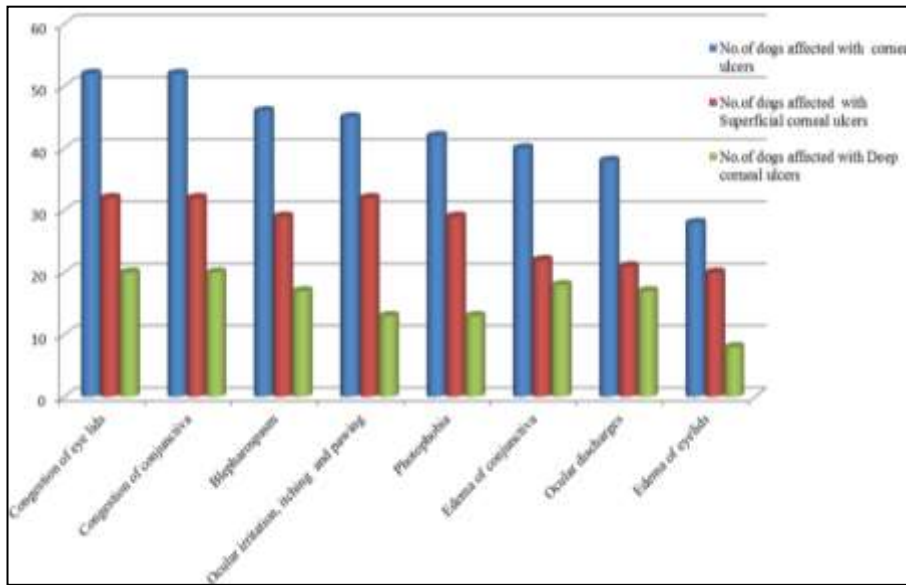


Fig 3: Bar Chart Display of Clinical Signs in Dogs Affected with Corneal Ulcers

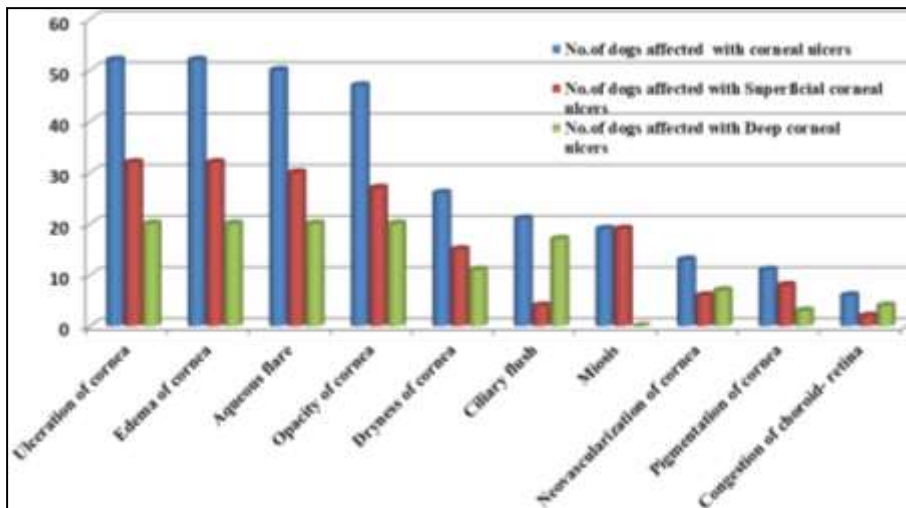


Fig 4: Bar Chart Display of Ophthalmic Findings in Dogs Affected with Corneal Ulcers

Results and discussion

The principal clinical signs exhibited in 52 dogs affected with Corneal Ulcers were congestion of conjunctiva and eyelids and ulcerations (100%), blepharospasm (88.46%), ocular irritation, itching and pawing (86.53%), photophobia (80.76%), edema of conjunctiva (76.92%), ocular discharges (73.07%) and edema of eye lids (53.84%). Further, the clinical signs in 32 dogs affected with Superficial corneal ulcers were congestion of conjunctiva and eyelids and ulcerations, ocular irritation, itching and pawing (100%), photophobia (90.62%), blepharospasm (90.62%), edema of conjunctiva (68.75%), ocular discharges (65.62%) and edema of eye lids (62.5%). The clinical signs in 20 dogs affected with deep corneal ulcers were, congestion of eyelids, conjunctiva and ulcerations (100%) and edema of conjunctiva (90%), blepharospasm and ocular discharges (85%), itching, irritation, pawing and photophobia (65%) and edema of eyelids (40%). Similar findings were recorded by [1, 12, 9, 14, 13, 3, 2, 10, 7, 5, 8, 11]

An attempt was made to study in detail the ophthalmic findings in corneal ulcers to detect further abnormalities using direct and indirect ophthalmoscopy and hand held slit-lamp. On close examination of table-4.8, the ophthalmic findings in Corneal Ulcers were, edema and ulceration of cornea (100%), aqueous flare (96.15%), and opacity of cornea (90.38%), dryness of cornea (50%), ciliary flush (40.38%), miosis (36.53%), and neovascularization of cornea (25%), pigmentation of cornea (21.15%) and congestion of choroid-retina (11.53%). On perusal of table- 4.9, the ophthalmic findings in Superficial corneal ulcers were, ulcers and edema of cornea (100%), aqueous flare (93.75%), opacity of cornea (84.37%), miosis (59.37%), dryness(46.87%), pigmentation of cornea (25%), neo vascularization (18.75%), ciliary flush (12.5%) and congestion of choroid retina(6.25%). Further, the ophthalmic findings in deep corneal ulcers were, ulcers, edema, aqueous flare and opacity (100%), ciliary flush (85%), dryness of cornea (55%), neovascularization (35%), congestion of choroid retina (20%) and pigmentation of

cornea (15%). The findings of the present study were in accordance with [12, 9, 14, 13, 3, 2, 7, 4, 5, 8, 11]. Basing on the above observations it may be construed that the appearance of prominent ophthalmic signs might be of use in interpolating with specific eye diseases and helpful in selecting appropriate therapeutic agents.

During the study on visual acuity out of 55 affected eyes examined, 34 (61.82%) showed normal vision and 21 (38.18%) showed reduced vision. Further, in Superficial corneal ulcers, out of 34 affected eyes examined, 23 (67.65%) showed normal vision and 11 (32.35%) showed reduced vision. In Deep corneal ulcers, out of 21 affected eyes examined, 11 (52.38%) showed normal vision and 10 (47.62%) showed reduced vision. The study indicated reduction in vision in dogs affected with corneal ulcers.

The clinical signs exhibited in 52 dogs affected with corneal ulcers were all (100%) dogs showed congestion of eyelids and conjunctiva and ulcerations, 88.46% showed blepharospasm, 86.53% showed ocular irritation, pawing and itching, 80.76% showed photophobia, 76.92% showed edema of conjunctiva, 73.07% showed ocular discharges and 53.84% showed edema of eye lids. Further, the clinical signs in 32 dogs affected with Superficial corneal ulcers were all (100%) showed congestion of conjunctiva and eyelids, ulcerations and ocular irritation, itching and pawing, 90.62% exhibited photophobia and blepharospasm, 68.75% showed edema of conjunctiva, 65.62% had ocular discharges and 62.5% showed edema of eye lids. The clinical signs in 20 dogs affected with Deep corneal ulcers were all (100%) dogs showed congestion of eyelids and conjunctiva and ulcerations, 90% showed edema of conjunctiva, 85% showed blepharospasm and ocular discharges, 65% exhibited ocular irritation, itching and pawing and photophobia and 40% showed edema of eyelids.

Conclusion

The ophthalmic findings in dogs affected with corneal ulcers were all (100%) had edema and ulcerations of cornea, 96.15% had aqueous flare, 90.38% had opacity of cornea, 50% had dryness of cornea, 40.38% had ciliary flush, 36.53% had miosis, 25% had neovascularization of cornea, 21.15% showed pigmentation of cornea, and 11.53% had congestion of choroid-retina. The ophthalmic findings in 32 dogs affected with superficial corneal ulcers were all (100%) had edema and ulcerations of cornea, 93.75% had aqueous flare, 84.37% had opacity of cornea, 59.37% had miosis, 46.87% had dryness, 25% exhibited pigmentation of cornea, 18.75% had neo vascularization, and 12.5% had ciliary flush and 6.25% congestion of choroid retina. Further, the ophthalmic findings in 20 dogs affected with deep corneal ulcers were all (100%) dogs exhibited ulcers, edema, aqueous flare and opacity, 85% exhibited ciliary flush, 55% exhibited dryness of cornea, 35% had neovascularization, 20% congestion of choroid retina and 15% had pigmentation of cornea.

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