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Incidence of Cataract in Diabetic and Nondiabetic Dogs: A Research Study

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Abstract: ***The cases presented over a period of 24 months from March 2013 to February 2015 to the Small Animal Ophthalmology unit of the Madras Veterinary College Teaching Hospital, Chennai, were screened for the incidence and stage of cataract. Incidence of non diabetic and diabetic cataractous dogs were recorded and the variables like breed, age, gender, eyes affected were noted. The study recorded an incidence of 14.96 per cent cataracts among 2580 cases. Highest incidence was recorded in Spitz (34%). In Gender wise males had more incidence (58.49%) compared to the female dogs. The age group of 6 to 10 years had the highest incidence of 40.25 per cent.***

Keywords: Incidence, cataract, diabetic, nondiabetic dogs

1. Introduction

Cataract is the most common causes of blindness in canines. The indications for cataract surgery include restoration of functional vision to the animal, prevention of complications that may occur secondary to cataract such as lens induced uveitis, glaucoma and improvement of the aesthetic appearance of the patient. Phacoemulsification lens extraction and artificial intraocular lens (IOL) implantation offer a favorable success rate and is considered as the most appropriate technique for the treatment of cataract (Bras *et al.*, 2006). Prevalence of cataract was 50 per cent in dogs of 9.4 ± 3.3 years and that all dogs above 13.5 years of age had some degree of lens opacity (Williams, 2004). The mean age of the nondiabetic dogs was 7.54 years and that of the diabetic dogs was 9.90 years (Bagley and Lavach, 1994).

In, Dogs presented with cataracts, 53.9 per cent were mature and 41.57 per cent were immature cataracts (Sellamani, 2008). Larger breeds showed cataracts earlier in life and the smaller breeds later in life (Gelatt, 2007).Preoperative lens induced uveitis (LIU) was more common in Labrador Retrievers and Moeller *et al.* (2011) suggested that this may be due to the higher prevalence of diabetic cataracts in the Labrador Retriever group, which are commonly associated with intumescence and phacolytic uveitis.

A complete detailed ophthalmic examination included evaluation of pupillary light and menace responses, schirmer's tear test, measurement of intraocular pressure, light examination of the anterior segment, keratometry, A-scan ultrasonography and indirect or direct ophthalmoscopy after instillation of a mydriatic. Fundic examination is quite important in cataract patients to asses the stage of cataract.

Surgical techniques performed for removal of cataract are phacoemulsification, extracapsular cataract extraction and intracapsular cataract extraction. Phacoemulsification followed by intra ocular lens implantation is by far the most commonly used and preferred method of cataract surgery in dogs.

2. Materials and Methods

Medical records and diagnostic ophthalmoscopic tests performed in dogs presented to the small animal ophthalmology unit of Madras Veterinary College, Chennai over a period of 24 months from March 2013 to February 2015 were found to suffer from cataracts and cataract associated signs. A total of 2580 dogs were screened in this study. Detailed ophthalmic examination were performed by direct, indirect ophthalmoscopy and A-scan ultrasound to diagnose the lens constituents, pathology and later confirmed as cataract. The incidence of cataract with reference to age, breed, gender and involvement of one or both eyes and stage of cataract were analysed and presented.

3. Results and Discussion

A total of 2580 dogs were presented to the Small Animal Ophthalmology unit of the Madras Veterinary College Teaching Hospital, Chennai over a period 24 months from March 2013 to February 2015 out of which 386 dogs (14.96%) were found to suffer from cataracts and cataract associated signs. Ramani *et al.* (2013) however reported an incidence rate of 23.12 per cent (844) cataract over a period of 24 months and Sellamani (2008) reported year wise incidence of cataract as 18.20 per cent. The incidence reported in our study was less when compared to that reported by Nitin (2013), where 23.81 per cent of cases presented over a period 12 months were found to suffer from cataracts and cataract associated signs. The differences in the rates of incidence could be attributed to the differences

in seasonslaity of the study. However overall rates of incidence point to the importance of cataract as a condition which has to be encountered by the surgeon.

The breed wise distribution of cataract recorded highest incidence in Spitz 34 per cent (108), followed by Non Descript 25 per cent (80) Labrador Retriever 23 per cent (74) and Dachshund, German Shepherd Dog, Lhasa Apso, Pug, Terrier, Cocker spaniel, Dalmatian, Rajapalayam, Great Dane, Boxer, Siberian husky, Doberman, Rottweiler, Golden Retriever and Pekingese collectively formed 18 per cent (56) (**Fig.1**).This was in accordance with Ramani *et al.* (2013) who also reported the highest incidence in Spitz 36.49 per cent, followed by Non Descript 21.8 per cent, Labrador Retriever 14.2 per cent and German Shepherd Dog 6.06 per cent, Cocker spaniel and Rottweiler 5.2 per cent, Terrier 3.3 per cent and other breeds were 3.78 per cent. Nitin (2013) also reported an incidence rate of 36.87 per cent in Spitz, followed by Non Descript 25.66 per cent, Labrador Retriever 18.58 per cent and German Shepherd Dog 7.08 per cent, Cocker spaniel, Boxer, Dachshund, Doberman Pincher and Dalmatian collectively formed 6.19 per cent and Terrier and Terrier crosses were 5.62 per cent as in the earlier studies in the same institution. This could be due to prevalence of Spitz breed more in this region.

With respect to the gender, incidence rate was found to be 58.49 per cent in males and 41.50 per cent in females (**Fig.2**). This was in accordance with Ramani *et al.* (2013) who found that the incidence rate was 52.60 percent in males and 47.40 per cent in females. Whereas, Nitin (2013) had reported the incidence of cataract as 51.91 per cent in males and 48.09 per cent in females. The results reveal almost equal chances of cataract formation in both sexes.

In this study, the age group of 6 to 10 years had the highest incidence of 40.25 per cent, followed by 0 to 6 year age group dogs had incidence of 34.59 per cent. The incidence was relatively lower in the age group of over 10 years 25.15 per cent (**Fig.3**). This could be due to hyper mature cataracts that have begun to liquefy. Lens proteins may leak through the lens capsule and cause anterior uveitis at this stage (Adkins and Hendrix, 2003). The mean age of the diabetic dogs was 6.01 years and the nondiabetic dogs was 6.76 years. This differs from findings of Oliver *et al.* (2010) who found that the mean age of the diabetic dogs was 9.12 years which was statistically higher than that of the nondiabetic dogs was 7.42 years. Whereas Bagley and Lavach (1994) reported that the mean age of nondiabetic dogs undergoing cataract surgery was 7.54 years and that of the diabetic dogs was 9.90 years.

The findings were thought to be in line with that reported by Williams (2004) who said the mean age at which 50 per cent of the population would suffer from cataracts was 9.4 ± 3.3 years. Thus the highest incidence was found in the 6 to 10 year age group. This finding was in accordance with that of Nitin (2013) where the age group 6 to 10 years had the highest incidence of 50.22 per cent. Whereas Ramani *et al.* (2013) found that the age group 7 to 15 year had the highest incidence of 50.22 per cent followed by dogs of 3 to 7 years of age group had incidence of 30.80 per cent while the 0 to 3 year age group had the lowest incidence of 19.50 per cent cataract in dogs.

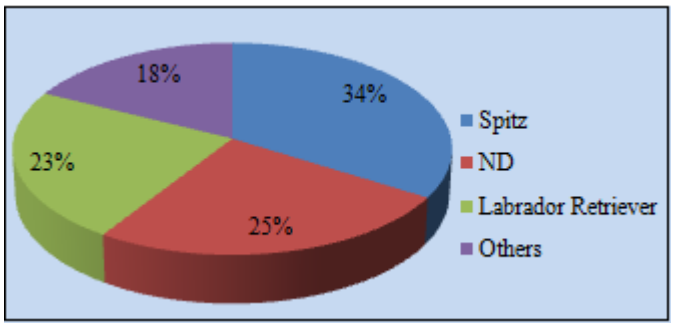

Figure 1: Breed Wise Incidence of Cataract

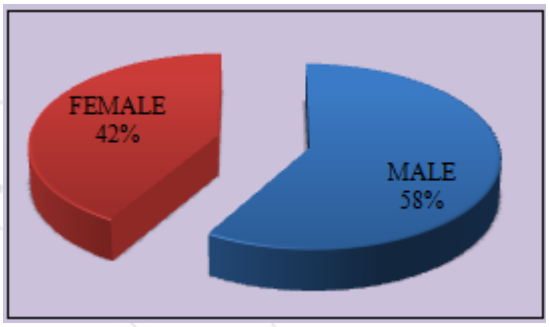

Figure 2: Gender Wise Incidence of Cataract

Incidence of eyes affected analysis of 318 cases presented, 246 (77.35%) were found to have bilateral cataracts and 72 (22.64%) had unilateral cataracts. Among the unilateral 32 (44.40%) were right eye and 40 (55.55%) cases were left eye (**Fig.4**). This was in accordance with Nitin (2013) who found that the highest incidence of the 88.89 per cent were bilateral cataracts and 11.21 per cent had unilateral cataracts. The results suggested higher number of bilateral cases than unilateral cases, though both eyes have equal chance of getting affected.

In this study, mature cataracts had the highest incidence of 45.91 per cent (146). Immature cataracts was seen in 90 cases (28.30%) followed by 54 cases (16.98%) of hypermature cataracts and remaining cases included those of incipient 20 (6.28%) and intumescent cataracts 8 (2.51%). Martins *et al.* (2010) reported that mature cataracts were the most common (73.2%) which was substantially higher than that obtained from this study (45.91%).These findings are in agreement with Nitin (2013) who recorded 159 (46.9%) cases of mature cataract, 98 cases (28.91%) of immature cataracts followed by 51cases (15.04%) of hypermature cataracts and 31(9.14%) cases of incipient cataracts.

Intumescent cataracts were more common in the eyes of diabetic dogs because of the rapid formation and imbibitions of fluids in such cataracts, which caused sudden blindness. Even though cataract is an elective surgery, in such cases, surgery should be attempted immediately to restore the vision. Immature stage of cataract yields the best success rate for phacoemulsification (Bagley and Lavach, 1994).

4. Conclusion

The present study, recorded an incidence of 14.96 per cent cataracts among 2580 cases. Highest incidence was recorded in Spitz (34%). Gender wise males had more incidence (58.49%) compared to the female dogs. The age group of 6 to 10 years had the highest incidence of 40.25 per cent.

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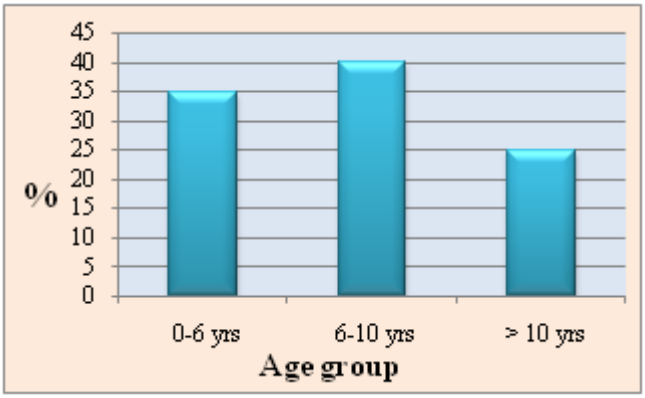

Figure 3: Age Wise Incidence Of Cataract

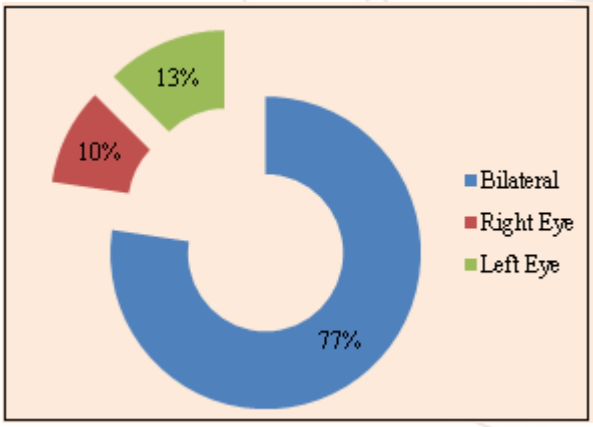

Figure 4: Incidence of Eyes Affected

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