

EPIDEMIOLOGY OF CANINE DIABETES MELLITUS IN WEST BENGAL

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A study on prevalence of diabetes mellitus was conducted in canine in and around Kolkata, West Bengal. A total number of 800 clinical cases were screened of which 15 (1.8%) were found positive for diabetes mellitus. Season wise prevalence shows that highest prevalence of diabetes mellitus in the winter season (November to February) 2.20% and the lowest in summer season (March to June) 1.38%. Among different age group, 7 to 9 years age group found to be more affected (46.7%) followed by 9 to 12 years age group (33.3%) and 4 to 6 years age group (20%) and 0 to 3 years age (0%). Breed wise prevalence noted the highest prevalence in Spitz (3.53%) followed by Dachshund (3.33%). Sex wise prevalence of diabetes mellitus showed the highest prevalence in female represented 73.3%.

Key words: Diabetes mellitus, Prevalence, Sex, Age, Breed, Season, Canine.

Introduction

Diabetes mellitus is an important endocrine disorder of the canine relating to defective carbohydrate, fat and protein metabolism, characterized by an absolute or relative deficiency of Insulin, leading to hyperglycemia (Thungrat *et al.*, 2010). The prevalence of diabetes mellitus was consistently greater over time since 1970 to till date in older dog compared to young dog. With the highest prevalence occur in dogs 10 to 15 years of age (Guptil *et al.* (2003) recorded highest prevalence in 10 to 15 years older dog. This study deals with the influence of the predisposing factor like age, sex, breed and season in the occurrence of the diabetes mellitus in dog in and around Kolkata.

Materials and Methods

The present study was carried out in the Department of Veterinary Medicine, Ethics and Jurisprudence, Faculty of Veterinary and Animal Sciences, West Bengal University of animal and Fishery Sciences for a period of one year during August 2011 to July 2012. The dogs presented to Veterinary Clinics of University and peripheral hospital of Kolkata with clinical signs suggestive of diabetes mellitus were included in the study. All the suspected

clinical cases showed sign of diabetes mellitus were screened for detection of positive cases through estimation of serum glucose, serum fructosamine and glycosylated haemoglobin using available commercial diagnostic kit (Span diagnostic /MERCK) spectrophotometrically. The clinical cases showed higher glucose level, fructosamine level and glycosylated haemoglobin were confirmed as diabetes mellitus and used for epidemiological study. Epidemiological data were collected as per proforma and analyzed statistically (Snedecor and Cochran, 1994).

Results and Discussion

In the present study the prevalence of diabetes mellitus depicted in Diagram 1 to 4 and Table 1 according to season, age, breed, sex respectively. A total number of 800 clinical cases were examined from August 2011 to July 2012 with different clinical illness. Out of which, 15 number of animals were found positive for diabetes mellitus. This accounted for 1.8% of the total canine clinical cases which showed symptoms of diabetes. It is in close accordance with the finding of Fracassi *et al.*, (2004) reported 1.33% prevalence of diabetes mellitus in dog in Italy.

Table no. - 1. Prevalence of Diabetes mellitus in dog

Number of cases Examined	Number of cases positive for Diabetes mellitus	Percentage (%)
800	15	1.8

Diagram No. - 1 Seasonal effect on prevalence of Diabetes Mellitus in dog.

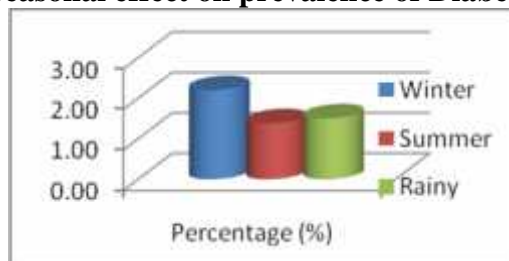


Diagram No. -2 Effect of Age on prevalence of Diabetes mellitus in dog

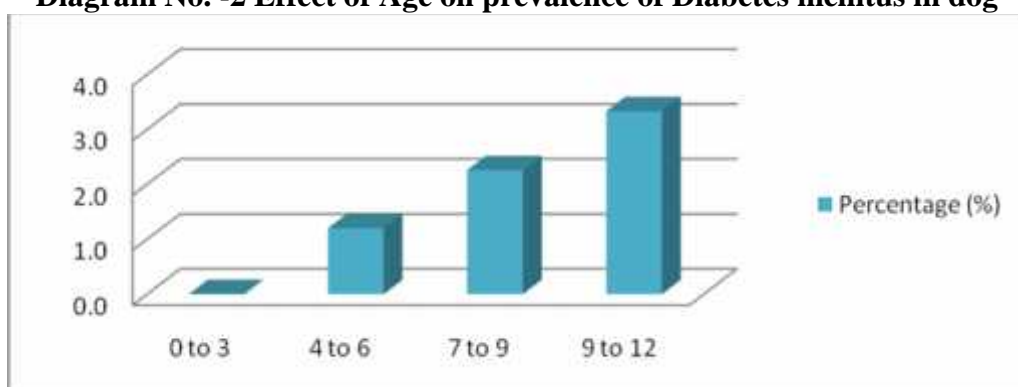


Diagram No. -3. Effect of Breed on prevalence of Diabetes mellitus in dog

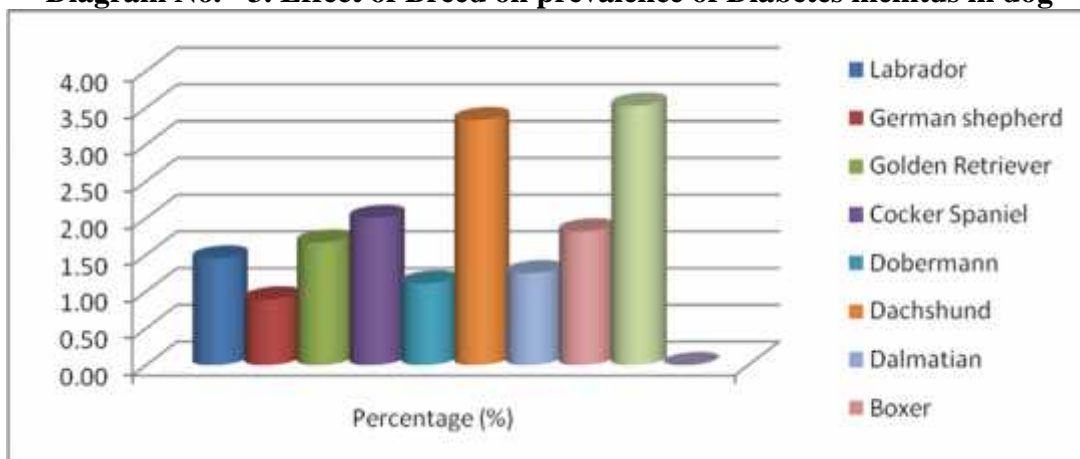
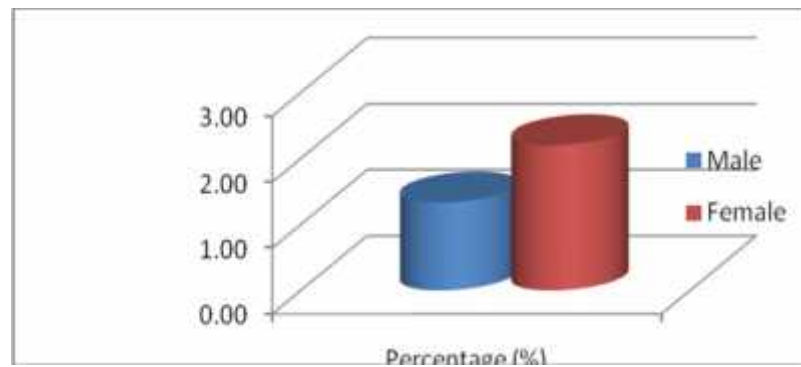


Diagram No. -4. Effect of Sex on prevalence of Diabetes mellitus in dog



Season wise occurrence: Diabetes mellitus was reported throughout the year. However more number of cases were found positive in winter season (November to February) 2.20% followed by rainy season (July to October) 1.50% and least in summer (March to June) 1.38%. Inherited insulin resistant in conjunction with environmental risk factors such as physical inactivity, obesity and consumption of excessive amounts of highly refined easily digestible carbohydrate place large, prolonged demand on the β -cells for excessive insulin secretion which eventually results in β -cell exhaustion and diabetes. The highest incidence of diabetes mellitus observed in winter season might be due to the influence of conducive environmental risk factors like physical inactivity, obesity and consumption of excessive amounts of carbohydrate. A highly significant, seasonal incidence of canine diabetes was recorded by previous worker Davison *et al.*, (2005). Atkins *et al.*, (1987) recorded peak incidence of canine diabetes in winter season. These findings are in agreement with the findings of Atkins *et al.*, (1987) and Davison *et al.*, (2005).

Age wise occurrence: Highest occurrence is noticed in 7 to 9 years of age (46.7%) and lowest in 0 to 3 years of age (0%). These findings are in agreement with the findings of Gupta *et al.*, (2003) and Catchpole *et al.*, (2005). Prevalence of diabetes in dog depends upon the maturity of pancreatic β -cells of Islets of Langerhans. In the present study the

lowest incidence is recorded in Juvenile stage (0 to 3years) where as highest incidence is recorded in 7 to 9 years of age reflects the above facts and the present study is in agreement of Morgan (1992).

Breed wise occurrence: Highest occurrence is observed in Spitz (3.53%) followed by Dachshund (3.33%), Cocker Spaniel (2.00%), Boxer (1.82%), Golden Retriever (1.67%), Labrador (1.45%), Dalmatian (1.25%), Doberman (1.11%), German Shepherd (0.89%), Mongrel (0.00%). The occurrence of diabetes mellitus may be due to the existence of genetic factors of a particular breed. This result more or less similar to previous study of Davison *et al.*, (2005); Fracassi *et al.*, (2004); Hess *et al.*, (2000).

Sex wise occurrence: Among the affected animals, 73.3% of female dog showed positive for diabetes mellitus compare to 26.6% male dog in the present study. The findings of the study is in agreement of the findings of Doxey *et al.*, (1985). The higher percentage of diabetes mellitus in intact female dogs may be due to the insulin antagonistic action of progesterone and mammary derive growth hormone and present findings was corroborated the observation of Eigenmann *et al.*, (1983).

Conclusion

Season, age, breed and sex have showed influence in occurrence of diabetes mellitus in canine.

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