RETROSPECTIVE STUDY OF CANINE DEMODICOSIS

M.P. Sakhare[1], N.P. Dakshinkar[3], A.M. Rode[2], S.V. Upadhye, N.V. Kurkure and G.R. Bhojane[2]

[1]Ph.D. Scholar, [2]Assistant Professor, [3]Professor & Head, Department of Clinical Veterinary Medicine, Ethics and Jurisprudence; Nagpur Veterinary College; MAFSU; Nagpur-400006 (M.S.).

[Received: 26.5.2017; Accepted: 29.1.2018]

{DOI 10.29005/IJCP.2018.10.1.001-004}

The present study was conducted to determine the prevalence of *Demodex* infection in pet dogs in Nagpur city. A total of 7020 pet dogs admitted to TVCC, Nagpur Veterinary College, Nagpur were investigated for *Demodex* infection from January 2006 to December 2015. The overall prevalence of demodicosis was found to be 31.17%. Seasonal prevalence was highest in the month of June (35.02%), and October (32.47%) and lowest in December (29.01%) and January (28.16%). The prevalence in male dogs (59.78%) was higher than that in female dogs (40.22%). Dogs of less than 1 year old was more affected (50.23%) followed by more than 2 years (33.87%) and 1 to 2 year old (15.90%).

Keywords: Canine demodicosis, Prevalence, Retrospective.

Canine demodicosis is a common, non-contagious, inflammatory parasitic skin disease, characterized by excessive proliferation of commensal mite, *Demodex canis* within the hair follicles and sebaceous glands (Verde, 2005 and Shrestha *et al*., 2015). Canine demodicosis is differentiated into a localized versus a generalized form. Localized demodicosis occurs most commonly in young dogs of less than one year of age, and spontaneous remission occurs in most patients. Localized demodicosis has a good prognosis, with the overwhelming majority of cases spontaneously resolving without miticidal treatment (Scott *et al*., 2001). Generalized demodicosis may be a severe and potentially life-threatening disease (Mueller *et al*., 2012). Generalized demodicosis is commonly complicated with a secondary bacterial folliculitis and/or furunculosis (Kuznetsova *et al*., 2012). The presence of mite causes intense pruritus, which initiates the dog to rub or scratch the infected areas which gradually results in emaciation, anemia and alopecia (Pathak and Bhatia, 1986). *Demodex* mites are better considered as parasites that normally do not cause adverse effects on their host but that can act as opportunistic pathogens in certain circumstances (Ferrer *et al*., 2014). This disease development is immunocompetence for this mite, which has a hereditary feature (Scott *et al*., 2001). Canine Demodicosis is a complex disease involving interactions between skin structure, the immune system and environmental influences. This pose challenges to treat effectively because of acaricide in-efficacy and consecutive recurrences and to manage because of the length of treatment, the need to identify and treat underlying causes, demands on the clients and need for frequent follow-up visits.

The present study was undertaken to determine the prevalence of *Demodex* infection in pet dogs and to analyze the association between prevalence and epidemiological factors (age, gender, month etc.) of canine demodicosis.

Materials and Methods

During the ten years period from 2006 to 2015 altogether 7020 dogs, which were brought to the Teaching Veterinary Clinical Complex, Nagpur Veterinary College, Nagpur with skin affections, were examined clinically. Clinical examination of affected dogs showed persistent itching, alopecia, periorbital alopecia, erythematous or pustular lesions especially on face, forelimb, hindlimb while in some cases covered all the body in Generalized demodicosis while in localized demodicosis alopecia, itching, periorbital alopecia and erythematous or pustular lesions limited to either face and/or forelegs. Canine demodicosis was diagnosed in 2188 dogs.

Part of Ph.D. Thesis

Detailed history regarding season, gender and age of each dog was recorded and correlated with the prevalence of demodicosis. The dogs were categorized into 3 groups according to their age as less than 1 year, 1 to 2 years and above 2 years. Diagnosis of demodicosis was confirmed on the basis of anamnesis, detailed clinical examination, dermatological examination and presence of *Demodex sp.* in skin scrapings.

Results and Discussion

Among 7020 dogs examined of different skin diseases, 2188 were positive for canine demodicosis indicating overall prevalence as 31.17% (Fig 1.) These variations in relative proportion of skin diseases may be due to the effect of different climatic condition in different regions of study. The differences among the results of the present and above earlier studies might be attributed to epidemiological factors, such as weather, seasonal variations, geographical location, and differences in sample collection technique and data collection as also reported by Shrestha *et al*. (2015). The dermatoses cases were directly proportional to the environmental temperature. In hot and humid months of the year, the cases of skin disease were abundant (36.00%). Similar finding has been reported by Kumar and Haque (2015) who reported that demodectic mange affected 5.88% of all dermatological problems.

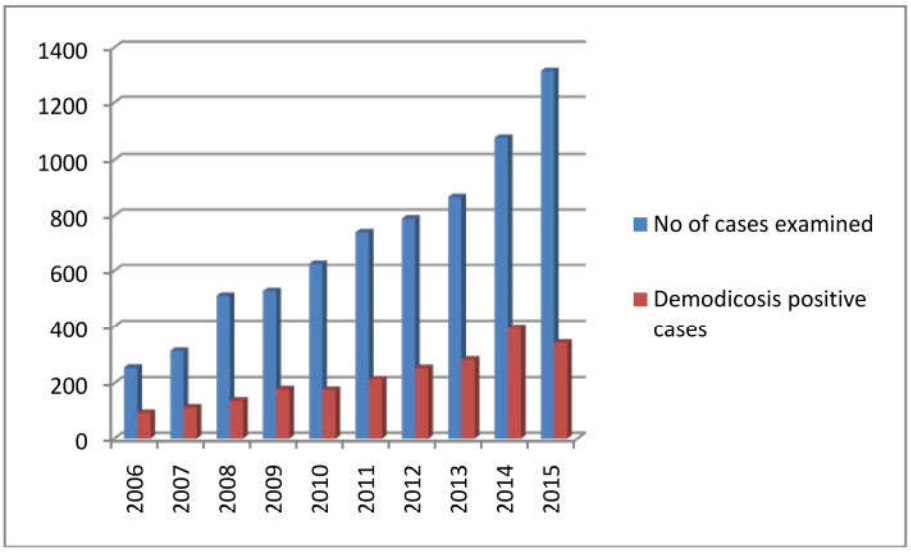

Fig. 1 Year wise number of cases examined and Positive cases

The month-wise prevalence of canine demodicosis in present study was highest 35.02% (Fig 2.) in the month of June followed in October 32.47% and the lowest in the month of December (29.01%) and January (28.16%).

According to gender prevalence of canine demodicosis was found to be more in males 59.78% as compared to the female 40.22% dogs. It is in accordance to the reports of Cai *et al.* (2014), who reported *Demodex canis* infection in males was twice as that in females and Shershta *et al.* (2015) reported 36.7% prevalence in male population and 22.9% prevalence of canine demodicosis in female population, wandering and fighting habit causes male dogs more prone to demodicosis which is also influenced by hormonal levels.

However, sex susceptibility is to be analyzed in light of observation that people in the region prefer male dogs over females because of their masculine look, better vigor and no fuss of unwanted pregnancies as also reported by Sarma *et al.* (2013).

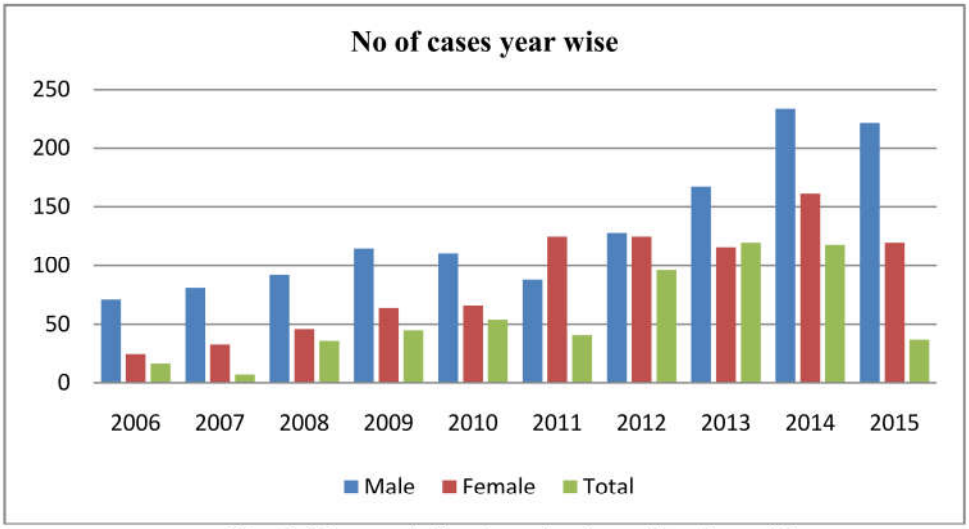

Fig. 2. Year and Gender wise demodicosis positive cases

The present study revealed age wise prevalence of canine demodicosis in dogs less than one year age group was 1099 (50.23%) followed by dogs more than 2 years 741 (33.87%) and dogs from 1-2 years 348 (15.90%) as shown in (Fig. 3). Simillar findings are of Elsheikha *et al*. (2011), who noticed 71.7% prevalence of juvenile onset demodicosis and 28.2% of adult-onset demodicosis; Islam *et al.* (2013) who also reported that 71.42% of *Demodex* positive cases were of less than 1 year age and Shrestha *et al.* (2015) found 49%, 6.9% and 33.3% in puppy, adult and senior age group dogs, respectively, and opined the age could be a risk factor for canine demodicosis. Higher susceptibility of younger dogs observed in this study could be due to lowered body resistance.

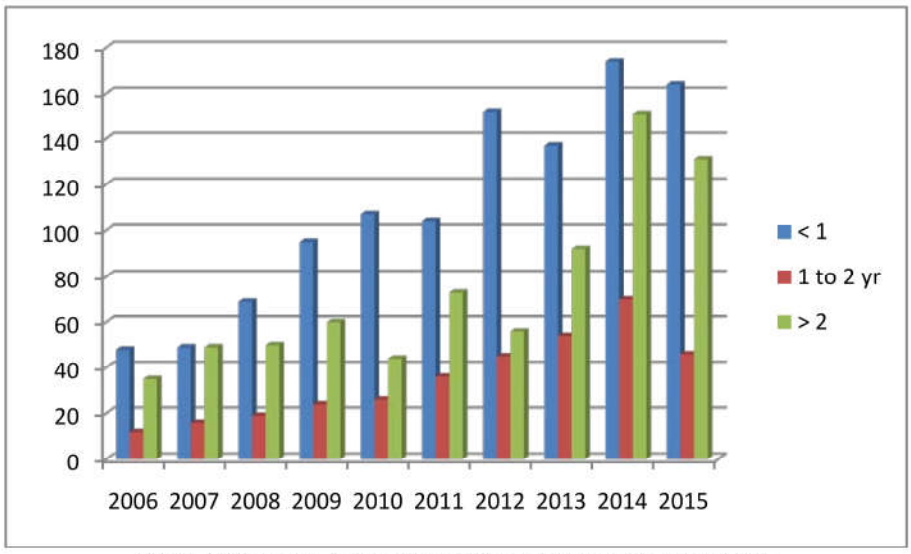

Fig.3. Year and Age wise positive cases of demodicosis

Acknowledgements

The authors are grateful to Dean and DI, Faculty of Veterinary Sciences, Maharashtra Animal and Fishery Sciences, Nagpur for providing all necessary facilities for the present work.

References

Cai, D., Zhang, Q., Zhang, L., Zhang, H., Fu, Z., He, G., Liu, G. and Liu, J. (2014). Prevalence of fur mites in canine dermatologic disease in Henan, Hebei, Heilongjiang Provinces and Xinjiang Uygur Autonomous Region, China. *Inter. J. Vet. Sci.*, 3(1): 29-32.

Elsheikha, H., Freeman, E., Madouasse, S.P. and Flynn, R. (2011). Risk factors predisposing dogs to demodicosis: A retrospective study. *Vet. Times*, **40**: 26.

Ferrer, L., Ivan, R. and Silbermayr, K. (2014) Immunology and pathogenesis of canine demodicosis. *Vet. Dermatology*, **25**: 427-465.

Islam, M.M., Khanam, S.S, Rashid, S.M.H. and Islam, M.N. (2013). Prevalence and pathology of demodectic mange in stray dogs in bangladesh. *J. Sci. and Tech*., **11**: 118-121.

Kumar, A. and Haque, S. (2015). Pattern of occurrence of dermatoses in canine population in and around Ranchi. *Inter. J. Sci. Envi. and Tech.*, **4** (6): 1706 – 1708.

Kuznetsova, E., Bettenay, S., Nikolaeva, L., Majzoub, M. and Mueller, R. (2012). Influence of systemic antibiotics on the treatment of dogs with generalized demodicosis. *Vet. Parasitol*, **188**: 148–155.

Mueller, R.S., Bensignor, E., Ferrer, L., Holm, B., Lemarie, S., Paradis, M. and Shipstone, M.A. (2012). Treatment of Demodicosis in dogs: 2011 Clinical Practice Guidelines. *Vet. Dermatol,* **23**: 86–96.

Pathak, K.M.L. and Bhatia, B.B., (1986). Haemato-biochemical and pathological changes in a dog with generalized demodicosis. *Indian J. Vet. Med*., **6**: 26-28.

Sarma, K., Mondal, D.B., Sarvanan, M., Kumar, M. and Vijaykumar, H. (2013). Incidence of Dermatological Disorders and its Therapeutic Management in Canines. *Intas Polivet*, **14**(II): 186-192.

Scott, D.W., Miller, W.H. and Griffin, C.E. (2001). *Small Animal Dermatology*, 6th edn., W.B. Saunders, Philadelphia, U.S.A. Pp. 1528.

Shrestha, D., Thapa, B., Rawal, G., Santosh, D. and Sharma, B. (2015). Prevalence of demodectic mange in canines of kathmandu valley having skin disorder and its associated risk factors. *Inter. J. of Applied Sci. and Biotechnology*, **3**(3): 459-463.

Verde, M. (2005). Canine demodicosis: treatment protocol. *Proceeding of the NAVC North American Vet. Conference* Jan. 8-12, Orlando, Florida. Pp. 299-300.