OCCURRENCE OF HIP DYSPLASIA IN DOGS: A RETROSPECTIVE STUDY

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Hip dysplasia is a developmental disorder leading to malformation of hip joint and is associated with pain and lameness. The present study included a total of 67 clinical cases of hip dysplasia presented to the Institution during period of two years. Diagnosis was made based on radiographical changes in hip joint. The age wise distribution, sex wise distribution and breed wise distribution of hip dysplasia was recorded. Average body weight of dogs with hip dysplasia was also observed. Bilateral and unilateral hip dysplasia with the left and right limb involvement were also recorded. This retrospective study of hip dysplasia yielded fruitful results in procurring relevant datas.

Keywords: Dog, Hip dysplasia, Occurrence, Osteoarthritis

Hip dysplasiais the abnormal development of the coxofemoral joint characterized by subluxation or complete luxation of femoral head in young patients and mild to severe degenerative joint disease in old patients (Fossum*et al.,* 2013). The development of canine hip dysplasia results from complex interactions among multiple genetic loci and environmental factors (Leighton, 1997). Large and giant breed dogs generally have a higher incidence of hip dysplasia than in smaller breed dogs, although exceptions existed (Krontveit *et al.*, 2012). Abnormalities of pelvic musculature like weakened pelvic muscle mass and altered muscle fiber composition and size are associated with development of canine hip dysplasia (Cardinet *et al*., 1997). Many surgical methods are available in the literature for the treatment of hip dysplasia and osteoarthritis of hip (Anderson, 2011). The aim of this study wasto determine the prevalence of hip dysplasia in the period between June, 2014 and May, 2016 on the basis of radiological examination and to assesswhether there were differences in prevalence between the sexes, age and breed.

Case History and Observations

Dogs presented to Department of Veterinary Surgery and Radiology, College of Veterinary and Animal Sciences, Pookode, during a period of two years with the history of reluctance to exercise, unilateral or bilateral pelvic limb lameness, inability to jump or go up steps, decreased development of hindlimb muscles, inability to take many steps, slowness to rise, an abnormal gait and bunny hopping were examined and data was recorded. Clinical examination was performed for Ortolani'ssign and pain on palpation and manipulation of hip joint. Standard ventrodorsal view of the hip joints with extended hind limbs was taken under sedation. Radiographic evaluation was performed based on Norberg angle, subluxation, cranial effective acetabular rim, femoral head and neck exostoses, and femoral head recontouring (Fig.1 and 2).

Results and Discussion

2418 dogs were presented to the outpatient unit of Department of Veterinary Surgery and Radiology between June, 2014 and May, 2016. Of which 726 (30.02 %) cases suffered from orthopaedic problems. Among 67 (9.22 %) orthopaedic cases were diagnosed as hip dysplasia (Fig.3). The age wise distribution of hip dysplasia in dogs less than one year, one to four years and above four years were 32 (47.76 %), 24 (35.82 %) and 11 (16.14 %) respectively (Fig.4) simillar findings were reported by Citi *et al.* (2005) whohave reported that the highest incidence (37.6%) was recorded in dogs less than 12 months of age followed by 25.5% in dogs between 25-72 months,22.8% in dogs between 12-24 months of age and 14.1% in dogs older than 73 months.

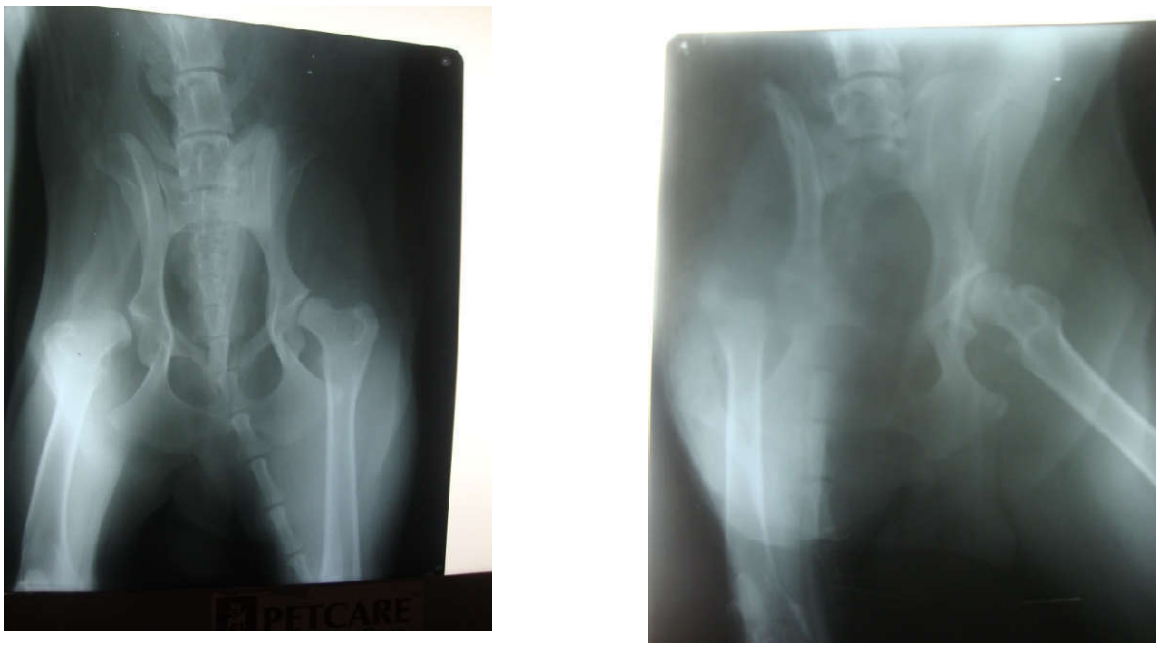

Fig. 1 and 2. Radiographs Showing the Hip Dysplasia

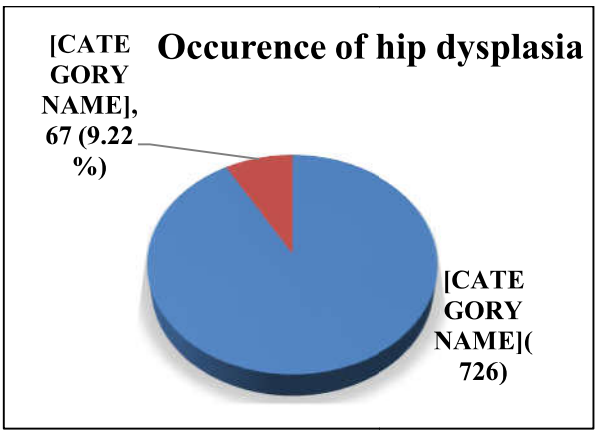

Fig. 3: Occurrence of hip dysplasia

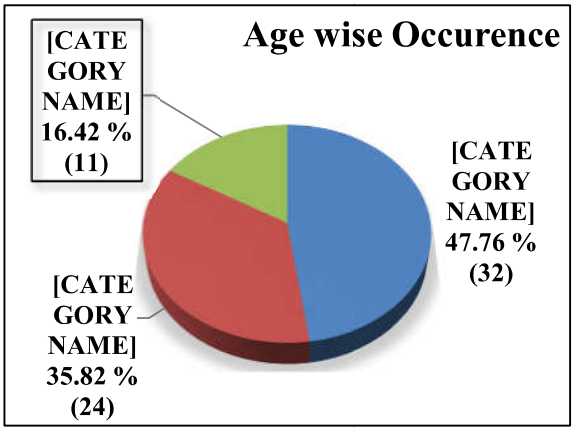

Fig. 4: Age wise occurrence

Sex wise distribution of hip dysplasia showed 39(58.20 %) males and 28 (41.80 %) females i.e. in this study highest incidence of hip dysplasia was recorded in males than females (Fig.5), which may be due to preference of people to keep more male dogs as pets than females. Contrary to this Rettenmaier *et al.* (2002) reprted that there is no significant difference in the prevalence of hip dysplasia between sexes or between pure bred and mix bred dogs. Though, simillar findings were of Wood *et al.* (2002) who have recorded that hip dysplasia was higher in males than in females among Labrador Retrievers. But contrary to our findings, Coopman *et al.* (2008) have mentioned about their studies in different dog breeds of Belgium and found that 60 % of females were affected with hip dysplasia.

Breed wise occurrence of hip dysplasia was highest in Labrador Retrievers 27 (40.29 %) followed by German Shepherd Dogs 19 (28.36%), Rottweilers 9 (13.44 %), Pugs 4 (5.98 %), St. Bernards 2 (2.99 %), Lhasa Apso 1 (1.49 %), Doberman Pinscher 1 (1.49 %), Cocker Spaniel1 (1.49 %), French Mastiff 1 (1.49 %), Golden Retriever 1 (1.49 %) and Spitz 1(1.49 %). Simillar findings were reported by Samir *et al.* (2014) who have observed that the incidence of canine hip dysplasia was 4.29%, 5.59%, 19.29% and 31.79% in small-sized, medium-sized, giant sized and large-sized breeds.

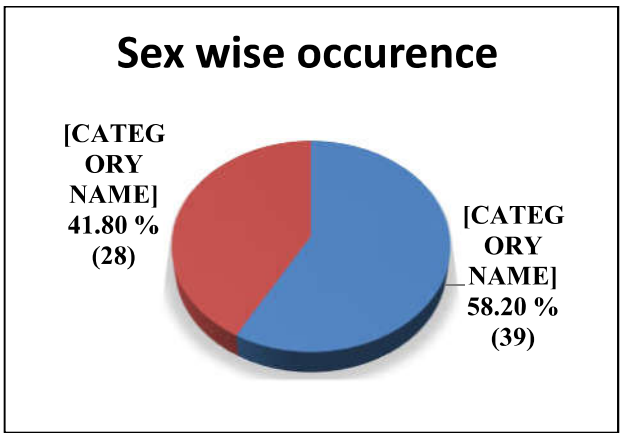

Fig. 5: Sex wise occurrence

Simillarly Krontveit *et al.* (2012) reported that large and giant breed dogs generally have a higher incidence of hip dysplasia than smaller breed dogs, although exceptions exist. In this study, average body weight of dogs with hip dysplasia was 24.74 kg with the lowest being 6 kg and highest 62 kg. Bilateral and unilateral hip dysplasia was found to be 56 (83.58 %) and 11 (16.42 %) respectively. In unilateral hip dysplasia, left and right limb involvement were 63.63 % and 36.37 % respectively these findings were in accordance to Citi *et al.* (2005) who have also reported that bilateral and unilateral canine hip dysplasia was found to be 83.3 % and 16.7% respectively. The occurrence of osteoarthritis secondary to hip dysplasia was found to be 18 (26.86 %) of all cases of hip dysplasia and in the present study osteoarthritis lesions were observed above 1.8 years old dogs.

References

Anderson, A. (2011). Treatment of hip dyspla -sia. *J. Small Anim. Pract.,* **52:** 182-189.

Cardinet, G.H., Kass, P.H. and Wallace, L.J. (1997). Association between pelvic muscle mass and canine hip dysplasia. *J. Am. Vet.Med. Ass.,* **210:** 1446.

Citi, S., Vignoli, M., Roni, F. and Morgan,J.P (2005). A radiological study of the incide-ce of unilateral canine hip dysplasia. *Sch-wieiz. Arch. Tierheilkd*., **147:** 173-178.

Coopman, F., Verhoeven, G. and Saunders, J. (2008). Prevalance of hip dysplasia, elbow dysplasia and femoral head osteochondrosis in dog breeds in Belgium. *Vet. Rec*., **163:** 654.

Fossum, T.W., Curtis, W.D., Caroline, V.H., Ann, L.J., Catriona, M.M., Mary, A.G.R., Kurt, S., Schulz andMichael D.W. (2013). *Small Animal Surgery*. 4th Edn. Elsevier Inc, Missouri, U.S.A. Pp.1306-1316.

Krontveit, R.I., Nodtvedt, A., Bente, K.S., Erik R. and Cathrine, T. (2012). Housing and exercise related risk factors associated with the development of hip dysplasia as determined by radiographic evaluation in a prospective cohort of Newfound lands, Labrador Retrievers, Leonbergers, and Irish Wolfhounds in Norway. *Am. J. Vet. Res*., **73:** 838-846.

Leighton, E. (1997). Genetics of canine hip dysplasia. *J. Am. Vet. Med. Ass.,***210:** 1474-1479.

Rettenmaier, J.L., Keller, G.G., Lattimer, J.C., Corley, E.A. and Ellersieck, M.R. (2002). Prevalence of canine hipdysplasia In a vety. teaching hospital population.*Vet Radiology Ultrasound,* **43(4):** 313-318.

Samir, R.N, Hoyda, M.A.A., Haithem, A.F. and Mohamed, M.S. (2014). A retrospective study on canine hip dysplasia in different breeds in Egypt. *Global Veterinaria,* **13(4):** 503-510.

Wood, J.L.N., Lakhani, K.H. and Rogers, K. (2002). Heritability and epidemiology of canine hip dysplasia score and its componenets in Labrador retrievers in the United Kingdom. *Vet. Med.,* **55:** 95-108.