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Incidence of canine hip dysplasia - a prospective study of one year#

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Abstract

A study was conducted to assess the prevalence of canine hip dysplasia (CHD) among dog population during a period of one year from January 2021 to December 2021. Canine hip dysplasia was confirmed by clinical orthopedic and radiographic examinations. Of the 231 dogs presented with lameness suspected to be originating from hip joint, 140 animals had dysplastic hips. The incidence was more in large breeds of dogs in an age group of 6 months to 12 months. Thirty five percent of the animals showed unilateral affection while in the remaining 65 percent it was bilateral. Females were more affected with this condition as per the findings of this study. Other than hip dysplasia, traumatic hip dislocation and osteoarthritis contributed to lameness originating from hip joints.

Keywords : *Canine hip dysplasia, prevalence, lameness, CHD*

Inbreeding for purebred dogs has resulted in development of a lot of inherited diseases. Canine hip dysplasia (CHD) is one such complex orthopaedic disorder which affects the quality of life of affected patients. It results from developmental abnormality of coxofemoral joint defined by complete luxation or subluxation of femoral head from the acetabulum. The genetic factors along with environmental factors, diet, body conformation and size accounts for the development of CHD. Eventhough exceptions exist, large and giant breeds are more prone to hip dysplasia than small breeds of dogs. In later life, this condition develops into degenerative joint disease which affects the quality of life of the patient.

A total of 231 dogs irrespective of age breed and sex presented to TVCC, Pookode with lameness during the period from January, 2021 to December, 2021 was screened for hip

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affections. Detailed clinical, orthopedic and radiographic examinations were conducted. Physical examinations included presence or absence of thigh muscle atrophy, ortolani sign and barden test. Radiographic evaluations included assessment of norberg angle, angle of inclination, distraction index, arthritic changes of hip joint and physeal coverage.

Out of the 231 dogs screened, 147 (64 %) animals showed lameness due to hip affections. Among these 147 dogs, 140 (95 %) were having dysplastic hips and the rest (5 %) suffered from hip dislocation due to trauma. Fourteen dogs showed osteoarthritis consequent to hip dysplasia. Seventy seven per cent of the dysplastic animals were females (Table 1) which was significantly higher than in males (23 %). The findings of the present study are in accordance with the findings of Loder and Todhunter (2017), who reported a slightly higher incidence in females than in males. However, Fries *et al.* (1995) had reported an equal probability of incidence in both genders. In Norway, Turkey, and the United Kingdom, no sex differences were noted in the prevalence of CHD for the various breeds studied (Wood *et al*., 2000; Wood *et al.,* 2002; Sarierler, 2004; Krontveit *et al.,* 2010; Freeman *et al*., 2013). Jayaprakash *et al.* (2007) and Simon *et al.* (2010) reported a higher incidence of CHD in males than in females.

Table 1. Gender wise prevalence of canine hip dysplasia

Gender	No. of dysplastic hips (Per cent)	p value
Female	108 (77) [a]	0.001
Male	32 (23) [b]	

The breed wise prevalence of hip dysplasia revealed highest incidence in Labrador Retriever (55 %) followed by Rottweiler (19 %), German Shepherd (17 %), Golden Retriever, St. Bernard and Pittbull (2 % each), Cocker Spaniel, Pug, Cane Corso and Siberian Husky(1 % each). Though breed wise incidence of CHD varies in various geographic areas, a higher incidence of the condition is reported in giant and large breeds of dogs like Cane Corso (Genevois *et al.* 2008), Newfoundland (Kronveit, 2010,) Rottweiler (Rettenmaier *et al.* 2002). Large and giant breeds are more prone to hip dysplasia than small breeds, even though exceptions exist. This could be attributed to heavy body weight and less musculature around and acting on the hip joint, especially the pectineus muscle. The head of the pectineus muscle tends to pull the femoral head away from the acetabulum. The breed wise incidence findings of this study are in accordance with the findings of Simon *et al.* (2010).

Out of this 140 dysplastic hips, 91 animals showed bilateral affection whereas 49 (35 %) were unilateral (Table 2). Loder and Todhunter (2017), also reported a 33 per cent incidence of unilateral CHD. The prevalence of unilateral CHD was 35 per cent in a study in New York with 1022 dogs consisting of Labrador Retrievers, Golden Retrievers, German Shepherds, and crossbreeds (Lust *et al.* 1973) which is strikingly similar to the findings of our study. A study of multiple breeds from Italy reported an overall 31.5 per cent of unilateral CHD (Krontveit *et al.,* 2012). In 57 per cent of the unilateral cases left hip was affected while in 43 per cent it was right hip.

Table 2. Limbs involved in CHD

	Number	Per cent
Unilateral Left	28	57
Unilateral Right	21	43
Bilateral	91	65

Puppies below 6 months of age showed more symptomatic evidences of hip dysplasia than older dogs. More than 50 per cent of animals found positive for CHD were belonging to the age group below 6 months while 34 per cent belonged to age group 6 months to 1 year and 15 per cent where above 1 year (Table 3). The incidence of CHD in puppies was significantly higher than those in adults. This was in contrary to the observations of Van Hagen *et al.* (2005) that dogs of older ages are likely to develop joint diseases due to gradual deterioration of joint structures. All the animals positive for osteoarthritis were above 1 year of age. This result is in agreement with the observation of Runge *et al.* (2010) that the probability of developing osteoarthritis increases with age.

Table 3. Age wise incidence of CHD

Age group	No. of dysplastic animals (per cent)	p value
Below 6 months	71(51) [a]	0.001
6 – 12 months	48(34)[b]	
Above 12 months	21(15)[c]	

Limitations of this study need to be acknowledged. Since the data pertains solely to dogs presented to our hospital and whose radiographs had been taken, it may not give the true prevalence of CHD in the canine population.

Summary

The study undertaken to identify the incidence of hip dysplasia was conducted in animals showing hind limb lameness. Labrador Retriever was found to be the commonly affected breed followed by Rottweiler, German shepherd, Golden Retriever, St Bernard, Cocker Spaniel, Pug, Pittbull, Canecorse, Siberian Husky. Bilateral hip dysplasia was more common than unilateral, among which left limb was more affected. Considering sex and age, hip dysplasia was more prevalent in females and puppies under 6 months of age.

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Conflict of Interest:

The authors declare that there is no conflict of interest

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