

## INCIDENCE OF OSTEOARTHRITIS IN DOGS – A CLINICAL STUDY OF 64 PATIENTS

Thara Singh D. Lamani<sup>1\*</sup>, L. Ranganath<sup>2</sup>, B.N. Nagaraja<sup>3</sup>, M.L. Satyanarayana<sup>4</sup>,  
K.V. Jamuna<sup>5</sup> and Ansar Kamran<sup>6</sup>

<sup>1</sup>PG Scholar, <sup>2</sup>Dean, Veterinary College, Haasan,

<sup>3</sup>Professor and Head, Dept. of Veterinary Surgery and Radiology,  
Veterinary College, Hebbal, Bengaluru – 560024

<sup>4</sup>Professor and Head, Dept. of Veterinary Pathology,  
Veterinary College, Hebbal, Bengaluru – 560024

<sup>5</sup>Professor and Head, Dept. of Veterinary Anatomy and Histology,  
Veterinary College, Hebbal, Bengaluru – 560024

<sup>6</sup>Professor, Dept. of Veterinary Medicine,

Veterinary College, Hebbal, Bengaluru – 560024

E-mail: vet549@gmail.com (\*Corresponding author)

**Abstract:** Coxofemoral joint affections were recorded in 200 dogs of different breed, age and sex during period from March 2012 to February 2013. Among that, 64 dogs were found to be suffering from osteoarthritis (32%). Breed wise the incidence of osteoarthritis was highest in Labrador retriever dogs (31.25%) followed by German Shepherd dogs (23.43%). Age wise, the incidence of osteoarthritis was more between 5 – 10 years old dogs (62.5%). Incidence of bilateral osteoarthritis of Coxofemoral joint was more noticed (59.37%) followed by unilateral right (15.62%) and unilateral left (14.06%). Sex wise, males were (64.06%) more affected than females (35.93%).

**Keywords:** Dogs, Osteoarthritis, Coxofemoral joint, incidence.

### INTRODUCTION

The word arthritis is formed by two Greek words *arthron* (joint) and *itis* (inflammation), which means “joint inflammation”. Arthritis is a significant problem in middle and old aged dogs, although it can occur in animals of any age. The various forms of arthritis include degenerative or inflammatory arthropathies (May, 1995). The etiology might be of non inflammatory disease conditions which included degenerative joint disease and osteoarthritis, characterised by degeneration of the articular cartilage, hypertrophy of the bone margin and changes in the synovial membrane which might be primary due to aging or secondary due to developmental diseases. Osteoarthritis occurs in dogs primarily due to aging and but most commonly secondary to hip dysplasia (Benzioni *et al.*, 2008). Usually the aged dogs are at greater risk of affected by osteoarthritis owing to their wear and tear and delay in regeneration. Higher incidence was reported in Labrador retriever and German shepherd

breed dogs (Smith *et al.*, 2006). Osteoarthritis may affect all the joints, but, hip, stifle and elbow joints were at more risk (Anderson *et al.*, 1999).

## **MATERIALS AND METHODS**

Data collected from the total number of cases presented to the Department of Surgery and Radiology, Veterinary College, Hebbal, Bangalore during the period of one year from March 2012 to February 2013, were studied. Of these, dogs suffering from various joint affections were segregated and classified according to the type of affection. Age wise, breed wise, sex wise and joint wise predilection of osteoarthritis in the dogs presented was recorded and presented.

## **RESULTS**

During this period, 8850 cases were presented to the clinic. Of these a total of 200 (2.25%) cases of coxofemoral joint affections were recorded in dogs of different breed, age and sex. Among those, 64 cases were found to be suffering from osteoarthritis. Breed wise, the occurrence of osteoarthritis was high in Labrador Retriever 20 (31.25%) followed by German Shepherd 15 (23.43%), Non-descript 08 (12.5%), Golden Retriever 03 (4.68%), Saint Bernard 03 (4.68%), Spitz 05 (7.81%), Pug 02 (3.12%), Dalmatian 02 (3.12%), Dachshund 02 (3.12%), Mastiff 02 (3.12%), Great Dane 01 (1.56%) and Basset Hound 01 (1.56%) breed of dogs (Table 1). Age wise, most commonly affected age group was between 5 – 10 years 40 (62.5%) followed by 10 – 15 years 17 (26.56%) dogs and 7 (10.93%) dogs in 1 – 5 years age (Table 2). Sex wise, the prevalence was more in male dogs 41 (64.06%) compared to females 23 (35.93%) (Table 3). Bilateral osteoarthritis of Hip joint was noticed in 38 dogs (59.37%), unilateral right 10 (15.62%) and unilateral left 9 (14.06%). Osteoarthritis of Elbow joint was noticed in 06 dogs (9.37 %) and Osteoarthritis of Stifle joint was noticed in 01 dog (1.56%) (Table 4).

## **DISCUSSION**

Osteoarthritis is the single most common joint disorder which affects dogs and the prevalence was recorded as 20% of total hip disorders (MacPhail, 2000 and Smith *et al.*, 2006). The findings concurred with the present study wherein 32% of the dogs had osteoarthritis among the 200 cases presented with osteoarthritis. Sex wise, male dogs had a higher incidence of the osteoarthritis. In the present study, 64 per cent of male dogs were affected with osteoarthritis, which concurred with the findings of Bendele (2001) and Henrotin *et al.* (2004). Smith *et al.* (2001) had reported that sex was not a significant risk factor for osteoarthritis. In contrary to

this, higher incidence of joint affections in females than in males was reported by Denny and Minter (1973), Barnes (1977) and Whitehair *et al.* (1993).

In the present study, Labrador retriever was the most commonly affected breed to the extent of 31.25% followed by, German shepherd dogs, non-descript and Spitz, respectively. Ginja *et al.* (2009) and Sanghi *et al.* (2009) had reported higher incidence of canine hip osteoarthritis in large and giant breed dogs like Labrador retriever, German shepherd, Doberman and Great Dane. McLaughlin and Roush (2002) opined that growing large breed puppies are often affected with developmental orthopaedic conditions like hip dysplasia, which can lead to osteoarthritis. Smith *et al.* (2006) reported higher incidence of hip osteoarthritis in Labrador retrievers and attributed to excessive body weight. Wahl *et al.* (2008) reported higher incidence of hip osteoarthritis in German shepherd dog and attributed to hereditary origin.

Among the age group of above 5 to 10 years followed by 10 to 15 years and 1 to 5 years. Dogs of age groups 7-9 years were found to be most affected, which is in agreement with the findings of Boothe *et al.* (1996). Whitehair *et al.* (1993) and Duval *et al.* (1999) reported the highest incidence of joint disease in 7 to 10 years of age. Neaas *et al.* (2002) the highest incidence of joint affection was seen between 2 and 4 years of age. The present study revealed highest occurrence of osteoarthritis in hip joint and elbow was found to be second commonly affected joint followed by hock, carpal joint, tarsal joint, shoulder, stifle and spine joints. Anderson *et al.* (1999) observed stifle to be the second most affected joint. Highest incidences of stifle joint compared to the elbow joint were reported by Denny and Gibbs (1980), Leighton (1981) and Montgomery *et al.* (1989).

**Table 1: Breed wise occurrence of osteoarthritis in dogs**

Breed	Number	Hip Joint	Elbow Joint	Stifle Joint	Percentage (%)
Labrador retriever	20	18	2	0	31.25
German shepherd	15	12	3	0	23.43
Non descript	8	8	0	0	12.5
Spitz	5	5	0	0	7.81
Dachshund	2	2	0	0	3.12
Dalmatian	2	2	0	0	3.12
Great Dane	1	1	0	0	1.56
Pug	2	2	0	0	3.12

Golden Retriever	3	2	1	0	4.68
Mastiff	2	2	0	0	3.12
Saint Bernard	3	2	0	1	4.68
Basset Hound	1	1	0	0	1.56
<b>TOTAL</b>	<b>64</b>	<b>57</b>	<b>6</b>	<b>01</b>	<b>100</b>

**Table 2: Age wise occurrence of osteoarthritis in dogs**

Age	Number	Percentage (%)
1-5 years	07	10.93
Above 5-10 years	40	62.5
Above 10-15 years	17	26.56
<b>TOTAL</b>	<b>64</b>	<b>100</b>

**Table 3: Sex wise occurrence of osteoarthritis in dogs**

Sex	Number	Percentage (%)
Male	41	64.06
Female	23	35.93
<b>TOTAL</b>	<b>64</b>	<b>100</b>

**Table 4: Occurrence of osteoarthritis cases presented to the Veterinary college Hospital**

Clinical condition	Number	Percentage (%)
Total number of osteoarthritis cases	64	32
Total number of Bilateral Hip joint osteoarthritis cases	38	59.37
Total number of unilateral right Hip joint osteoarthritis cases	10	15.62
Total number of unilateral left Hip joint osteoarthritis cases	9	14.06
Total number of Elbow joint osteoarthritis cases	06	9.37
Total number of Stifle joint osteoarthritis cases	01	1.56

**REFERENCES**

- [1] Anderson, M.A., M.R. Slater and T.A. Hammad (1999) Results of a survey of small animal practitioners on the perceived efficacy and safety of an oral nutraceutical. *Prev. Vet. Med.* **38**: 65 – 73.

- [2] Barnes, A.J. (1977) Rupture of the anterior cruciate ligament of the dog: A survey from practices in the Kent region. *J. Small Anim. Pract.* **18**: 55 – 57.
- [3] Bendele, A.M. (2001) Animal models of osteoarthritis. *J. Musculoskel. Neuron. Interact.*, **1**: 363 – 376.
- [4] Benzioni, H., R Shahar, S. Yudelevitch and J. Milgram (2008) Bacterial infective arthritis of coxofemoral joint in dogs with hip dysplasia. *Vet. Comp. Ortho. Traumatol.* **21**: 262 – 266.
- [5] Boothe, D.L., A. Gelfand, R. Turkell, G. Camp, G. Ross and R. Willer (1996) Round table discussion. Degenerative joint disease in dogs, part 1. *Canine pract.* **21**: 6 – 11.
- [6] Denny, H. R. and C. Gibbs (1980) The surgical treatment of osteochondritis dissecans of the canine stifle joint. *J. Small Anim. Pract.* **21**: 317.
- [7] Denny, H. R. and H. M. Minter (1973) The long term results of surgery of canine stifle disorders. *J. Small Anim. Pract.* **14**: 695 – 714.
- [8] Duval, J.M., S.C. Budberg, G.L. Flo and J.L. Sammarco (1999) Breed, sex, and body weight as risk factors for rupture of the cranial cruciate ligament in young dogs. *J. Am. Vet. Med. Assoc.* **215**: 811 – 814.
- [9] Fernandes, F.R., C.B. Grindam, A.J. Lipowitz and V. Perman (2002) Synovial fluid analysis: Preparation of smears for cytological examination of canine synovial fluid. *J. Am. Anim. Hosp. Assoc.* **19**: 727 – 734.
- [10] Ginja, M.M.D., A.M. Silvestre, J. Colaco, J.M. Gonzalo-Orden, P. Melo-Pinto, M.A. Orden, M.P. Llorens-Pena and A.J. Ferreira (2009) Hip dysplasia in Estrela mountain dogs: Prevalence and genetic trends. *Vet. J.*, **182**: 275 – 282.
- [11] Henrotin, Y., C. Sanchez and M. Balligand (2004) Pharmaceutical and nutraceutical management of canine osteoarthritis: Present and future perspectives. *Vet. J.* **170**: 113-123.
- [12] Leighton, R. L. (1981) Surgical treatment of osteochondritis dissecans of the canine stifle. *J. Vet. Med. Small Anim. Clin.* **76**: 1733.
- [13] Macphail, C.M. (2000) Treatment of canine osteoarthritis. *Waltham focus.* **10**: 25 – 31.
- [14] May, C. (2005) Diagnosis and management of bacterial infective arthritis in dogs and cats. *In Practice.* **27**: 316 – 321.
- [15] McLaughlin, R. and J. Roush (2002) Medical therapy for patients with osteoarthritis. *Vet. Med.* **97**: 135 – 144.
- [16] Montgomery, R. D., J.L. Milton and R.A. Henderson (1989) Osteochondrosis dissecans of the canine stifle. *Comp. Cont. Ed. Pract. Vet.* **11**: 1199 – 1205.

- [17] Neaas, A., R. Srnec and Kecova (2002) Diagnostic reliability of stifle arthroscopy of pathological changes in cruciate deficient knee. *Acta Vet. Brno.* **71**: 249 – 254.
- [18] Sanghi, D., S. Avasthi, R.N. Srivastava and A. Singh (2009) Nutritional factors and osteoarthritis: A review. *Int. J. Med. Update.* **4**: 42 – 53.
- [19] Shikhman, A.R., C. Diana, M. Brinson and M. Lotz (2000) Profile of glycosaminoglycan - degrading glycosidases and glycoside sulfatases secreted by human articular chondrocytes in homeostasis and inflammation. *Arth. Rheum.* **43**: 1307 – 1314.
- [20] Smith, G.K., E.R. Erin, M.Y. Powers, D.F. Lawler, D.N. Biery, F.S. Shofer, P.J. Mckelvie and R.D. Kealy (2006) Lifelong diet restriction and radiographic evidence of osteoarthritis of the hip joint in dogs. *J. Am. Vet. Med. Assoc.* **229**: 690 – 693.
- [21] Wahl, J.M., S.M. Herbst, L.A. Clark and K.E. Murphy (2008) A review of hereditary diseases of the German shepherd dog. *J. Vet. Behaviour.* **3**: 255 – 265.
- [22] Whitehair, J.G., P.B. Vasseur and N.H. Willits (1993) Epidemiology of cranial cruciate ligament rupture in dogs. *J. Am. Vet. Med. Assoc.* **203**: 1016 – 1019.