

Incidence of Coxofemoral Joint Affections in Dogs - A Clinical Study of 575 patients

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Abstract

Coxofemoral joint affections were recorded in 575 dogs of different breed, age and sex during the period from 2007 to 2010. Amongst that, hip dysplasia accounted for 54%, osteoarthritis 28% and fracture luxation 18%. The incidence of hip dysplasia in susceptible breeds less than one year of age was 64% and majority of them were in the age group of 4 to 8 months (71%). Labrador retriever was found to be the most prone breed (43%) for hip dysplasia. While osteoarthritis was highest in German shepherd dogs (30%) with highest incidence in more above four years old dogs (82%). Fracture luxation was found to be common in less than one year of age dogs (51%) and Labrador retriever (23%) was the most affected breed. The age wise distribution of coxofemoral joint affection was 45% in less than 1 year old dogs because of the active period of growth, 19% in 1 to 4 year of adult dogs and 36% in more than 4 year old dogs. Among sex both the populations were equally affected.

Keywords: Coxofemoral joint affection; hip dysplasia; hip fracture luxation; osteoarthritis

Introduction

The conditions associated with coxofemoral joint includes fracture of acetabulum, luxation of hip, capital femoral physal fracture, fracture of femoral head and neck, hip dysplasia or Legg-Calve-Perth's disease and degenerative changes which prevents stabilization of hip and osteoarthritis. 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. Luxation or fracture might occur due to trauma and neoplasia. Osteoarthritis occurs in dogs primarily due to aging and but most commonly secondary to hip dysplasia (Benzioni *et al.*, 2008).

Materials and Method

The dogs presented with coxofemoral joint affections with signs of pain, laxity and crepitation were subjected to radiographic evaluation. The radiographic signs included, shallow acetabulum

and small, flattened femoral head. Secondary radiographic signs of hip dysplasia included femoral head subluxation and degenerative joint disease.

Results and Discussion

A total of 575 cases of coxofemoral joint affections were recorded in dogs of different breed, age and sex. Among that, disease wise involvement included hip dysplasia 54% (310), osteoarthritis 28% (159) and fracture luxation 18% (106). Sex wise distribution was 61% (352) in males and 39% (223) in females. The breed wise incidence was Labrador Retriever 34% (198), German Shepherd 23% (130), Great Dane 6% (37), Rottweiler 4% (21), Spitz 11% (63), Doberman 3% (19), Boxer 2% (14), Pug 2% (11), Non descript 8% (47) and other breeds that include Dalmatian, Bull mastiff, St Bernard, Bull dog, Dachshund, Cocker spaniel, Lhasa apso and Iris setter breeds contributed less than one percent each. The age wise distribution was 45% (256) in animals less than 1 year of age that in active period of growth, 19% (110) in 1 to 4 year of adult stage and 36% (209) above four years of age *i.e.* aging stage. Lafond *et al.* (2003) reported that the dogs with hip dysplasia showed initial signs during between 3 to 12 months of age and when the joint got

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remodeled they exhibited signs at median age of 5.4 years. The etiology was found to be secondary to hip dysplasia.

The common clinical sign exhibited by animal is pain because of micro and macroscopic changes within the synovial joint caused by eicosanoids that results in different degrees of lameness (Morgan, 1997) which can be assessed qualitatively by lameness score. Other signs include gait and postural abnormality, reluctance to walk or climb stairs and decrease in thigh muscle mass. Physical examination might reveal signs of crepitation in case of osteoarthritis or fracture, increased laxity 'Ortolani signs' indicative of hip dysplasia and limb shortening in case of luxation. Hip extended radiographic ventro-dorsal and lateral views were used to assess the severity of disease condition (Olmstead, 1998 and Lust *et al.*, 2001). Hip dysplasia was seen invariably in all breeds of dogs but predominantly seen in larger breeds. Among 310 cases of hip dysplasia the breed distribution was Labrador Retriever 43% (135), German Shepherd 25% (78), Great Dane 9% (28), Rottweiler 6% (18), Spitz 4% (13), Doberman,

Boxer, Pug, Dalmatian, Bull mastiff, St Bernard, bull dog, Dachshund, Cocker spaniel, Lhasa apso and Iris setter breeds contributed less than 2 percent each and only 0.6 percent (2) in crossbred dogs. The age incidence was 64% (199) in less than one year of age, 20% (61) in one to four years of age and 16% (50) above four years of age. A similar incidence in high risk breeds were also reported by Genevois *et al.* (2008). Breed predisposition suggests highest incidence in large breed of dogs 91% (182/199) (Table-1). Lafond *et al.* (2002) reported that the clinical signs were mostly exhibited during the active period of growth during 4 to 8 months of age and due to genetic predisposition and nutritional etiology which included excess energy intake, excess calcium intake and electrolyte imbalance and also due to environmental influences.

Among 159 case of osteoarthritis the breed wise distribution was German shepherd 30% (47), Labrador retriever 25% (39), Great dane 3% (4), Spitz 19% (30), Rottweiler, Doberman, Boxer, Pug, Dalmatian, Bull mastiff, St Bernard, bull dog, Dachshund, Cocker spaniel, Lhasa apso and Iris setter breeds contributed less than two percent



Fig. 1: Hip Dysplasia- Norberg' angle



Fig. 2: Hip Ultrasound- Hip dysplasia

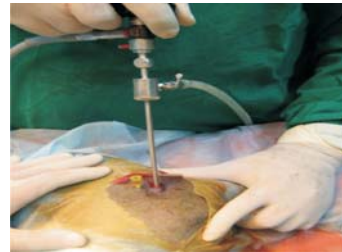


Fig. 3: Hip arthroscopic evaluation



Fig. 4: Femoral capital fracture



Fig. 5: Hip luxation



Fig. 6: Avascular necrosis of femur head

Table 1: Incidence of Hip dysplasia in large breed dogs less than one year of age

Breed	Age of the susceptible breeds						Total
	Less than 4 months		4- 8 months		More than 8 months		
	Male	Female	Male	Female	Male	Female	
German Shepherd	4	3	26	10	6	1	50
Labrador Retriever	2	3	46	20	11	8	90
Great Dane	3	-	12	6	4	-	25
Rottweiler	3	1	5	4	2	2	17
Total (Genderwise)	12(6%)	7(4%)	89(49%)	40 (22%)	23(13%)	11 (6%)	182
Total	19 (10%)		129 (71%)		34 (19%)		182/575 (31%)

each and six percent (9) in cross breed dogs. The age wise incidence at less than one year of age was 2% (3), 1 to 4 years 16 % (26) and above 4 years of age 82% (130). The sex wise incidence in males was 57% (90) and females 43% (69). Benzioni *et al.* (2008) reported that secondary osteoarthritis was most common due to hip dysplasia. Osteoarthritis can be managed with treatment 'triad' that includes pharmacological, exercise restriction and weight control.

Among 106 case of fracture luxation, the incidence in Labrador retriever 23% (24), German Shepherd 5% (5), Spitz 19% (20), Great Dane, Rottweiler, Doberman, Boxer, Pug, Dalmatian, bull dog and Cocker spaniel breeds contributing less than two percent each and 33 percent (36) in crossbred dogs. The age wise incidence at less than one year of age was 51% (54), 1 to 4 years of age 22% (23) and above four years of age 27% (29). Incidence of luxation, fracture of femur head and neck and acetabular fractures are common due to trauma or automobile accidents or secondary to hip dysplasia (Basher *et al.*, 1986). When the response to the conservative management fails surgical treatment should be opted. Various surgical procedure for hip dysplasia includes triple pelvic osteotomy, inter trochanteric osteotomy and pubic symphysiodesis and for hip luxation closed reduction with devita pin, open reduction with transarticular pins or toggle pinning or synthetic capsular techniques can be

performed. Salvage procedure for coxofemoral joint diseases includes excision arthroplasty and total hip arthroplasty (Schulz and Dejardin, 2003).

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