Vol.4 No.4 April–June 2017 ISSN : 2321-6387

Coxo-femoral osteoarthritis in a rescued dancing sloth bear *(Melursusursinus)*

Ilayaraja Selvaraj[1], Arun A. Sha[2], Puspendra K Singh[3] and Yaduraj Khadpekar[4]

[1]Deputy Director Veterinary Services, [2]Director of Veterinary and Research,
[3]Junior veterinary Officer, [4]Senior veterinary Officer,
Wildlife SOS, India

Article Received on 07.02.2017 *Article Published on 04.04.2017*

Abstract

Arthritis is an inflammatory condition of the joint. Types of arthritis are classified based on the condition and involvement of tissue in the articulation. Osteoarthritis is characterized by degeneration and hypertrophy of bone and cartilage. The rheumatic diseases are well documented in small animals but nothing much for any wild animals. In Agra Bear Rescue Facility one of the rescued adult female dancing bears showed the symptoms of lameness on its left hind limb, due to pain its activity and food intake was reduced. However we had provided symptomatic treatment but did not get good response. As a routine protocol tranquilization procedure was carried out to do a closer examination, radiography of the joints and confirmed the chronic osteoarthritis at coxo-femoral joint. Since there is no prescribed treatment for providing permanent cure for this condition, we decided to give periodical pain management as and when required with Meloxicam and Etodolac along with multi vitamins, mineral and glucosamine supplements and maintaining its body weight after isolating the animal in a small observation enclosure. Resulted in improved animal activities and food intake, though it was unable to fully bear the weight on the left hind limb; its walking without much difficulty. Since we understand that these rescued dancing sloth bears were more prone tocoxo-femoral joint damage due to prolonged malnourishment and forced to perform in an unusual standing position on the roads by the kalander (animal performer); we made the radiographic evaluation of hip joints as a mandatory procedure in our routine health check-up. Thus we diagnosed varied degrees of osteoarthritis at coxo-femoral joint in different animals and started providing the above said palliative treatment to enhance their life quality and minimize the stress and sufferings.

***Keywords**: Etodolac, Meloxicam, Osteoarthritis, Coxo-femoral joint, Sloth bear, Pain management.*

Introduction

Arthritis is an inflammatory condition of the joint. Based on the condition and involvement of tissue structure in the articulation, arthritis is classified into different types. Osteoarthritis is an inflammatory and Degenerative Joint Disease (DJD) characterized by degeneration and hypertrophy of bone and cartilage (Venugopalan, 2002) due to phenomenon of aging or a mechanically derived process (Hunter et al., 2002; Radin et al., 1982; Resnick D, 2002.). Bears with erosion of the particular cartilage would have severe pain and would have loss of movement,

stiffness and difficulties in walking, sitting and risinag (Kitchener et al., 2000 & 2004). DJD is reported in different bear species such as Ursusamericanus - American black bear (Storms et al. 2002 & 2004), Ursusmaritimus - Polar bear (Harper et al., 1988), Tremarctosornatus - Spectacled bears (Dierenfeld, 1988), but such report for the sloth bear is rarely available except the Paleopathologic examination study of dry-bone skeletons of captive bears from three different museums in the USA (Greer et al., 1997). Animals caught in the wild seldom (about 1%) have any evidence of OA, in contrast with captive wild animals (Rothschild & Martin., 1993; Rothschild & woods., 1992; Rothschild et al., 1999). Sloth bears in India has been used by the street performers (Kalandar) as dancing bear after the brutal training. The daily stress owing to malnourishment, indiscriminate beating, making them to stand frequently in hind limbs (unusual posture) making them more prone to many kinds of diseases. In this article we have reported a case of osteoarthritis at coxo-femoral joint in a living sloth bears and its management.

Materials and Methods

In Agra Bear Rescue Facility one of the rescued adult female dancing bears, age around 14 years showed the symptoms of lameness on its left hind limb but no visible injury or swelling was noticed either on hind limbs or hip region. However we had provided symptomatic treatment but with less response, the decision was made to immobilise the bear with InjXylazine hydrochloride @ 2mg/kg and Inj Ketamine hydrochloride @ 5mg/kg for close clinical and radiographic examination of the hip and knee joint. The animal was positioned on dorsal recumbancy for taking true ventro-dorsal hip joint articulation viewing image, right lateral recumbancy position for taking left knee joint image and blood sample were collected for detailed hemato -biochemical analysis.

Result and Treatment

The detail radiographic examination of the hip joint revealed osteoarthritis of left coxo femoral joint (fig 1) and the haemato-biochemical values were within range. The animal was shifted to a small enclosure for better observation and provides suitable enrichments to improve the bear's activity along with treatment and feeding regulated to maintain its body weight.

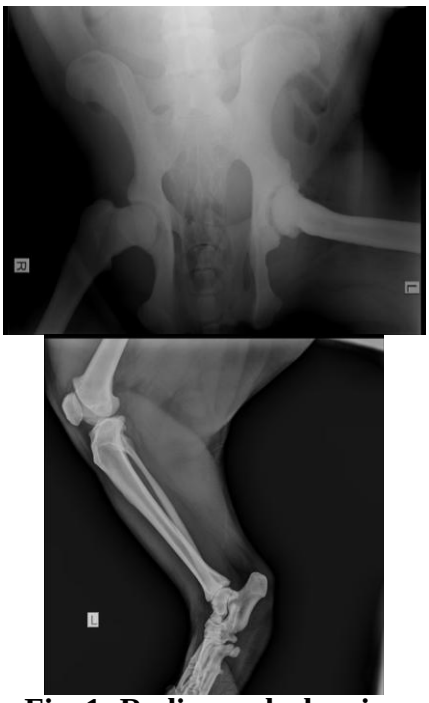

Fig. 1: Radiograph showing osteoarthritis of left coxo-femoral joint and normal knee joint of sloth bear

Meloxicam @ 0.2 mg /kg and Etodoloc 400 mg sustain release tablet administered orally per day for 7 days along with multi vitamin, minerals and glucosamine supplementation. However the animal was unable to bear its weight fully on left hind limb and its activity pattern and food intake became normal and it started walking without much difficulty.

Discussion

Degenerative Joint Disease (DJD) is a common disorder of humans and animals. It is generally regarded as a non-inflammatory condition of particular cartilage resulting from natural aging, trauma, or disease. DJD is a sequel to cartilage insult, but because cartilage lacks intrinsic vascularity it does not become inflamed, thus the designation of DJD as a non-inflammatory condition (Charles *et al*., 1985). Animals and some microbes lack the capacity to synthesize pantothenate (vitamin B5) and are totally dependent on the uptake of exogenous pantothenic acid (AntonioSampedro *et al.*, 2015). The deficiency of vitamin B5 leads to arthritis and rheumatism (Barton-wright &Elliott., 1963). Removal of an animal from its natural habitat is associated with a 10 fold increase in the prevalence of osteoarthritis, whether the animals were zoo or colony raised (Rothschild & Martin., 1993; Rothschild & woods., 1992; Rothschild *et al*., 1999). Whiteside *et al*., (2006) stated that Meloxicam has shown good clinical efficacy for the treatment of osteoarthritis and other painful conditions in large felids. *Ball et al*., (2001) reported the use of Etodolac as an adjunct to managing osteoarthritis in captive Bengal tigers (*Pantheratigrisbengalis*) (Ball *et al*., 2001) and Budsberg *et al.,* (1999) also described the efficacy of Etodolac in improving hind limb function in dogs with osteoarthritis of the hip joint. Kitchener (2004) suggested that ensuring an appropriate level of activity in zoo bears may be important to minimize the development of skeletal diseases.

Conclusion

The authors strongly suspect that the predisposing cause for osteoarthritis in this rescued dancing sloth bear might be due to its previous history of kalandars making the bears stand on its hind limbs a lot which is unusual in nature thus the constant pressure and overload on hip joints and hind limbs. After we learned that these rescued sloth bears were more prone to Coxo femoral osteoarthritis, we made the radiographic examination and evaluation of hip joins as a mandatory procedure to find normal (Fig. 2) and affected hip joints (Fig. 3).

Fig. 2: Normal hip joint of Sloth bear (Female & Male)

Fig. 3: Various digress of hip joint osteoarthritis is sloth bears

Thus we diagnosed various degrees of osteoarthritis at coxofemoral joint and initiated the treatment as mentioned. Providing isolated enclosure, suitable enrichment activities along with periodical medication (meloxicam, etodolac, vitamins, mineral and glucosamine supplement) and radiographic evaluation to further improve the treatment and care will minimize the pain and suffering thus will help to provide better quality of life to the bears in captivity.

Acknowledgement

We greatly appreciate the support of K. Satyanarayan and G. Sheshamani of the Wildlife S.O.S. who made these studies possible. We thank the animal care staff at Wildlife S.O.S. and Uttar Pradesh Forest Department for their kind co-operation.

References

A. Venugopalan. 2002. Essentials of Veterinary Surgery, (8th Ed.), Oxford and IBH publishing Co. Pvt. Ltd. New Delhi.121-124

Antonio Sampedro., Javier Rodriguez-Granger., Julian Ceballos., Luis Aliaga. 2015. Pantothenic acid: an overview focused on medical aspects. European Scientific Journal July 2015 edition vol.**11**, No.21

Barton-Wright EC, Elliott WA.1963. The pantothenic acid metabolism of rheumatoid arthritis. *Lancet.* **2**: 862-863.

Ball, R.L., L. Weiner, and A. Richner. 2001. Etodolac as an adjunct to managing osteoarthritis in captive Bengal tigers (*Pantheratigrisbengalis*). Proc. Am. Assoc. Zoo Vet.

Budsberg SC, Johnston SA, Schwarz PD, DeCamp CE, Claxton R. 1999. Efficacy of etodolac for the treatment of osteoarthritis of the hip joints in dogs. Journal of the American Veterinary Medical Association. **214(2):** 206-210.

Charles D. Newton and David M. Nunamaker.1985. Textbook of Small Animal Orthopaedics" Degenerative Joint Disease and Traumatic Arthritis (Chapter **87**). J.B. Lippincott Company.

Dierenfeld, E.S. 1988. Nutritional considerations in feeding the captive spectacled bear. Proceedings of the First International Symposium on the Spectacled Bear, Lincoln Park Zoo, Chicago, Illinois, USA. vol**1**. 115-130.

Greer, M., Greer, J.K. & Gillingham, J. 1977. Osteoarthritis in selected wild mammals. Proceedings of the Oklahoma Academy of Sciences. Vol **57**. 39-43.

Harper, J., White, S., Stewart, L. &Pelto, J. 1988. Inhalant allergic dermatitis in a polar bear Proceedings of the Annual Meeting of the American Association of Zoo Veterinarians, Toronto, Ontario, Canada, November 6-10. p. 97-98.

Hunter DJ, March L, Sambrook PN. 2002. Knee osteoarthritis: the influence of environmental factors. Clin Exp Rheumatol; **20:**93-100.

Kitchener, A.C. 2004. The problems of old bears in zoos, International Zoo News, Chichester, UK / North of England Zoological Society, Chester, UK. Vol.**51**. 282-293.

Kitchener, A.C., Kolter, L. & Brownstein, D. 2000. Problems with old bears in zoo EEP Yearbook 1999/2000. Including Proceedings 2000 EAZA Conference, Aalborg, 19-24 Sept. 625-628.

Radin EL, Orr RB, Kelman JL, Paul IL, Rose RM. 1982. Effect of prolonged walking on concrete on the knees of sheep. J Biomechanics; **15**:487-92

Resnick D. 2002 .Diagnosis of bone and joint disorders. Philadelphia: Saunders.

Rothschild BM, Hong N, Turnquist JE. 1999. Skeletal survey of Cayo Santiago rhesus macaques: osteoarthritis and apical plate excrescences. Semin Arthritis Rheum; **29**: 100-11.

Rothschild BM, Woods RJ. 1992. Osteoarthritis, calcium

pyrophosphate deposition disease, and osseous infection in Old Word Primates. Am J Phys Anthropal; **87:** 341-7.

Rothschild BM., Martin LD. 1993. Paleopathology: disease in the fossil record. London: CDC press.

Storms, T.N., Beazley, S.L., Schumacher, J. & Ramsay, E.C.2004. Thyroid cystadenoma, colloid goiter, and hypothyroidism in an American black bear (*Ursusamericanus*). Journal of Zoo and Wildlife Medicine . vol**35**.82-87.

Storms, T.N., Graham, P.A. & Ramsay, E.C. 2002. Hypothyroidism in an American black bear (*Ursusamericanus*) and thyroid testing in bears. Proceedings of the Annual Meeting of the American Association of Zoo Veterinarians, Milwaukee, Wisconsin, October 5-10. 28-30.

Whiteside DP, Remedios AM, Black SR, Finn-Bodner ST. 2006. Meloxicam and surgical denervation of the coxofemoral joint for the treatment of degenerative osteoarthritis in a Bengal tiger (Pantheratigristigris). J Zoo Wildl Med; 37(3): 416-9.