Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
www.entomoljournal.com
JEZS 2021; 9(1): 1169-1171

Received: 28-11-2020
Accepted: 30-12-2020

PK Boro
Lakhimpur College of Veterinary Science, Assam Agricultural University, North Lakhimpur, Assam, India

P Gogoi
Veterinary Officer, State Veterinary Dispensary, Bordihingia, Golaghat, Assam, India

B Choudhary
Regional Head (North East) Wildlife Trust of India, Noida, Uttar Pradesh, India

Corresponding Author:
PK Boro
Lakhimpur College of Veterinary Science, Assam Agricultural University, North Lakhimpur, Assam, India

Successful conservative management of angular leg deformity in a wild Asian elephant (Elephas maximus) calf

PK Boro, P Gogoi and B Choudhary

Abstract
A wild Asian elephant (*Elephas maximus*) calf of 5 months during the period of rehabilitation develops affection in the metatarsophalangeal joint of right hind limb, which became visible as vulgas angular leg deformity. Abnormal gait with lameness and frequent shifting of weight was the prominent sign. The affected leg was successfully brought into right alignment by applying a metallic shoe for 45 days without any technical aids.

Keywords: Asian elephant, Vulgas angular leg deformity, metatarsophalangeal joint, metallic shoe

Introduction
Angular leg deformity (ALD) is a deviation from the normal axis of limb (in the frontal plane) and is defined by the joint involved and the direction of the distal aspect of the limb is deviated [1]. Animals with ALD presents with either a valgus deformity (lateral deviation of the limb distal to the location of the deformity) or a varus deformity (medial deviation of the limb distal to the location of the problem [2]. ALD in wild animals is reported in cervids including - fallow deer (*Dama dama*), Red deer (*Cervas elaphus*), white tailed deer and in a giraffe (*Girraff acamelopardalis*) calf [1] but reports in elephants is scarce. ALD primarily affect young growing animals' upto 7 months of age but can be seen in older animals (eg. Trauma induced) [1]. Causes and risk factors are often related to asymmetrical growth of the physis, ligament rupture or orthopedic injuries [1]. This paper presents a clinical case of Valgus Angular leg deformity in an elephant calf which was rescued and admitted to a CWRC (Centre for Wildlife Rehabilitation and Conservation) located near Kaziranga National Park of Assam in India. CWRC is one of the pioneer wildlife rehabilitation Centre in India, run by a nongovernmental organization, Wildlife Trust of India along with the Assam Forest Department. The facility rehabilitates displaced indigenous wild animals of different species and among them the elephant calves are the most common mega herbivorous animal which is rescued and successfully rehabilitate back to the wild.

Clinical findings
The mobile veterinary unit of CWRC rescued an Asian elephant calf of approximately 1 month old. On clinical examination few lacerations on the body surface was found. Laceration was treated with topical application of povidone iodine daily for a week. The calf was raised at the facility with skimmed milk powder Nestogen & Nestum (Nestle) with supportive treatment viz. vitamin @ 10-20 ml/day (Vimeral, Virbac India), mineral 20-30 ml/day (Super care 365, Excellar Healthcare pvt. Ltd.) and milk replacer (frequency 7-8 times/day). Gradually, the calf get accustomed with the other calves after a period of 1 month quarantine.
At the age of about 3 months angular bending of the tarso-metatarsal region of the right hind limb was observed (Fig 1, 2). Lateral deviation (vulgus deformity) was subsequently become significant on gradual bone conformation development with age. There was no presence of wound and sign of fracture or dislocation either. But the calf had abnormal walking gait, due to which she always remained the last one to reach their enclosure or at the time of walk into the forest.

Conservative Treatment
A metal shoe of iron was made with the help of an iron smith (Fig. 3). The circumference of

the footpad and limb, along with the length of the lower limb was taken to make the shoe. For application of the shoe, chemical restraining was done with xylazine hydrochloride @ 0.01 mg/kg & ketamine hydrochloride @ 5 mg/kg body weight. To fit the shoe double layered cotton was wrapped around the foot pad and limb (below the stifle joint). It was firmly wrapped and tied with gauge bandage and then the shoe was applied (Fig. 4). She was given topical shots of anti-inflammatory meloxicam (Melonex @ 5 ml i.m.) and Vitamin B complex (Neurokind @ 5 ml i.m.) on alternate days for 7 occasions. On 20th day slight erosion of skin was observed near the middle toe. Antihistaminic Chlorpheniramine maleate (Avil @ 5 ml i.m.) was given topically for 5 occasions. Frequent effort to remove the bandage by the calf was observed till the end of the application of the shoe. The bandage get wet and soiled due to urine and sometimes rain. On 25th and 40th day the calf was sedated again for new application of cotton and gauge bandage. At 45 days the shoe was removed and observed for 5 days and was kept in the enclosure with an open paddock with limited area for movement. The calf regained her normal posture and gait and the limb was brought into right alignment (Fig. 5).

Fig 1: Affected limb

Fig 2: Affected limb

Fig 3: Metal shoe

Fig 4: Applying the metal shoe in calf

Fig 5: Recovered limb

Results and Discussion

Angular limb deformities of a significant degree left untreated may result in irreparable limb misalignment that can result in joint abnormalities, muscle contracture, and ulcerative pododermatitis [4]. In the present case, the Asian elephant calf was recovered uneventfully using the metallic shoe which was in collaboration with the reported by others in two Asian elephants with the use of glue on shoes [3]. During the period of application of the shoe the calf developed skin erosions near the toes and in the lateral side of the metatarsophalangeal joint which was successfully cured by topical antibiotic medicines. These side effects/drawbacks of the shoe can be

eliminated by correction of the shoe. In foals, retardation of growth on the convex aspect of the deformity is consistently effective in correction of angular limb deformities and can be performed using several different systems of implants[5]. Growth plate retardation by transphyseal bridging proved successful in correcting valgus limb deformity of the proximal tarsometatarsus [6]. Unlike equine and human shoeing, elephant shoeing is more difficult application due to their intelligence. The authors had tried rubber shoe, which was easily removed by the calf. The application of casts and splints in pet animals and livestock has proven satisfactory results but in large animals like in elephants' could be a clinical challenge to the wildlife veterinarians. The prototypes of shoes will depend on the size of the elephant limb[3]. Such experimental finding requires time and newer approach of science, quality of metal and soft padding[3]. The remarkable right alignment of the limb and regaining of normal posture is more likely to be a newer invention of conservative treatment of angular leg deformity of elephants in human care.

References

1. Chase C, Lutz K, McKenzie E, Tibary A. Blackwell's Five-Minute Veterinary Consult: Ruminant. 2nd edition. Wiley Blackwell 2017.
2. Auer JA, Stick JA. Equine surgery. 5th edition. Saunders publication 2018.
3. Johnson G, Smith J, Peddie J, Peddie L, DeMarco J, Wiedner E. Use of glue-on shoes to improve conformational abnormalities in two asian elephants (*Elephas maximus*). Journal of Zoo Wildlife Medicine 2018;49(1):183-188.
4. Greenacre CB, Aron DN, Ritchie BW. Dome osteotomy for successful correction of angular limb deformities. Proc. Annu. Conf. Assoc. Avian Vet 1994, 39-43
5. Fackelman GE. Deformities of the appendicular skeleton. *In:* Jennings P. B. (ed.). The Practice of Large Animal Surgery. W. B. Saunders Co., Philadelphia, Pennsylvania. 1984, 950-957.
6. Tawnia J Zollinger, DVM, Kay A Backues DVM, Dipl ACZM, Armando G. Burgos- Rodriguez, D.V.M, Journal of Zoo and Wildlife Medicine 2005;36(4):689-697.