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Conservative radio-ulnar fracture treatment and comparison of the serological and leukocyte parameters in pariah kites: A case report

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Abstract

Three Pariah kites were rescued and were brought to school of wildlife forensic and health on different occasions, upon detailed physical examination and radiographs; it was found that all three birds had complete, open, transverse fracture of their respective radius and ulna. The birds were severely dehydrated and were not fit for anesthesia; the affected wing was immobilised in a figure of 8 bandages. The birds were treated with fluid therapy, analgesics, injection Clindamycin and dietary calcium supplementation. For above mentioned birds, the values such as ALP, TLC, and serum calcium level were recorded; both before and after the fracture was done healing. Finally, after successful treatment birds were released back in their natural habitat.

Keywords: Pariah kites, fracture, avian serological parameters

Introduction

Black/Small Indian/Pariah (*Milvus migrans govinda*), kites are opportunist hunters and belongs to bird of prey and fed on fishes, small mammals, birds and rodents. They use strong talons to pick the prey animal. The overall population trend is considered to be stable. The IUCN (International Union for Conservation of Nature) has categorized and evaluated these common Pariah Kite species and has listed them as of "Least Concern".

Materials and methods

All the Kites studied in this article were brought to school of wildlife forensic and health. For treatment purposes. During all this, They were not harmed in any way. All the Animal welfare guidelines were strictly followed. Three Pariah kites were rescued and presented to school of wildlife forensic and health, on different occasions; the birds were found collapsed and could not fly. Complete physical and radiographic examination revealed the open (compound) radio-ulnar fracture of the right wing. Just like most avian patients these birds were also under severe stress, because of the initial trauma and the additional stress of restraint and handling (Withrow, S. J. 1982) [1]. The birds were dehydrated and stabilised by giving subcutaneous fluids, followed by antiseptic dressing, immobilisation of fracture by applying a splint and Glucose water drops were fed. Till then the birds were kept in a warm, dark, quiet environment for several days and the wound associated with open fracture was routinely cleaned and dressed with 10% Povidone Iodine solution. For analgesia drops. Meloxicam (MeloneX®) @ 0.2mg/kg once daily for five days were fed orally, Antibiotic Clindamycin @ 75mg/kg (James W. Carpenter 2022) I/M was administered once daily for 11 days along with that Calcium supplement Setcal® was sprinkled on meat pieces and were offered as a feed for 30 days. Multivitamin supplement i.e. Birdplus® was given orally for 30 days. The daily maintenance fluid requirement for raptors and psittacine birds has been estimated at 50ml/kg/day (5% of the body weight) (Redig PT, 1984) [2]. The Blood was drawn from the unaffected wing vein, before and after the fracture was done healing, various blood parameters (as listed in table no. 1, 2 and 3) were taken into considerations, as they reflect process of fracture healing.

Table 1: Alkaline phosphatase values of the kites before and after the fracture was healed

Kite	Alkaline Phosphatase (Before) (U/I)	Alkaline Phosphatase (After) (U/I)
Kite 1	250	65
Kite 2	243	67
Kite 3	220	55

Table 2: Total leukocyte count of the kites before and after the fracture was healed

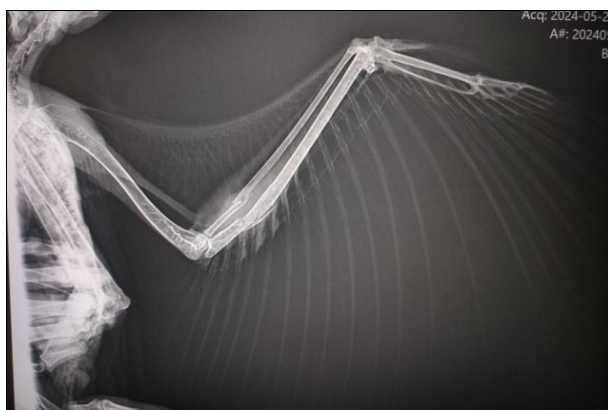
Kite	Total Leukocyte Count (Before) ($10^3/\text{mm}^3$)	Total Leukocyte Count (After) ($10^3/\text{mm}^3$)
Kite 1	65.3	28.7
Kite 2	58.7	32.1
Kite 3	54.2	31.1

Table 3: Serum calcium levels of the kites before and after the fracture was healed.

Kite	Serum Calcium level (Before) (gm/dl)	Serum Calcium level (After) (gm/dl)
Kite 1	8.06	9.11
Kite 2	8.01	9.32
Kite 3	8.52	9.43

Data tabulation

Here the statistical data are arranged in the form of tables designed to provide information that are easily understood. The statistical tabulation is the simplest and most revealing mean for presenting data in an orderly manner.

**Fig 1:** Kite 1 with a complete, overriding distal fracture of left wing**Fig 2:** Kite 2 with a complete distal fracture of left wing; callus formation has already started

The 't' test was used to compare the means of two measurements taken from this sample.

Following procedure was followed

T test (table value) = 4.30 (df = 2; p= 0.05)

- 1) Calculate Mean of differences
- 2) Calculate Standard deviation of differences
- 3) Calculate Standard Error of differences
- 4) Calculate 't' test

- 5) Compare the calculated t value with table t value

Results and Discussion

In our studies it was found that, ALP levels showed a rise before the fractures started healing. Dehydration can also take part in elevating ALP levels. As the fracture healed and dehydration was kept under check the ALP level came back to normal. There was significant difference between before and after values of ALP. After completing the course of mentioned antibiotic, there was significant decrease in total leukocyte counts. Serum calcium level also showed significant difference before and after the bone was done healing, although the difference was on lower end, as due to the homeostasis was maintained by an orchestra of hormones and also we were supplementing the calcium in the diet as well.

Physiotherapy

Conservative treatment heavily relies on physiotherapy for the successful rehabilitation of the birds. After sufficient healing short sessions of physiotherapy were practiced on the birds where the elbow and carpus are extended and flexed together repeatedly and also held in extension for short periods. After sufficient recovery, the birds were kept in aviary where they had ample of space for exercise and practice short flights. While offering the feed, they were made to practice short flights and then were offered with meat pieces. This way the birds were encouraged to use affected wing.

Conclusion

Three Pariah kites were rescued with complete, open, transverse fractures of their radius and ulna. Severely dehydrated, they received fluid therapy, analgesics, Clindamycin injections, and dietary calcium supplementation. Immobilization of the affected wing was achieved using figure-of-8 bandages. ALP, TLC, and serum calcium levels were recorded before and after healing, showing significant improvements. Following successful treatment, the kites were released back into their natural habitat.

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