

# Diagnosis and management of chronic arthritis in a 39 year old Sulphur-crested Cockatoo

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## Abstract

Avian patients are living longer in captivity and are being kept by an increasingly aging population that can empathise with painful arthritis/osteoarthritis changes associated with this geriatric status. Recognising this gradually debilitating condition is not aided by the inherent desensitisation of clients to small but significant changes in behaviours such as play, flying, interaction and climbing (Baine, 2012). This case report focuses on diagnosis and treatment of arthritis/osteoarthritis in a 39 year old Sulphur-crested Cockatoo (*Cacatua galerita*). This required a collective perspective from the client, prior veterinarians and involved nursing staff to re-evaluate quality of life changes over time. The diagnostic avenues utilised for this case included physical and distance examination, biochemistry and radiography, long term use of analgesia and physiotherapy, repeat physical examination and biochemistry, as well as regular distance contact with the owner. This has resulted in a successful outcome for both client and patient.

## Case Report

A 39 year old female Sulphur-crested Cockatoo (*Cacatua galerita*) was presented to the Bird & Exotic Clinic for an annual health check to ascertain suitability for boarding. The patient was an indoor only solo bird on a diet of budgie seed with a teaspoon of parrot seed per day, as well as *ad libitum* vegetables (no starches and limited corn) with access to apple as a treat. No prior history of arthritis was recorded. Any bird entering the boarding facility is required to undergo testing for common contagious diseases and any further diagnostic processes which were deemed necessary by the attending veterinarian to treat conditions that may interfere with the patient's welfare during their stay.

The client had no new current health concerns for the patient during history taking in consultation. When concern over changes in behaviour or posture were made by the attending veterinarian who had observed the bird previously in boarding, the client's response was that of no

new change in the patient and instead was a way of her always being. During examination the patient was noted to perch with a hunched low seated posture through the lower back. Physical examination revealed marked pronation of the right hock due to angulation from the stifle with subsequent compensatory supination of the right foot. The left leg was favoured for weight bearing and showed mild hyperkeratosis of the central tarsal pad. Further examination showed a significant reduction in range of motion of the carpi bilaterally by more than 50% and a moderate reduction in range of motion of the elbows bilaterally. The overall condition of the patient was above average with a body condition score of 3.5/5 (BCS). Faecal direct microscopy and with gram staining were negative respectively. Chlamydia ELISA and PCV/BC/TPP were negative and within normal limits respectively. The patient's weight was 656g.

Radiography showed both femurs to have an irregular circumferential size throughout the entirety of the bones length. The right femur had significant irregular periosteal bone proliferation distally while the left femur had reduced cranial-caudal diameter distally prior to the epicondyles. Bilateral osteophytes caudal to the patellar ligament insertion of the joint capsule were present with mild ossification of the patellar ligaments themselves. The elbow and carpal joints were normal and previous barrel chesting and microhepatica were noted. Refer to figures 1 and 2.

Due to radiographic and physical examination findings a diagnosis of osteoarthritis of the stifles and tendon contracture of the carpi and elbows was made. A treatment trial of nonsteroidal anti-inflammatory (NSAID) pain relief and passive physiotherapy was warranted. Biochemistry was performed prior to commencement due to possible effects of NSAIDs on the avian kidneys. This is extrapolated from feline studies of long term use which was associated renal failure and death (Sparkes et al., 2000). Non-fasting serum biochemistry showed only a moderate hypercholesterolaemia of 14.2 mmol/L (reference interval 3.5-7.4 mmol/L).



**Figure 1.** Ventro-dorsal view of a 39 year old female Sulphur-Crested Cockatoo (*Cacatua galerita*) showing irregular cortical bone changes of bilateral femurs, as well as remodeling of the femoral condyles with patellar ligament ossification. Barrel chesting and microhepatica are also visible.



**Figure 2.** Left lateral view of a 39 year old female Sulphur-Crested Cockatoo (*Cacatua galerita*) showing further views of irregular femoral cortices, as well as distal femoral and proximal tibiotarsal condylar remodeling of the joint surfaces.

Initial treatment trial consisted of a course of oral Meloxicam™ (Ilium, Australia) at 0.2mg/kg by mouth twice a day for five days and then 0.2mg/kg by mouth once per day for a further five days. The client was instructed to increase daily exercise in the form of encouraged play, and attempt slow bicycling of the legs if able.

During the treatment trial a significant increase in willingness to exercise, unprovoked movement in the cage and general mood were noted by the owner. These improvements were lost following cessation of meloxicam treatment. With the positive response and significance of skeletal changes on radiography an ongoing dose of Ilium Meloxicam™ 0.2mg/kg by mouth once per day ongoing was recommended. Small plain biscuit pieces were used to absorb the allocated meloxicam dose and encourage ingestion. This spares the client - bird bond.

Further changes included wrapping the main preferred sleeping perch in soft spongy bandaging material (Vet-wrap™); varying perch diameters (natural barked wood); encouraging foraging throughout the cage as opposed to one bowl (Lierz et al., 2012); increased exercise outside of the cage; and continued low calorie diet with the only treat food offered being that with medication.

One month after commencing treatment the patient was noted to move from 656g to 618g when re-weighed at first check. Serum biochemistry panel was unremarkable and the change in weight was attributed to increased exercise.

The ongoing plan consists of regular biochemistry once every three months due to ongoing non-steroidal anti-inflammatory use. At these times a full physical exam is performed, while regular communications are made between exams.

## Discussion

The current focus for geriatric patients has been placed on cardiac, hepatic and renal health due to the long term effects of sub adequate dietary and husbandry. Due to this emphasis we are seeing more patients "healthy" in terms of body function, and being prey species, more able to mask signs of chronic pain from arthritis/osteoarthritis.

Our current annual consultation approach for geriatric or at risk birds is to discuss the following behavioural factors and how they have changed over a prolonged period of time. This time period however is beyond the past year, and includes comparison between the young adult bird and its current state. These discussion points are lethargy or overall willingness to interact with the owner and environment; abnormal aggression; atypical body posture; lameness or changed gait; reduced grooming behaviour;

and reduced appetite or food motivation.

These signs hold particular importance when no abnormalities beyond skeletal changes in a full physical examination, crop/faecal direct microscopy and gram stain, biochemistry, haematology and chlamydia testing are found.

The next fundamental diagnostic, and possibly most underutilised, tool in this process is radiography. For both conjunctive information on organ and body function to biochemistry and to assess all joints, including those of the wings and the structure of the long bones to find any signs of degenerative joint changes with osteoproliferation.

A diagnosis of arthritis/osteoarthritis associated pain is made by either singular or combination of radiographic findings (any form of osteoarthritic changes) or with a positive response to a treatment trial of meloxicam, physiotherapy and husbandry changes if radiography cannot be performed. Radiography is always recommended but can be declined on cost, anaesthetic safety and client consent.

Current primary analgesic agent of preference is oral meloxicam. The main concern for this medication is the long term effect it may have on renal or gastrointestinal integrity particularly during times of physiological stress that may not be noted by the owner and thus not brought to the attention of the vet. These periods of stress can cause hypovolaemia or hypoperfusion of the kidneys and thus injury related to lack of perfusion. While minor, these effects will become cumulative. Current studies of safety in avian patients is limited for long term use. One study has shown that high doses of meloxicam at 2.0mg/kg BID for 14 days produces no histopathological alterations in the kidneys (Sinclair et al., 2010).

To address this the patient is given a physical examination/weight in and a biochemistry at minimum of once every three months during treatment. The dose currently used is 0.2mg/kg due to recognised pain reduction over the practice's history and takes into account the lack of studies in safety of long term use. Dose rates in literature shown to have a satisfactory pain reduction range from 0.1mg/kg to 2.0mg/kg with a frequency of every 12 hours (Carpenter, 2013). The dose frequency is generally started at once per day however owners are advised to increase this to two times per day for two-three day periods when signs of pain are noted, before reducing back to normal dosing.

Further medications that can be used in conjunction include Dimethyl Sulfate (DMSO):Trimethoprim sulfa which can be applied topically for short periods around pododermatitis lesions of any grade (1-4). DMSO allows local penetration of the skin and provides analgesic ef-

fect, while also allowing Trimethoprim sulfa to act locally by absorption into surrounding tissues.

Oral butorphanol used is a potent analgesic in avian patients (Lightfoot, 2010) with effect of at most 1-2 hours. Butorgesic™ is used at 0.5mg/kg in our practice in two instances, either as an adjunct to meloxicam therapy for severe cases or in renal insufficiency cases in which NSAID use is contraindicated. Butorphanol is generally given in more severe osteoarthritis cases in the evening to allow improved sleep and provide cover while meloxicam's effect is waning. Within the author's practice it has been noted that butorphanol causes significant lethargy in avian patients

Future pain relief alternatives are currently limited. These include tramadol and gabapentin with limited avian studies regarding dose rates and efficacy (Baine, 2012) as well as liposome-encapsulated butorphanol tartrate which has shown promise for prolonged anaesthesia in Amazon parrots (*Amazona ventralis*) (Lightfoot, 2010), and Aspirin which requires further research of efficacy in avian patients.

Husbandry changes to aid chronic arthritis/osteoarthritis pain are recommended as the following:

Addressing dietary trends to avoid obesity; softening of the sleeping perch or main favoured perch with vetwrap; varying perch diameter (natural barked wood for grip); flat surfaces and ramps padded with material such as folded linen sheets; food and water bowls easily accessible from a comfortable perch or surface; passive physiotherapy by increasing voluntary exercise through play; and active physiotherapy by either flexion/extension of affected joints or complete limb manipulation (i.e. bicycling for 15-20 repetitions twice per day).

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