
USE OF INTERLEUKIN RECEPTOR ANTAGONIST PROTEIN (IRAP) IN A MULTI-MODAL THERAPEUTIC REGIME FOR OSTEOARTHRITIS IN AN ASIAN ELEPHANT (*Elephas maximus*)

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Abstract

A ~41-yr-old female Asian elephant (*Elephas maximus*) experiencing forelimb stiffness and decreased range of motion was diagnosed with bilateral carpal osteoarthritis (OA). Symptomatic^a and OA specific^b treatments had mixed success in alleviating clinical signs.

Standing sedation combined with local anesthesia was employed to deliver ultra-sound guided carpal articular injections using an autologous conditioned serum product, interleukin receptor antagonist protein (IRAP)^c combined with hyaluronic acid and amikacin. IRAP was delivered into radiocarpal, intercarpal, and carpometacarpal joints bilaterally at 2 wk intervals for three treatments in each joint.¹ Symptomatic treatment was assessed using keeper photos, videos, stiffness and mobility charts, and daily observations. Disease treatment was assessed using serial monitoring of complete blood counts, serum chemistries, protein electrophoreses (EPH), amyloid A (SAA), and haptoglobin^d levels; carpal radiographs; and articular prostaglandin E2 (PGE2)^e values.

Following articular injections, increased discomfort lasted ~24-48 hr, then resolved. Within 2 mo of completing therapy, improved range and speed of motion were evident. Decreased inflammation was evidenced by heat degraded protein, SAA, haptoglobin, and PGE2 levels. Improved clinical signs and bloodwork parameters lasted ~5-6 mo, at which point IRAP was repeated.

Based on the positive symptomatic and disease response noted, autologous therapy using IRAP is recommended for consideration for carpal osteoarthritis in elephants. Serum and joint inflammatory markers were instrumental in gauging response to treatment, progression of disease, and determining when additional treatments were indicated, and should be included in the diagnostic and therapeutic approach to osteoarthritis.

^aCosequin, Veterinary Sciences, Inc, Lancaster, South Carolina 29720 USA; Gabapentin, Actavis Pharma, Inc, Parsippany, New Jersey 07054 USA; Ibuprofen, Amneal Pharmaceuticals, Bridgewater, New Jersey 08807 USA; Gastrogaurd, Merial, Inc, Duluth, Georgia 30096 USA

^bLegend, Merial, Inc, Duluth, Georgia 30096 USA; Adequan, Luitpold Pharmaceuticals, Inc, Animal Health Division, Shirley, New York 11967 USA

^cInterleukin receptor antagonist protein, Dechra Veterinary Products, Overland Park, Kansas 66211 USA

^dProtein electrophoresis, serum amyloid A, and haptoglobin measurements performed at Acute Phase Protein Laboratory, Division of Comparative Pathology, Miller School of Medicine, University of Miami, Miami, Florida 33136 USA

^eProstaglandin E2 measurements performed at the Orthopedic Research Center, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, Colorado 80523 USA

Key words: Arthritis, Asian elephant, *Elephas maximus*, inflammatory markers, interleukin receptor antagonist protein, treatment

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