ANALGESIA FOR THE "BIG-UNS," ELEPHANTS, RHINOS, GIRAFFES AND HIPPOS

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Abstract

Inherent in the Veterinarian's Oath is the prevention and relief of animal suffering; and, for zoological veterinarians, this includes a diverse array of animal groups, including the 'big-uns' – the megavertebrates. Provision of analgesia is fundamental to relief of suffering. Analgesia can be defined as the relief of pain without loss of consciousness.[4] Effective pain relief in megavertebrate mammals has been limited by lack of science-based information addressing pharmacodynamics and effectiveness of analgesics; the role of the rumen and its contents on pharmacokinetics of analgesics in large ruminants; the challenges of pain recognition; the difficulty in assessing pain location, intensity and response to analgesic therapy; and the obstacles associated with analgesic administration and patient acceptance/compliance. Only four pharmacokinetic studies for analgesic use in elephants have been published; three for the non-steroidal anti-inflammatory agents ibuprofen[1], phenylbutazone[2], and ketoprofen[3] and one for the opioid butorphanol.[6] No known pharmacokinetic publications are available in the literature for rhinos, giraffes, and hippos. Most of the information regarding use of analgesics in megavertebrates is anecdotal and is dispersed in case reports, abstracts, and book chapters throughout the literature or passed on by work of mouth from one veterinarian to another. The recommended dosages for analgesics from these sources are generally extrapolated from domestic animal studies and then modified as indicated by experience. Metabolic/Allometric scaling has been used to scale antibiotic dosages from domestic species to the elephant; however, the scaled dosages were considerably different from dosages recommended by pharmacokinetic studies.[6] Consequently, it is unlikely that metabolic scaling will work for estimating dosages of analgesics in megavertebrates, especially if the drugs are protein bound or have unusual metabolic pathways. It is clear that there is a need for more pharmacokinetic studies involving analgesic drugs in all of the megavertebrate species, if we are to care for these species properly.

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