
MEDICAL MANAGEMENT AND INTENSIVE CARE IN A NORTHERN WHITE RHINOCEROS (*Ceratotherium simum cottoni*)

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Abstract

Medical management of megavertebrates can be challenging as their large size can limit the scope of diagnostics possible, increase the risk of restraint, and reduce therapeutic options available. Additionally, megavertebrates are charismatic and high profile animals, and end of life decisions typically involve lengthy deliberation and multiple invested parties. Delivery of intensive care is possible with appropriate teamwork and planning, as recently demonstrated by a case at the San Diego Zoo Safari Park. The guiding tenets of case management were identification of stakeholders for communication, step-wise and serial diagnostics, systematic review of therapeutic options, including use of consultants as needed, contingency planning for emergency situations, and finally health assessment and evaluation of quality of life.

A 41-yr-old northern white rhino (*Ceratotherium simum cottoni*) presented acutely in May 2015 with a subcutaneous abscess growing beta-hemolytic *Streptococcus* sp. While significant evacuation of purulent material was performed, complete resolution of the abscess could not be achieved due to the position of the abscess and difficulty in locating a ventral drainage site. Antimicrobials were prescribed (trimethoprim and sulfadiazine oral antibiotic powder, Uniprim®, 20 mg/kg p.o., s.i.d.) in May and after recurrence of abscess and drainage in August, but compliance was intermittent. Over the following months, more aggressive medical and eventually surgical management was employed in an attempt to resolve this acute medical issue, while other more chronic medical issues, such as ileus and urinary tract infection, were investigated and managed.

Using a combination of behavioral, chemical, and mechanical (chute) restraint, multiple investigative procedures were performed to better elucidate the disease process. Chute restraint and/or sedation (butorphanol, 20µg/kg i.m. ± medetomidine, 7.5 µg/kg i.m., or diazepam, 200-250 µg/kg) allowed for protected contact and more invasive diagnostics, including serial rectal and transcutaneous ultrasounds, without which antemortem diagnosis of the rhino's retroperitoneal abscess would not have been possible. Surgical drainage of one abscess was achieved under a combination of chute restraint and standing sedation. Serial blood sampling allowed for tracking of the case and identification of disease progression and health decline, seen as persistent elevation in fibrinogen and globulins, and hypoglycemia that became more profound prior to death.

Medical management included oral antibiotics and when compliance became poor, both rectal (doxycycline, 20 mg/kg p.o., b.i.d.) and parenteral antibiotics (tulathromycin Draxxin®, 2.5 mg/kg i.m., q7d), based on antimicrobial resistance patterns of repeat cultures. Rectal fluids, including those with added dextrose, were used to manage dehydration and hypoglycemia when other

alternatives, such as intravenous catheterization, was not feasible due to the animal's size and location. Other means of glucose support such as oral dextrose and a nasogastric tube were attempted but unsuccessful.

This case highlights the importance of regular health assessments and shows that intensive care can be achieved even in megavertebrate patients. This case also details the difference between palliative geriatric care for chronic issues and pursuit of diagnosis and curative medicine for more acute problems. Without losing sight of the larger picture in a case like this, step-wise medical management helped distinguish acute and chronic problems and identify treatment modalities possible. Also, through the establishment of quality of life parameters prior to identification of severe disease processes, an emotional and difficult decision can garner objective support among multiple important stakeholders.

Key words: Animal welfare, *Ceratotherium simum cottoni*, intensive care, medical management, northern white rhino, quality of life