PATHOLOGICAL FINDINGS IN CAPTIVE RHINOCEROSES

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INTRODUCTION

The purpose of this paper will be to review pathological findings in captive African and Asian rhinoceros species by disease category. The source of the information is from rhinoceros mortalities at the National Zoological Park, from other zoos participating in the SSP and from the literature. A cutaneous ulcer syndrome in the black rhinoceros and other diseases of the integument will be covered in this proceedings by Dr. Linda Munson.

INFECTIONOUS DISEASES

Few viral diseases are reported: encephalomyocarditis (EMC) was isolated from a neonatal black rhinoceros in Florida with cardiomyopathy. Pox-like lesions are reported in both black and white rhinoceros from German zoos from which orthopoxviruses were isolated and compared with poxvirus from elephants and okapi.

Reports of bacterial diseases in rhinoceroses are sporadic and include systemic infections with Salmonella and Clostridia. Leptospirosis has been considered as an etiologic possibility for the fatal hemolytic anemia syndrome of black rhinoceroses. Fatal colibacillosis occurred in a premature black rhinoceros neonate in St. Louis with typical septicemic lesions with disseminated intravascular coagulation (DIC) also described in another neonatal black rhinoceros.

Tuberculosis due to M. bovis occurred in a pair of black rhinoceros at the National Zoo in 1980 and has been reported elsewhere. Caseoalcic pulmonary lesions were more typical of bovine rather than the sarcomatoid-type found in equines.

Black rhinoceros appear to be quite susceptible to pulmonary and systemic mycoses associated with Aspergillus sp. and zygomycetes. Cases of mycotic disease have occurred in at least four North American zoos. Reports of mixed Aspergillus and Absidia infections were also reported in two black rhinoceros in a German zoo.

Parasites found in rhinoceroses that can be perpetuated in captivity include mainly intestinal nematodes and cestodes. Two Indian rhinoceroses at the National Zoo have had periodic infections with anoplocephalid tapeworms, and a microscopic intestinal nematode, Crossocephalus sp., both of which appear to be of low pathogenicity. Parasites in recently imported rhinoceros can be a threat, like Amblyomma hebraeum, the tick vector of heartwater (Cowdria ruminantium) which were recovered from black rhinoceroses introduced into Texas. Gastric myiasis (stomach bots) due to Gyrostigma conjugens was reported in two black rhinoceros in Berlin, and G. pavesii in white rhinoceros elsewhere. These bots are usually innocuous and no more pathogenic than their equine counterparts. Blood-borne parasites like hematozoa and trypanosomes are usually self-limiting as they require vectors indigenous to native habitats.

NONINFECTIONOUS DISEASES

Hemosiderosis particularly of the liver, is a common finding in black rhinoceroses and has been related to the hemolytic syndrome common in this species, but...
other causes of iron storage conditions are possible and have not been ruled out. The hepatic pigment is strongly positive with iron stains and has been confused for bile pigment leading to erroneous conclusions. Another idiopathic condition reported is encephalomalacia which was fatal for three young female black rhinoceroses housed at three different zoos 21, 23.

Myopathy and leiomyometaplasia (lipofuscinosis) of smooth muscle has also been observed histologically in black rhinoceros in which recent evidence indicates that vitamin E deficiency may occur in this species in captivity 5, 6, 10, 14, 17.

The National Zoo incurred a death in a female Indian rhinoceros associated with gastric impaction with duodenal torsion. Congenital unilateral aorta was reported in a black rhinoceros 4; pericarditis sicca occurred in a female white rhinoceros 33, and calcinosis of the endocardium in a black rhinoceros 1, both in German zoos.

Vaginal leiomyomas (fibroids) appear to occur as an entity in the Indian rhinoceros probably associated with hyperestrogenism 24. Four animals with these vaginal tumors, all originating from different zoos, had abnormal estrous cycles with no births occurring after the tumors were discovered. Only a few malignant neoplasms have been observed in other rhinoceros species including a hepatocellular carcinoma and a uterine adenocarcinoma.

REFERENCES


