

VAGINAL HEMANGIOMA IN A WHITE RHINOCEROS (*CERATOTHERIUM SIMUM SIMUM*)

Kirk W. Reese, B.A., Bruce E. Eilts, D.V.M., M.S., and Gordon Pirie, D.V.M.

Abstract: A female white rhinoceros (*Ceratotherium simum simum*) had repeated episodes of vaginal hemorrhage beginning in February 1981 and continuing until January 1991 with no apparent clinical effects. The vaginal hemorrhage became a daily event in January 1991; therefore, the rhinoceros was immobilized and examined. A nodular mass was palpated and biopsied in the cranioventral vagina. A second immobilization and endoscopic exam was performed on 23 January 1991. Although no clinical effects of the hemangioma were evident, the reproductive effects of the hemangioma are unknown.

Key words: White rhinoceros, *Ceratotherium simum simum*, hemangioma, cranioventral vagina, reproductive effects.

INTRODUCTION

Hemangioma in the white rhinoceros (*Ceratotherium simum simum*) is relatively uncommon; no cases have been reported in the literature. In general, the prevalence of neoplasia in free-ranging wild animals is lower than that in captive wild animals. This low prevalence is most likely due to the shorter life-span of free-ranging wild animals as compared to those in captivity.⁶ Three types of neoplasias have been reported in two different species of rhinoceroses, a squamous cell carcinoma at the base of the horn in an Indian rhinoceros (*Rhinoceros unicornis*), a genital tract leiomyoma, and an interdigital papilloma in a black rhinoceros (*Diceros bicornis*).^{1,5,6}

This report presents a case of vaginal hemangioma, which is apparently uncommon in rhinoceroses.

CASE REPORT

A wild female white rhinoceros was caught in Natal, Africa, in 1972. Her age at that time was estimated to be 2 yr, based on size. On 15 April 1972, the rhinoceros was transferred to Stockbridge Wildlife Safari in Virginia, and on 22 October 1976, she was

moved to the Philadelphia Zoo. In February of 1981, a bloody discharge emanating from the vulva was noted for the first time. Because no other clinical signs were observed and the discharge was intermittent, no diagnostic procedures were performed. In May 1983 and January 1984, samples of the discharge were obtained for culture. *Streptococcus* spp. and *Escherichia coli* were grown from the samples but were considered contaminants because the samples had been collected from the enclosure floor and no other clinical signs were present. Thus, no further diagnostic procedures or treatments were performed. The rhinoceros had no history of being bred at the Philadelphia Zoo.

On 26 November 1988, the rhinoceros was transferred to the Knoxville Zoo. On 2 May 1989, vaginal hemorrhage was again reported; however, the hemorrhage was attributed to a natural estrous cycle. On 28 August 1989, vaginal hemorrhage was again observed, but the bleeding subsequently stopped and the rhinoceros exhibited no apparent ill effects. The rhinoceros was bred once at the Knoxville Zoo on 30 October 1990, but no calf was born.

The rhinoceros (no. 1) was shipped to the Greater Baton Rouge Zoo on 17 January 1991 and housed with a male and another female (no. 2). During the day, all three rhinoceroses were kept in one yard. At night, the two females were housed in a pen separate from the male and exhibited no ag-

From the Department of Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, Louisiana 70803, USA (Reese, Eilts); and the Greater Baton Rouge Zoo, Baker, Louisiana 70714, USA (Pirie).

gressive behavior toward each other. However, both females occasionally engaged in battles with the male. Fights were most common when the male was trying to breed either of the females. Since coming to the Baton Rouge Zoo, rhinoceros no. 1 has been bred by the male twice, once on 4 April 1991 and again on 18 April 1991. Since rhinoceros no. 1 came to the Baton Rouge Zoo, rhinoceros no. 2 has been bred three times, on 9 March 1991, 17 May 1991, and 1 July 1991. At the time of initial examination (15 January 1992), it was not known if either female was pregnant.

On 16 February 1991, vaginal hemorrhage from rhinoceros no. 1 was noticed for the first time since her arrival at the Baton Rouge Zoo. As before, no other clinical signs were present, and the discharge was considered incidental. On 14 December 1991, blood was once again reported on the perineum of rhinoceros no. 1, and was persistently observed for the next few days. A provisional diagnosis of endometritis or open pyometra was made, and on 16 December 1991, one packet of tetracycline HCl powder (Polyotic, American Cyanamid Co., Wayne, New Jersey 07470, USA) was sprinkled over the food of rhinoceros no. 1. This treatment was continued until 20 December 1991, but no clinical improvement was seen, and the bleeding continued daily and varied only in amount.

On 15 January 1992, rhinoceros no. 1 was tranquilized with 2 mg etorphine HCl (M-99, Lemmon Co., Sellersville, Pennsylvania 18960, USA) via dart. In approximately 10 min, the rhinoceros was still standing but was approachable. A noose of heavy nylon rope was put around her muzzle behind the caudal horn and snugged tightly. The rope was tied to a truck through an iron gate, and the truck slowly pulled the rhinoceros to the gate where additional ropes were used to secure the rhinoceros. The perineum was scrubbed, and the vagina was examined with a speculum and palpation. Blood in the cranial vagina prevented adequate visualization with the speculum. Vaginal palpation

revealed a nodular mass in the cranial vagina, just ventral to the cervix. An equine endometrial biopsy instrument (Pilling Co., Fort Washington, Pennsylvania 19034, USA) was used to take samples of the mass for histopathology and culture. At this time, blood samples were also taken for a CBC and chemistry panel. The etorphine HCl was reversed with 4 mg diprenorphine HCl (M-50-50, Lemmon Co., Sellersville, Pennsylvania 18960, USA), and recovery was uneventful.

The results from the blood examination showed an increased total protein and fibrinogen concentration which was attributed to inflammation or to mild dehydration. All other blood measures were within normal ranges. There was no growth from the culture obtained from the mass. Histopathology revealed that the mass was a hemangioma.

Vaginal hemorrhage continued unabated, and a vaginal endoscopic exam was performed. On 23 January 1992, the rhinoceros was immobilized using the same protocol as before. The mass was visualized endoscopically in the cranial vagina just ventral to the cervix. The mass was partially covered by an unidentified flap of tissue. Recovery from sedation was uneventful.

From the time of endoscopic exam on 23 January 1992 until 25 February 1992, the bleeding varied from slight to significant but never to the extent observed prior to 23 January 1992. No hemorrhage has been reported since 25 February 1992. Clinically, this rhinoceros has otherwise been unaffected. Surgical excision of the mass via laser is under consideration if the bleeding worsens.

DISCUSSION

A hemangioma is a benign tumor of endothelial cells.⁴ Because hemangiomas arise from vascular tissue, they may be found in any site but most commonly are found in the dermis and subcutis.⁴ Ovarian and uterine hemangiomas have been reported in

swine.^{3,8} Clinical signs associated with ovarian hemangiomas in swine include various reproductive disorders, such as anestrus, fetal death, silent estrus, fertilization failure, abortion, agalactia, and decreased litter size.³ These reproductive disorders are of great concern when dealing with an endangered species, such as the white rhinoceros, where breeding and reproduction are important.

The average estrous cycle length of a rhinoceros is 38–58 days.² Captive rhinoceroses cycle year round, with peak activity between November and February.⁷ From 18 January 1991 until the present, rhinoceros no. 1 has been bred only twice, on 4 April 1991 and on 18 April 1991, and is apparently not presently pregnant. However, pregnancy cannot be totally ruled out because gestation length is approximately 480 days. If rhinoceros no. 1 is not pregnant, she probably has irregular estrous cycles or silent estrous periods. However, when compared with rhinoceros no. 2, estrous and breeding behavior of rhinoceros no. 1 are not that irregular. Rhinoceros no. 2 was bred on 9 March 1991, 17 May 1991, and 1 July 1991. However, pregnancy in this animal also cannot be definitely ruled out. Therefore, if rhinoceros no. 2 is pregnant, then she is cycling more regularly than rhinoceros no. 1. If rhinoceros no. 2 is not pregnant, then these two rhinoceroses are apparently similar in estrous and breeding behavior, and their apparent irregular estrous cycles may be attributed to the local climate or some other factor affecting both females. If the estrous and breeding patterns of the two females are significantly different, then it is possible that the vaginal hemangioma may be the cause of this difference. The hemangioma may cause silent estrous periods or mechanical blockage of fertilization. However, the size and location of this hemangioma make this hypothesis unlikely.

Although vaginal hemangiomas apparently are rare in all species of rhinoceroses,

the physical location of these lesions may affect reproduction and may be a serious threat to the reproductive life of affected rhinoceroses, which is of great concern in maintaining captive breeding herds.

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