

## DEATH DUE TO VOLVULUS IN A WHITE RHINOCEROS *CERATOTHERIUM SIMUM* FROM THE KRUGER NATIONAL PARK

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*Abstract* – Acute intestinal obstruction due to volvulus is described as the cause of death in an adult white rhinoceros cow. It is also pointed out that the gross anatomical features which predispose volvulus in the horse, are also present in the white rhinoceros and is considered to have some significance in the aetiology of the present case.

### *Introduction*

In 1931 Charles Elton stressed the fact that the field of wildlife pathology was still virtually untouched and emphasized the urgent need for further investigation. In the succeeding years good progress was made. However, with an uncommon species like the white or square-lipped rhinoceros, *Ceratotherium simum*, (Bigalke 1963), knowledge on the causation of natural deaths is still lamentably scant. When a rhino from the Kruger National Park, Republic of South Africa, was therefore reported dead with no external cause discernible, the matter was fully investigated and documented.

After becoming extinct in the Transvaal about 1896 (Bigalke 1963), four white rhinos were re-introduced to the southwestern section of the Kruger National Park on 14 October 1961 (Pienaar 1970). The rhinos, two bulls and two cows, were released in a specially constructed 257 ha enclosure at Faai near Pretoriuskop Rest Camp, and adapted themselves well.

After having produced four calves in the intervening years and with a 7-month old calf at heel, the cow named Faai died unexpectedly on 29 October 1974. The necropsy was performed the next day.

### *Results and discussion*

On opening the abdomen, signs of an acute diffuse peritonitis were visible. The blood vessels of the stomach and intestines were distended and a large quantity of foul-smelling dark-coloured fluid with pus was found in the abdominal cavity. Advanced abdominal and intestinal tym-

pany was present. A portion of the small intestine was twisted around its own axis (Fig. 1), winding the mesentery taut to form occlusion or strangulation of the lumen and blood vessels. The affected loops had a red-black appearance which was due to congestive haemorrhage and an invasion of the wall by putrefactive bacteria (gangrene). The lumen contained dark-coloured ingesta mixed with blood and the mucosa was ulcerated. On handling these loops, a dark-coloured fluid could be rubbed off the outer surface.

The affected intestinal loops, easily identifiable by its red discolouration and constriction marks, consisted of a 220 cm portion, commencing 530 cm from the stomach and ending 290 cm from the junction of the small intestine with the caecum.

Dorland's illustrated Medical Dictionary (1965) defines the term "volvulus" as "Intestinal obstruction due to a knotting and twisting of the bowel." The necropsy findings indicate a diagnosis of death due to complications arising from volvulus.

Jubb and Kennedy (1970) maintain that volvulus is unusually common in infant ruminants and adolescent swine but less common in adult horses and swine. Adult ruminants and carnivores are virtually exempt from this affliction. Smith, Jones and Hunt (1972) also believe that the long and tenuous intestine of the horse is subject to obstruction because of accidents resultant from its tortuosity and the length of the mesentery which suspends it. According to Davis (1957) the cause of the condition is obscure, but it is usually attributed to slips, falls, rolling or abnormal movements of the animal. Accumulation of ingests in certain loops of the intestine, together with the liberal movements permitted by the long mesenteric attachments, probably predisposes the horse to such conditions.

Taxonomically, the rhinoceros is allied to the horse. A similar layout of the lower alimentary system corroborates this idea. The lower alimentary canal of the rhino consists of a big J-shaped stomach, a tortuous small intestine and a caecum forming a large cul-de-sac intercalated between the small intestine and colon, which also is of extensive dimensions. A relatively long mesentery further emphasises the similarity between the species. The gross anatomical features which predispose volvulus in the horse, is therefore also present in the rhinoceros and must have some significance in the aetiology of the present case. Wallowing activity of the rhino could also be a contributing factor. It has been noted that on occasion rhinos roll over almost onto their backs with legs in the air (Owen-Smith 1973).

According to Jubb and Kennedy (1970) an infarcted gangrenous intestinal wall is readily permeable to putrefactive bacteria and their products, and the peritoneum provides an excellent absorptive surface. In this case peritonitis supervened indicating a fairly protracted, but terminal course for the condition.

As far as can be determined from the literature this is the first documented case of volvulus for the species.



Fig. 1. Volvulus in a white rhinoceros. The affected portion of the small intestine is shown. The upper hand indicates the point where twisting and strangulation of the intestine and blood vessels took place.

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