

GROSS ANATOMICAL STUDY ON THE SKULL OF ADULT RHINO (RHINOCEROS UNICORNIS)

S. Borthakur¹ and C.C. Bordoloi²

Department of Anatomy and Histology, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati - 781022

The paucity of literature has been marked on gross anatomical characteristics of the skull of great Indian Rhinoceros (*Rhinoceros Unicornis*) an unique, but endangered animal of Assam. Hence, the present study has been aimed to elucidate the same. Although the skull of Rhino presented four surfaces as in Other domestic animals (Nickel *et al.*, 1986) viz., dorsal, nuchal, ventral and lateral. Present study has been confined only in the former two surfaces.

Materials and Methods

Six adult and one young one horned Rhinos skulls collected from the National Sanctuary, Kaziranga, were utilized in the current study. Subsequent to death, these animals were buried. Later, the skeletons were taken out and the skulls were macerated according to Hyman (1942) and Raghavan (1964).

Results and Discussion

The skull of one horned rhino had the form of an irregular triangle, the base of which was caudal. Nickel *et al.*, (1986) stated that the skull in most of the domestic animals was in the form of a four sided pyramid. Dorsal

surface : (Fig. 1) The dorsal surface of Rhino skull was formed by the occipital, interparietal, parietal, frontal and nasal bones as in dog (Nickel *et al.* loc cit.) horse (Getty, 1977 a) and sheep (May, 1954). However, interparietal bone was found to be fused in adult rhino as in pig (Nickel, *et al.*, loc.cit). For the convenience of study, the dorsal surface was divided into three regions, viz., parietal, frontal and nasal. The parietal region extended from the squamous part of occipital bone to the parietofrontal suture. This region was located in between the external sagittal crest unlike in horse and dog in which the two crests converged caudally to separate the parietals. The external sagittal crests were absent in pig, ruminants and short headed dog (Nickel *et al.* loc.cit)

The frontal region was the most extensive region as in ox and horse) (Raghavan, 1964). The paired frontal bones were interposed between the parietal bones caudally and nasal bones rostrally as in pig (Getty, 1977 b). The profile of the frontal region in rhino was triangular and slightly concave, but is smooth and flat in horse Getty, (1977a). On either side of naso-frontal suture, two tuberosities could be noticed which were absent in domestic animals. In ox and horse,

1. Associate Professor
2. Professor & Head

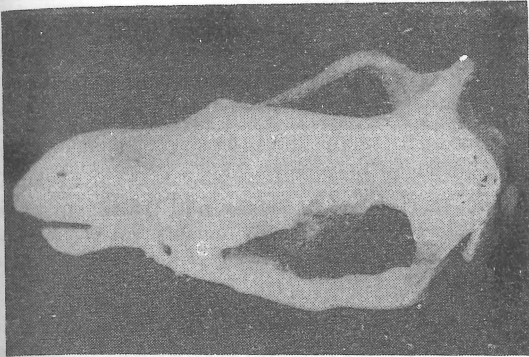


Fig.1. Skull of Rhino - Dorsal Surface

the frontal region was broadest at the root of the zygomatic process (Nickel, et al., loc cit). In rhino, zygomatic process of the frontal bone was completely absent, as against a short and blunt structure in dog (Raghavan, loc. cit) and pig (Getty, 1977 b). However, the aforementioned tuberosity might be the rudimentary zygomatic process of the frontal bone in the rhino. The supra orbital foramen was absent in rhino as in dog and pig (Nickel et al. loc. cit). The supra-orbital groove present in ox (Raghavan, 1964) was absent in rhino.

The nasal region was sharply concave due to the presence of a rough bony protuberance at the centre of the nasal bone which formed the highest point of the rhino skull. Such protuberance on the nasal suture was represented by a shallow groove.

Nuchal surface : (Fig. 2) Nuchal or

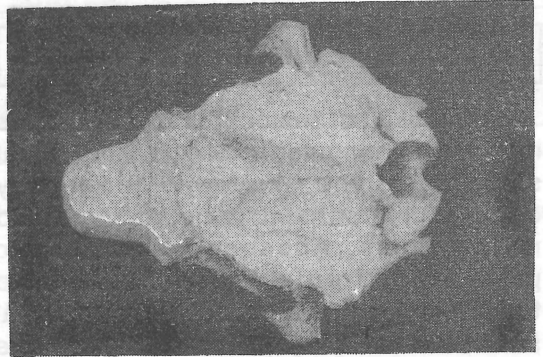


Fig.2. Skull of Rhino - Nuchal surface

occipital surface in rhino was formed mainly by squamous and lateral parts of the occipital bone, together with a narrow strip of temporal bone on either side. The nuchal surface was separated from the dorsal surface by the nuchal crest as in Pig (Nickel et al. loc cit.) Just below the nuchal crest, squamous part of the occipital bone presented external occipital protuberance, on either side of which was a deep fossa. Which is not to be found in the skull of any other domestic animal. Between the protuberance and the foramen magnum was the external occipital crest which could be considered as the downward continuation of the external occipital protuberance as observed by Borthakur (1990) in goat.

In the lateral part of the occipital bone, massive occipital condyles were found, one on either side of the foramen magnum. The dorsal and ventral margins of the foramen magnum were notched. Both the width and

Anatomical study on the skull of adult rhino

height of the foramen measured from 6 to 7 cm. Lateral to the occipital condyle there was a paracondylar process as in other domestic animals (Nickel, *et al.*, loc. cit):

Summary

The skull of rhinoceros unicornis was irregularly triangular in Shape. The dorsal surface of the skull was formed by occipital, interparietal, parietal, frontal and nasal bones. Absence of zygomatic process of frontal, presence of two tuberosities on either side of naso-frontal suture and a bony protuberance on the nasal bone were the striking features of the dorsal surface. The nuchal surface presented a deep fossa on either side of the external occipital protuberance. The occipital condyles were massive.

Acknowledgement

The authors duly acknowledge the help of Dr. M. Bhattacharya, professor, Dept. of Anatomy & Histology, College of

Veterinary Sciences, A.A.U., Khanapara in preparing the present paper. Further, the authors are grateful to the forest Department, Govt. of Assam for their help and co-operation.

REFERENCES

- Borthakur, S. (1990) ... Ph.D. thesis presented to Assam Agricultural University.
- Getty, R. (1977 a) ... Sisson and Grossman's "The Anatomy of the Domestic Animals" Vol. 1. Published by the Macmillan Company of India Limited " 318-348.
- Getty, R (1977 b)... Sisson and Grossman's "The Anatomy of the Domestic Animals" Vol. 2. Published by the Macmillan Company of India Limited : 1231 - 1252.]
- Hyman, L.N. (1942) ... Comparative Veterinary Anatomy. University of Chicago Press : 533.
- May, N.D.S. (1954) ... The Anatomy of the Sheep, a dissection manual. 3rd Ed., University of Queensland Press: 267-288.
- Nickel, R. Schummer, A. and Seiferle, E. (1986) ... The locomotor system of the Domestic Mammals. Vol. 1. Verlag Paul Parey (Berlin) : 101-167.
- Raghavan, D. (1964) ... Anatomy of the ox. I.C.A.R. (New Delhi) : 49-82.

I.V.J. PRESS FUND

Liberal contributions are solicited for I.V.J.. Press Fund.

Please Remit by cash, M.O. or D.D.

May be drawn in favour of "I.V.J. Press Fund"

Payable at Chennai.
