Gross Anatomical Studies on the Cranial Bones of Skull in Chital (Axis axis)

Ramswarup Kumawat1, Sanjeev Joshi2, Rakesh Mathur3* and Om Prakash Choudhary4

Department of Veterinary Anatomy, College of Veterinary and Animal Science
Rajasthan University of Veterinary and Animal Sciences, Bikaner-334 001 (Rajasthan)

Received: 12 September 2013; Accepted: 03 December 2013

SUMMARY

The present study was conducted on cranial bones of skull of chital. The topography and structure of occipital, sphenoid, ethmoid, interparital and parital were studied. A small quadrilateral bone wedged in between the parietal anteriolaterally and the supraoccipital posteriorly. The parietal was a paired bone. The frontal was roughly pentagonal in shape and formed the roof of cranial cavity. The temporal was a paired bone and formed the part of the lateral wall of the cranial cavity.

Key words: Chital, Cranial bones, Skull

Chital (Axis axis), also known as spotted deer or axis deer an antelope, which is an endemic species of south Asia, occurring in India. The chital is protected under Schedule III of the Indian Wildlife Protection Act, 1972. The aim of this study was to investigate the cranial bones of skull of chital, thereby making a contribution in filling the gap of knowledge in this field and especially the vetro-legal cases.

The present study was conducted on cranial bones of skull of six adult chital (Axis axis) of either sex. The permission for the specimen’s collection was sought from Principal Chief Conservator of Forest (PCCF), Rajasthan. The skeletons were collected from the Bikaner zoo and Jaipur zoo after official approvals. The skeletons were dug out from the graveyards located in the premises of the office of Deputy Conservator of Forest (WL), Bikaner and Jaipur. Afterwards, the specimens were processed as per standard technique. Then the gross study was conducted.

The placement of occipital bone in chital resembled to that of horse (Getty, 1975) and camel (Singh, 1984), dog (Miller et al., 1964). The nuchal surface of skull was formed by the occipital bone which was similar to the findings in dog (Miller et al., 1964) and in horse (Getty, 1975); whereas, in ox (Raghavan, 1964) occipital bone formed the ventral part of nuchal surface. Temporal bone also participated in the formation of the crest, lateral to the paramastoid process in chital which was similar to the findings in camel (Singh, 1984). The paramastoid processes were thin and prismatic which projected ventrally as reported by Raghavan (1964) in ox. These were thick and prismatic in chital. The basilar part was short and wide in this study as described in ox (Raghavan, 1964) but unlike was the case of camel in which two distinct impressions on the dorsal surface of basilar part of occipital bone (Singh, 1984). The squamous part was quadrilateral in chital similar to that in camel (Singh, 1984) and in horse (Getty, 1975). The nuchal crest was less prominent in chital similar to that of dog (Miller et al., 1964) and horse (Getty, 1975).

In sphenoid bone of chital, the orbital fissure and round foramen united to form foramen orbitotorundum, which was similar to the findings in ox (Raghvan, 1964). Ethmoid bone was located between the cranial and nasal cavity which was similar to ox (Raghavan, 1964), horse (Getty, 1975). Caudally it fused with pre sphenoid, rostro-ventrally with vomer and palatine and dorso-rostrally with the frontal bones which was concurrent to the finding to ox (Raghavan, 1964), in horse (Getty, 1975). It consisted of cribriform plate, labyrinth and perpendicular plate as documented in ruminants (Raghavan, 1964). There was an ethmoidal foramen like in ox (Raghavan, 1964), horse (Getty, 1975). However, there were two ethmoidal foramina in dog (Miller et al., 1964) and in camel (Singh, 1984) the foramen was not remarkable.

1 Veterinary Officer; 2 Assoc. Prof.; 3 Prof. & Head.; 4 Ph.D. Scholar,
Vety. Anatomy, GBPUA&T, Pantnagar
*Corresponding author: dr.sanjeevjoshi@yahoo.co.in
The interparietal bone was small quadrilateral bone wedged in between the parietal antero-laterally and the supraoccipital posteriorly which was similar to the findings in (Raghavan, 1964), in dog (Miller et al., 1964). The interparietal process of occipital represented the paired interparietal bone in chital. It was centrally placed between squamous part of occipital and parietal bones; but not well recognized due to fusion with the same bone of opposite side in horse (Getty, 1975).

The parietal bones were paired bones which formed the caudo-dorsal and lateral walls of the cranial cavity as in horse (Getty, 1975) and in dog (Miller et al., 1964). In contrast, in ox, the parietals did not enter into the formation of roof of the cranial cavity (Raghavan, 1964) and formed only the dorsal part of the caudal wall of the cranium.

The caudal part of external surface of frontal bone was strongly convex in chital while the cranial part was suppressed; as reported by Raghavan (1964) in ox. The frontal bone was much convex as compared with the parietal and nasal bones in adult sloth bear (Kalita et al., 2004). The supra-orbital foramen was present in the supra-orbital groove of medial margin of the orbit as in ox (Raghavan, 1964). The supra-orbital foramen perforated the root of zygomatic process in horse (Getty, 1975).

The frontal sinus was confined to the frontal bone as documented by Raghavan (1964) in ox. In chital, the nasal bone was inserted in the frontal bone as loose attachment as in horse (Getty, 1965) but contrary to ox (Raghavan, 1964) where the attachment was closely adherent.

The ethmoidal foramen was formed through the concurrence of orbital part of frontal bone and pre-sphenoid wing similar to finding of Getty (1975) in horse; whereas in ox it was located entirely in the frontal bone (Raghavan, 1964). Two ethmoidal foramina were commonly present and were formed entirely in frontal bone in ox (Raghavan, 1964).

The petrous and tympanic parts of temporal bone were united by the occipito-tympanic suture unlike in ox (Raghavan, 1964). The articular tubercle was absent in chital as in dog (Miller et al., 1964). The mastoid process was absent in chital as in camel (Singh, 1984) and in ox (Raghavan, 1964). The tympanic bulla of chital was large similar to that of camel (Singh, 1984) and ox (Raghavan, 1964). It articulated with the basilar part of occipital bone similar to dog (Miller et al., 1964).

REFERENCES


