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Gross anatomical studies on the femur of Asian elephant (*Elephas maximus*)

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Abstract

The study was conducted on three femurs of Asian elephant (*Elephas maximus*). The femur was comprised of cylindrical shaft with proximal and distal extremities. The shaft presented cranial and caudal surfaces and medial and lateral borders. The proximal extremity comprised head and greater trochanter. The fovea capitis seen in African elephants and domestic animals was absent in the head. The greater trochanter was placed laterally below the level of head similar to African elephants, cats and man. The greater trochanter continued on the craniolateral aspect of shaft as ridge like trochanter tertius as in African elephants. The distal extremity comprised a trochlea cranially and two condyles caudally. Unlike in ruminants the medial supracondyloid tuberosity, supracondyloid fossa and extensor groove were indistinct. The present study indicated that most of the gross anatomical features of the femur of Asian elephants were similar to that of African elephants but differed in several aspects from that of domestic animals.

Keywords: Asian elephant, femur, gross anatomy

1. Introduction

Elephants are the largest land animals. Asian elephant is the only living species of the genus *Elephas*. Femur bones form the massive skeleton of the thigh. It not only acts as the supportive lever but also helps for the forward propulsion of the body. Literatures pertaining to the femur of Asian elephant are scanty. Hence the study was undertaken.

2. Materials and Methods

The gross anatomical study was conducted on three femurs of Asian elephants preserved for academic purpose in the museum of Department of Veterinary Anatomy and Histology, College of Veterinary and Animal Sciences, Mannuthy, Thrissur. Morphology of the femur was studied and was compared with that of African elephant and domestic animals.

3. Results and Discussion

The femur was the longest bone of the appendicular skeleton. It was strong, heavy and comprised of a cylindrical shaft with proximal and distal extremities (Figs. 1 & 2). It articulated with acetabulum to form hip joint and with tibia, fibula and patella below to form stifle joint.

3.1 Shaft

The shaft was flattened craniocaudally and presented two surfaces *viz.* cranial and caudal and two borders *viz.* medial and lateral. This finding is similar to that of Asian elephant calves (Mariappa, 1986) [4]. The cranial surface was flattened at the proximal one third and convex at distal two thirds (Fig. 1). Unlike in large ruminants the caudal surface was flat, smooth and narrow at middle (Fig. 2). The medial border was rounded and its proximal end presented a rough area representing the lesser trochanter (Fig. 4). Lateral border was smooth and straight. The intertrochanteric crest which connects the greater and lesser trochanter in domestic animals was absent. This finding is similar to that of Malle and Bezuidenhout (1994) [3] who reported that inter trochanteric crest was absent in the femur of African elephant.

3.2 Proximal Extremity

The proximal extremity comprised of head and greater trochanter (Figs. 3, 4). Medially located head was smooth and hemispherical (Figs. 1, 2).

The fovea capitis seen in the head of femur in African elephants and domestic animals could not be noticed. The trochanter major formed lateral part of the proximal extremity of the femur (Fig. 3). It was placed laterally and below the level of the head similar to that of African elephants (Malle and Bezuidenhout, 1994)^[3] and that in cats and man (Dyce *et al.*, 2010)^[1]. In case of horse and ox it was placed above the level of head, but in dog and pig greater trochanter and head were in the same level (Nickel *et al.*, 1986). Caudomedial aspect of the greater trochanter furnished the trochanteric fossa (Fig. 4). The greater trochanter continued on the cranial aspect of shaft as ridge like trochanter tertius as in African elephant (Malle and Bezuidenhout, 1994)^[3] while

in the case of horse it was seen as a process (Koing and Liebich, 2014)^[2].

3.3 Distal Extremity

The distal extremity comprised a trochlea cranially and two condyles caudally (Fig. 6). The trochlea was vertical and its lips were of equal height (Fig. 5). As in large ruminants the oval shaped medial condyle was larger than the elliptical lateral condyle (Dyce *et al.*, 2010)^[1]. The condyles were separated by the deep intercondylar fossa. Medial supracondyloid tuberosity, supracondyloid fossa and extensor groove were indistinct.



Fig 1: Cranial view



Fig 2: Caudal view



Fig 3: Cranial view

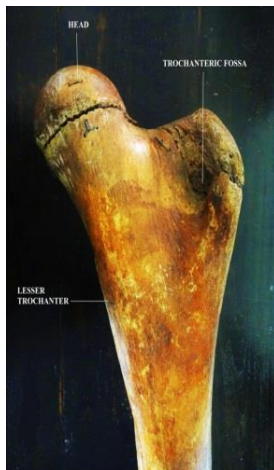


Fig 4: Caudal view



Fig 5: Cranial view



Fig 6: Caudal view

4. Conclusions

The present study indicated that most of the gross anatomical features of the femur of Asian elephants were almost similar to that of African elephants but differed in several aspects from that of domestic animals. Detailed and comparative anatomical studies will be helpful in Veterolegal cases.

5. References

1. Dyce KM, Sack WO, Wensing CJG. Text Book of Veterinary Anatomy. Edn 4, Saunders Elsevier, China, 2010, 834.
2. Konig HE, Liebich HG, Veterinary Anatomy of Domestic

- Mammals. Edn 6, Schattauer GmbH, Germany, 2014, 824.
3. Malle MSS, Bezuidenhout AJ. Osteology of the pelvic limb of the African Elephant (*Loxodonta africana*). Onderstepoort Journal of Veterinary Research. 1994; 61:51-66.
4. Mariappa D. Textbook of Anatomy and Histology of the Indian elephant, Edn 1, Indira Pub House, Michigan, 1986, 209.
5. Nickel R, August S, Eugean S, Joseph F, Helmut W and Karl-Heinz W. The Locomotor System of the Domestic Mammals. Edn 1, Verlag P. Parey, Berlin, New York. 1986; 1:499.