



MORPHOLOGICAL STUDIES ON THE LIVER OF SAMBAR DEER (*Cervus unicolor*)

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ABSTRACT

The present study was conducted on the liver collected from three Sambar deer. The liver had an average weight of 1 kilogram and was firm and friable with reddish brown colour. It presented two surfaces and four borders. The cranial diaphragmatic surface was occupied by the falciform ligament, round ligament, right and left triangular ligaments and the area nuda which was bounded by the coronary ligament. The hepatic porta on the visceral surface contained the hepatic artery, portal vein, hepatic duct and several hepatic lymph nodes. The line of attachment of lesser omentum on the visceral surface was almost straight. The notch for round ligament was distinct and deeper. The thick dorsal border lodged the caudal vena cava and the oesophageal notch. The lobation of liver was more distinct than that of large ruminants. The left lobe was undivided but showed fissures and notches. The gall bladder and gall bladder fossa were not present. The quadrate lobe and the undivided right lobe were not clearly demarcated. The caudate lobe consisted of a small and more distinct papillary process and a large caudate process. The caudate process and the right lobe formed the deep renal impression for the cranial pole of right kidney.

Key words: Morphology, Liver, Sambar deer

INTRODUCTION

Sambar deer is the largest of all deer species found in India. It is mainly a forest dweller that prefers hills and denser parts of the forest. It feeds on leaves, wild fruits and grass. The coat colour is brown with grayish tinge. A fully grown deer attains about 300 kg body weight and reaches a height of 135 -150 cm at the shoulder. They are extremely shy of humans and feed during later evenings and in night. They are good swimmers and have very acute sense of hearing.

Liver is the largest gland in the body. In foetus, it is an important haemopoietic organ. It is a storage organ of glycogen, fat and protein. The liver secretes bile and converts end products of protein catabolism to urea and uric acid. It removes waste products resulting from the break down of erythrocytes. It also plays an important role in the detoxification of harmful substances. Literature pertaining to the gross anatomical studies on the liver of Sambar deer was found to be scanty. Hence the present study was undertaken.

MATERIALS AND METHODS

The present study was conducted on the liver collected from three Sambar deer brought for post mortem to the Department of Pathology at College of Veterinary & Animal Sciences, Pookot, Wayanad. Various morphological features were studied and the weight of the liver was taken with the help of an electronic balance.

RESULTS AND DISCUSSION

The liver was firm and friable with reddish brown colour and had an average weight of 1 kilogram. It presented two surfaces namely diaphragmatic and visceral surfaces and four borders viz. right, left, dorsal and ventral. The cranial diaphragmatic surface was convex and was related to the diaphragm. This surface presented the thin serosal sheet called falciform ligament which extended from the oesophageal notch to the notch for the round ligament (Fig. 1). Dorso medially

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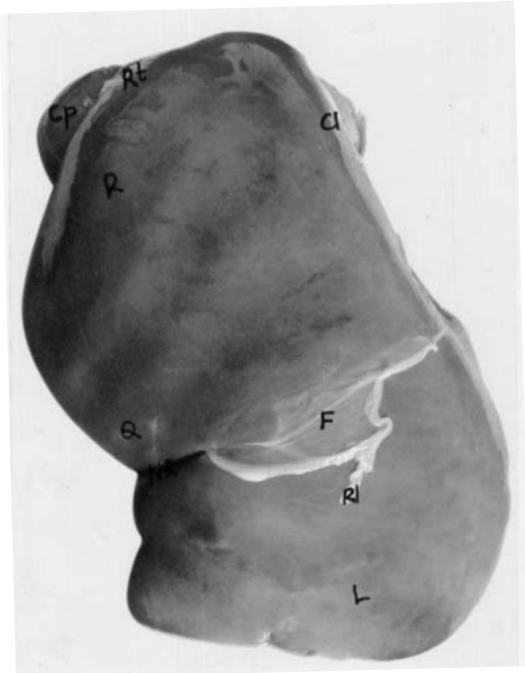


Fig.1. Parietal surface of the liver of Sambar deer

L- Left lobe, R- Right lobe, Q- Quadrante lobe, Cp- Caudate process, F- Falciform ligament, Rl- Round ligament, Cl- Coronary ligament, Rt- Right triangular ligament.

this surface presented a long triangular area without serosal covering, area nuda which was closely attached to the diaphragm as in other ruminants (Getty 1975). This area was bounded by the two divisions of coronary ligament. The right triangular ligament connected the caudolateral angle of the liver to the dorsolateral abdominal wall. The left triangular ligament was noticed near the oesophageal notch and it connected the liver to diaphragm. These two ligaments were connected by the narrow coronary ligament located on the diaphragmatic surface lateral to the caudal vena cava. The hapato renal ligament was located medial to the right lateral ligament and connected the liver to the anterior end of right kidney.

The caudal visceral surface presented the hepatic porta at about its middle (Fig.2). The hepatic porta presented the hepatic artery, portal vein, hepatic duct and several hepatic lymph nodes. The right and left hepatic ducts joined to form the common hepatic duct which opened in the duodenum. The line of attachment of lesser omentum extended from oesophageal notch to porta and was almost straight unlike in ruminants where

it is oblique (Getty 1975).

The right border was short and thick as in ruminants. This border along with right lobe and caudate process presented the deep renal impression for the right kidney. The left border was thin and convex and it connected the dorsal and ventral borders. The thin ventral border presented the notch for round ligament which was distinct and deeper as in hog deer (Jayathangaraj *et. al.*, 2000). But in large ruminants this fissure is indistinct. The round ligament was present as a slight thickening of the caudal free edge of falciform ligament and it represented the vestige of umbilical vein. In small ruminants it is not evident (Dyce *et. al.*, 1996). The thick dorsal border lodged the caudal vena cava in the sulcus venae cavae. Medial to the sulcus venae cavae, the oesophageal notch was noticed at about the middle of this border unlike in ruminants where it is located more medially and to the left.

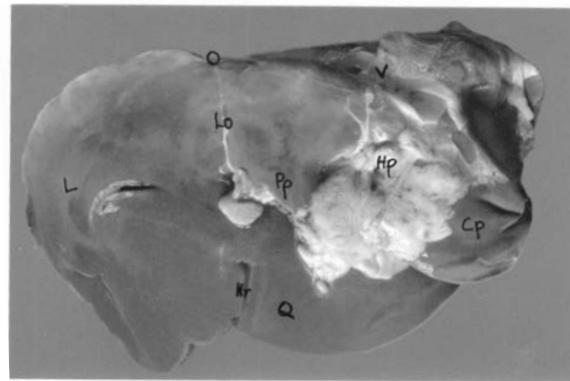


Fig.2. Visceral surface of the liver of Sambar deer L- Left lobe, Q- Quadrante lobe, Pp- Papillary process, Cp- Caudate process, Hp- Hepatic porta, O- Oesophageal notch, Nr- Notch for round ligament, Lo- Lesser omentum, V- Vena cava.

In deer, the lobation of liver was more distinct as in small ruminants (Getty, 1975) and unlike in large ruminants (Fig.2). The left lobe of the liver was located ventral to an imaginary line connecting the oesophageal notch and the notch for the round ligament. This lobe was undivided as in small and large ruminants, but it showed an arc like fissure at about the middle of its visceral surface. Another 'L' shaped fissure was present on this lobe near the left border. Two secondary notches could also be noticed near the notch for the round



ligament. The gall bladder and gall bladder fossa were not present. Due to the absence of gall bladder and the notch on the ventral border separating the quadrate and right lobes, these two lobes were not clearly demarcated in the deer. The quadrate lobe was more distinct than that of large ruminants. The right lobe was undivided as in other ruminants. The caudate lobe consisted of a small papillary process projecting towards the porta and a large caudate process dorsal to the porta which protruded above the right border. The papillary process was more distinct as in sheep (Nickel *et. al.*, 1979) and unlike in large ruminants. The caudate process presented a fissure at the dorsal end and was narrower and less blunt as in small ruminants (Dyce *et. al.*, 1996). The caudate process and the right lobe formed the deep renal impression for the cranial pole of the right kidney.

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INFOMANIA

This set of questions relate to foods

1. Name the art and science of good eating or the study of food and culture .
2. Which is the fifth basic taste apart from bitter, salty, sweet and sour. It is described as a meaty taste with long lasting, mouth watering and coating sensation over the tongue.
3. Name the subjective scale used for organoleptic evaluation of spiciness of pepper and chilli.
4. Ageusia means
5. To the consumption of which substance, the Chinese Restaurant Syndrome has been associated.
6. Name the non fiction book authored by Michael Pollan in 2006 which describes the human food choices.
7. Describe pescetarianism.
8. How do we define a set of cooking traditions and practices often associated with a specific culture and are influenced primarily by the locally available ingredients and are named according to the region.
9. This was popularised in Kerala during the 80's. It consists of shavings of the roasted meat with vegetables from a skewer, and is covered with a bread. Eaten with sauce. Identify this fast food.
10. Name the ice cream dessert, which usually has a scoop of ice cream with toppings including sauce, syrup, nuts, etc.
11. Roti prata is a popular food in Singapore and shares many things in common to a Kerala food. Which is the Kerala food.
12. What is the term for a young chicken, 28 days old at slaughter, weighing 400-450 grams, but not more than 750 grams. Its synonym is spring chicken.
13. Gustation, the other commonly used word for this is
14. What is the study of wine making named except vine growing and grape harvesting.
15. Study of the effects of food on gene expression .

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