



MORPHOLOGICAL AND MORPHOMETRICAL STUDIES ON THE LIVER OF DAY-OLD BELTSVILLE SMALL WHITE TURKEY POULTS*

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Abstract

The present study was conducted on the liver of day-old Beltsville Small White turkey poult. The liver of day-old poult was located in thoracoabdominal cavity and was composed of right and left lobes. The right lobe was larger than the left lobe and the latter was subdivided further into dorsal and ventral parts. The liver weighed $1.74 \pm 0.020g$ and its right lobe was ellipsoidal whereas left lobe was triangular. It was yellow in colour and presented by two surfaces, viz. parietal and visceral and three borders viz. medial, lateral and caudal. The present suggests that the morphological features of liver in the day-old Beltsville Small White turkey poult except colour were similar to those of adult turkey.

Keywords: Liver, Gross anatomy, Day-old poult, Beltsville Small White turkey

Liver is the largest gland in the body, which plays an important role in detoxification, storage of fat and fat-soluble vitamins, synthesis of plasma proteins and secretion of bile. Avian liver is bilobed and relatively larger in comparison to the size of the bird. The right and left lobes are joined cranially at the midline. Liver has great functional and reserve capacities. Literature pertaining to the gross anatomical features of liver in day-old turkey poult is scanty. Hence, the present study was undertaken to study the gross anatomical features of liver in day-old Beltsville Small White turkey poult.

Materials and Methods

Liver of day-old Beltsville Small White turkey was studied using 6 day-old poult.

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These birds from a single hatch were collected at random from the University Poultry and Duck Farm, Mannuthy. Various gross anatomical features of liver in these birds were studied. Weight of the liver was recorded with the help of an electronic balance. Morphometrical parameters like length, width and thickness were taken by using digital Vernier caliper.

Results and Discussion

Liver was located in thoracoabdominal cavity and extended caudally beyond the level of the ribs and sternum. Antero medial aspect in both lobes was in contact with heart (Fig.1). Similar observations were made by Whittow (1998) and Schmidt *et al.* (2003) in birds, Hena *et al.* (2012) in pigeon and quail, Abdulla (2015) in Mallard duck and Aaraji (2015) in adult turkey.

It presented two surfaces, *viz.* parietal and visceral and three borders, *viz.* medial, lateral and caudal. The parietal surface was convex and smooth and occupied the floor of the body cavity. The visceral surface was concave and caudal end of this surface of the right lobe was in contact with gall bladder (Fig.2). Similar observations were made by Nickel *et al.* (1977) in birds and Sridevi *et al.* (2016) in adult turkey. The cranio-dorsal part of visceral surface of left lobe was related to proventriculus whereas its caudo-dorsal part was occupied by gizzard. These observations are in agreement with

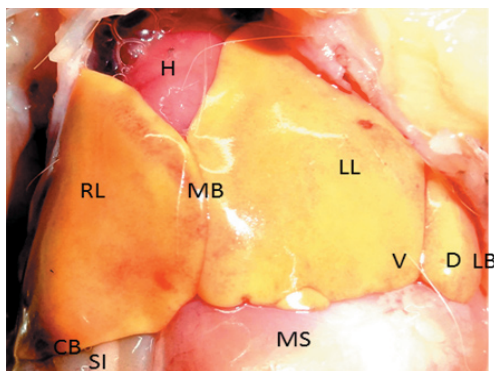


Fig.1. Photograph showing the parietal surface of liver in day-old poult . LL- Left lobe, RL- Right lobe, D- Dorsal division of left lobe, V-Ventral division of left lobe, CB- Caudal border, LB- Lateral border, MB- Medial border , H- Heart , SI- Small intestine , MS- Muscular stomach

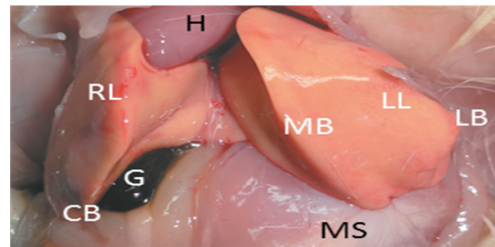


Fig. 2. Photograph showing the visceral surface of liver. LL- Left lobe, RL- Right lobe, GB-Gallbladder, H- Heart , MS-Muscular stomach

those of Hena *et al.* (2012) in pigeon and quail and Abdulla (2015) in the liver of Mallard duck.

The liver in present study was composed of two lobes, *viz.* right and left. The left lobe was subdivided further by a caudal fissure into small dorsal and large ventral divisions. Similar findings have been reported by King and Lelland (1984) regarding in domestic fowl and Aaraji (2015) in adult turkey. However, Shafey (2006) reported that in ducks and pigeon left lobe was not divided. The right lobe was larger than left lobe and it measured 18.37 ± 0.14 mm in length while the left lobe was 14.39 ± 0.40 mm long. The width of upper, middle and lower parts of right lobe was 110.61 ± 0.10 , 14.07 ± 0.28 and 11.39 ± 0.42 mm, respectively. The width of left lobe was 11.27 ± 0.23 , 16.02 ± 0.14 and 12.43 ± 0.07 , in upper, middle and lower parts, respectively. The right lobe had 1.54 ± 0.01 mm thickness while that of left lobes was 1.96 ± 0.01 mm. The liver weighed 1.74 ± 0.020 g.

The shape of the right lobe was ellipsoidal while that of left lobe was triangular. These observations are in agreement with Sridevi *et al.* (2016) in adult turkey. In present study, the liver was yellow in colour and this was in agreement with the findings of Clark (2005) in birds. This yellow colour could be attributed to the complete absorption of yolk by the developing turkey embryo towards the end of incubation period and subsequent deposition of fat in hepatocytes by the day-of-hatch. It can be concluded that the morphological features of liver in the day-old Beltsville Small White turkey poult except colour was similar to that of adult turkey.

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