

Morphological and Histological study of lower part of respiratory system in cobra geese (anser anser)

Abstract The morphological and histological study described the major organs of the lower respiratory system (lower trachea ,syrinx , bronchi and lung) in the cobra geese (Anser Anser) for making use in the study of the respiratory physiology, histopathology, the respiratory diseases diagnoses. The current study has been carried out in the College of the Veterinary Medicine - University of Al Muthanna for observing morpho-histological studies of eleven birds of cobra geese weighing (3-5 Kg) were used. Morphological show that the trachea was observed mostly on the right side of neck and when inter the thoracic inlet it become in the midline venter to the esophagus , it appeared long empty cartilaginous flexible pipe and it has pale red color and formed from over lapping series of complete tracheal rings which tightly connected together ,the cartilaginous rings were ossified , these rings are ossify as age progressive , the mean total weight ,length and width respectively of the trachea was (8.59 ± 0.307 g),(127.09 ± 1.186 cm) and (15.84 ± 0.260 cm). The syrinx is the voice box (organ of voice),which appeared as pavilion-shaped cartilaginous structure, which were pointed ventrally , It is located at the tracheal bifurcation, dorsal to the base of the heart, ventrally to the esophagus and between both sides of the left and right sternotrachealis muscle . The mean total weight ,length and width respectively of the syrinx was ($15,7 \pm 0.113$) , (16.78 ± 0.162) , ($1.4 \pm 0,094$). The trachea is divided into right and left broncho-syringeal cartilage, the primary bronchi (extra pulmonary) of the cobra geese consists of incomplete C shaped cartilages rings connected together by annular ligament , the intrapulmonary bronchi has similar shape, but different length and number of rings were the left long than right , these cartilaginous rings are hold together by a thin membrane extended from bifurcation of trachea to the hilus of the lungs , the mean weight ,length and width ,of bronchi approximately ($13,36 \pm 0.036$ g) ($18,27 \pm 0.0296$ cm)and ($1,31 \pm 0.05$ cm) . The lung located on each side of the heart, extended from the first to the sixth ribs (between the first and second intercostal space to five intercostal space),it have soft texture, red color, and pyramidal in shape , had three surfaces (costal, ventral and vertebral surfaces) , two borders; the (medial and lateral borders), The mean Wight , length and width of lungs were

($21,65 \pm 0.241$ g) ,($54,49 \pm 2.768$ cm) and($11,4 \pm 0.230$ cm). Distal part of trachea of cobra gees Consists of three layers mucosa (lamina propria) , sub mucosa and adventitia ,the first layer mucosa consist from epithelia lined by a II pseudostratified ciliated columnar epithelium and loose connective tissue consist from cell , fiber and matrix, beneath the epithelial layer is the lamina propria consists of elastic fibers and fibroblasts (Fig. 11,13) , the mean thickness of mucosa was (217 ± 6.043 μm) , deep to the lamina propria sub mucosa is the loose connective tissue , the mean thickness of submucosa was (372.7 ± 24.9 μm), The hyaline cartilage rings consist of an inner and outer zone. The last layer was adventitia that had loose connective tissue with blood vessels, the mean thickness of adventitia was (85.4 ± 9.85 μm). The syrinx composed of three layers the first layer mucosa is compose of pseudostratified columnar epithelia with goblets cells are increasing toward the broncheosyringeal part , the mean thickness of mucosa was (73.63 ± 8.23 μm) , the lamina propria was consisting of connective tissue including elastic fibers and collagen fibers and blood vessels. The mean thickness of sub mucosa was (205 ± 17.3 μm) , hyaline cartilage composed of perichondrium and ossified centers which composed of osteocyte presented inside lacuna, osteoblast and osteoclast. The mean thickness of cartilage was (364.5 ± 20.9 μm). Beneath that adventia that consisted of loose connective tissue which the thickness (159 ± 11.5 μm). The primary bronchi was lined by pseudostratified ciliated columnar cells ,basal cells with intraepithelial mucous glands and goblet cells based on basement membrane , The mean thickness of mucosa was (114.54 ± 9.47 μm) , The sub mucosa contained of loos connective tissue including collagen fibers and serous glands with myoepithelial cells (fig30) , The mean thickness of sub mucosa was (143.63 ± 18.6 μm) , Hyaline cartilage presented as C shaped it overlapped by perichondrium and fibers of perichondrium mixed at last there was adventia ,which the mean thickness of cartilage and adventitia was(192.7 ± 12.14 μm) (99.09 ± 6.8 μm). The lungs revealed that as a compact organ surrounded by fibroelastic connective tissue capsule, the parenchyma of the lung was formed of many lobules separated from each other by trabeculae in which bronchial tree and pulmonary blood vessels were branched , each lung lobule was formed of a central parabronchus surrounded by intensive network of air capillaries , the air capillaries were lined by flattened attenuated simple squamous epithelium, intensive network of blood capillaries were intermingled with the air capillaries.