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Title:

Anatomical and Histological Studies of Thymus Gland in Broiler (*Gallus gallus domestics*)

Abstract:

The present work is designed to study the anatomical and histological structures of the thymus gland in broiler chicken. Thirty five healthy, normal chicken and embryos of different ages and sexes were used in this study aged from (12th - 20) days embryo and (1st, 7th, 14th, 21th and 28th) day old chick after hatching. The thymus was well developed at 12th day old chick embryo, it consisted of 6-8 small, translucent lobe then becomes pale in color at 20 day old chick embryo, its located on both sides of the neck, the number of lobes on the left side was more than the right side, positioned parallel to the jugular vein and vagus nerve, after hatching of embryos the thymus lobes was appeared oval to bean in shape, vary in color from pink to red in advanced age. The anatomical measurement of the thymus gland was focused on the length, weight, size, and width of thymus lobes on both sides which increased in value gradually according to the age. The statistical analysis $p \leq 0.05$ showed significant differences in length, weight, size, and width of the lobes in all ages, but the maximum at 28th day old chick of the left side than the right side. The thymus was supplied by the common carotid artery that give branches to the ascending esophageal artery, cranial thyroid artery and a caudal thyroid artery. The thymus gland was composed of an outer capsule, cortex and medulla.

At 12th day old chick embryo, the thymus was surrounded by a thin connective tissue capsule and a septa in to the gland stroma extended to form a lobulation in each lobes, the cortex and medulla was not differentiated clearly. At 20 day old chicks embryo the lobules begun to recognize and composed of external dark stained cortex with a high population of lymphocytes and internal light stained medulla with less abundant lymphocytes and reticular fiber and epithelial reticular cells with appearance of Hassall's corpuscles. After hatching, at 1 day old chick, the cortex and medulla was well developed and contain an epithelial reticular cells and Hassall's corpuscles.

While At 7th day old of chick, the septa was well developed and contain blood vessels, numerous lymphocytes in the cortex more than the medulla, more Hassall's corpuscles and epithelial reticular cells was appeared in the medulla. With advanced age, epithelial and the reticular cell were increased, Hassall's corpuscles was appearing with translucent center and epithelial reticular cell at the edges. At 14th, 21th and 28th day old of bird, the lymphocytes appeared as a cords in the medulla. The histometrical showed the mean thickness of cortex was decreased in comparing with the medulla that increased during the development of age and its maximum was at 28th days old bird.