

**SOME TOPOGRAPHICAL AND
HISTOLOGICAL STUDIES OF THYROID AND
PARATHYROID GLANDS OF MOORHEN
(*Gallinula c. chloropus*)**

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SUMMARY

The thyroid gland of Moorhen has two separated lobes. These lobes were located in the thoracic inlet and receive blood supply from the cranial, middle and caudal thyroid arteries.

The histological organization of the thyroid gland in Moorhen is surrounded by a distinct connective tissue capsule and the parenchymal cells were arranged into colloid filled follicles enmeshed in the highly vascular interstitial connective tissue. The bilaterally paired, round to oval, parathyroid glands in Moorhen were located intrathoracically near or close to the caudal pole of the thyroid glands. They receive blood by short branches from caudal thyroid artery and small branch from the common carotid artery.

The parathyroid glands in Moorhen have a thin connective tissue capsule. Its parenchymal cells were arranged into an irregular, anastomosing cords of chief cells. No oxyphil cells were found in the parathyroid glands of Moorhen.

INTRODUCTION

Numerous investigators in the past few years have been carried out to study the thyroid gland in different animals; in the dog (1), Shami goats (2), bull (3), camel (4) and in the human (5). Some studies have also been made on the structure and function of parathyroid glands in many mammalian species; like deer (6), cow (7) and camel (8). There were scarce studies on thyroid and parathyroid glands of birds (9,10,11). The objective of this investigation is to reveal the anatomical and histological features of these glands in Moorhen (Gallinula c. chloropus) in order to give wide support for the conception.

MATERIALS AND METOHDs

Four Moorhen (Gallinula c. chloropus) were used in this study. They received an appropriate dose of local anesthesia with Lidocaine 2 % and then sacrificed. Making a mid-line incision through the skin and muscles of the neck and thorax in order to expose the thoracic cavity. The thoracic cavity of Moorhen was flooded with 10 % formalin. The gross anatomical features of the thyroid and parathyroid glands were verified.

For histological studies, the thyroid and parathyroid glands were removed and were put into fresh fixative of 10 % formalin for 24 hours. Specimens of tissue from the thyroid and parathyroid glands were prepared for optical microscopic examination. The tissues were washed in tap water, dehydrated through ascending concentration of ethyl alcohol, cleared in xylol and embedded in paraffin wax. Sections of five micrometers thickness were made and stained by two different staining haematoxylin and eosin, masson trichrome (12).

RESULTS AND DISCUSSION

The thyroid glands of the Moorhen were found to be a pair of oval bodies, located in the thoracic inlet, closely related to the common carotid artery, jugular vein and vagus nerve (plate I). Their color were reddish brown. The thyroid gland of Moorhen was highly vascularized structure and was supplied with blood by the cranial thyroid artery, middle thyroid artery and caudal thyroid artery. These three arteries were arised from common carotid artery.

In contrast to those results reported by Al-Askary (10) who noted that the blood supply of thyroid gland of an indigenous ducks were received from the cranial thyroid artery which arised from the vagus artery and the caudal thyroid artery which arised from the ascending eosophagal artery, where as the thyroid gland of hens received blood supply from Histologically , the thyroid gland of Moorhen is enclosed by a thin capsule. The capsule is frequently thickened in areas where small arteries, veins and nerves run within the surface of the thyroid gland. The thyroid capsule was found to be composed of collagen fibers and associated with fibroblasts. A considerable amount of adipose tissue was found in the external part of the capsule.

The stroma of the thyroid gland is consisted of spherical follicles accompanied by interstitial connective tissue (Fig. I). The follicular wall is lined by a single layer of cells. Some of follicles are small, spherical and are lined by cuboidal cells with large, round to oval and centrally placed nuclei. These follicles contain small amount of follicular colloid. Other follicles were large, being filled by a considerable accumulation of follicular colloid. These follicles were lined by simple squamous epithelium possessed dense stained,

spindle shaped nuclei. Some authors claimed that the size and shape of cells lining the follicles together with the shape of cells lining the follicles depends upon the activity of the thyroid gland (9,14). Individual or small groups of parafollicular cells were readily identified (Fig. II). They are located at the periphery of the thyroid follicles in an epifollicular position or are wedged between follicular cells as an interfollicular position. These cells did not come in contact with the follicular colloid directly. They were polyhedral or ellipsoidal in outline and are considerably larger than adjacent follicular cells. The nuclei of parafollicular cells are large with diffused chromatin and often eccentrically placed within the cell.

These morphological evidence of thyroid gland in Moorhen offers a support for other investigators (9,14,15). The parathyroid glands of Moorhen were found as four rounded bodies which form two lateral glands (plate I). These glands appeared rubbery in consistence, light in color and attached or close to the caudal pole of thyroid gland. This is in accordance with Richard et al.(16), where as Nickel et al.(17) claimed that due to the mode of development it was possible to distinguish 3-5 parathyroid glands.

The parathyroid glands in Moorhen receives blood from short branches from the caudal thyroid artery or from the common carotid artery. Histologically, the parathyroid glands in Moorhen were enclosed within connective tissue capsule. The stroma of the parathyroid glands was composed of irregular and anastomosing cords of cells separated by interstitial connective tissue associated with blood capillaries. A single cell type, the chief cell, being the principle constituent of the parathyroid glands. The cytoplasm of the chief cells may vary from clear to darkly staining, depending somewhat upon the physiological state of the glands. The

nuclei of the cells are round to oval in shape. No oxyphil cells, which were found in mammalian parathyroid glands, were seen. This is in agreement with other authors (6,11,18).

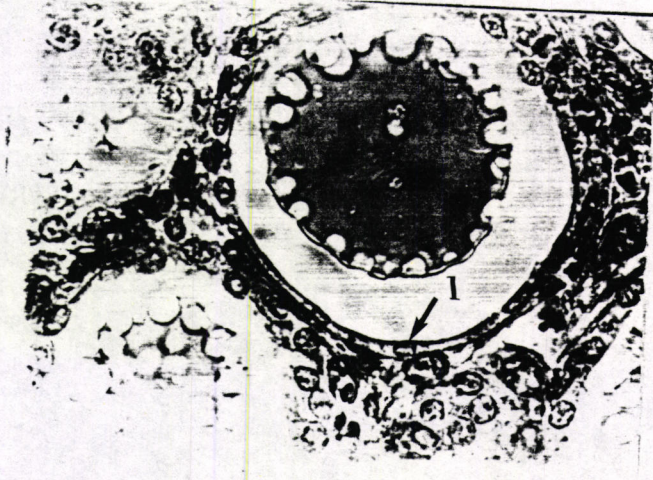


Fig. I: Thyroid gland of Moorhen showing follicles lined by single layer of cells, H&E X500

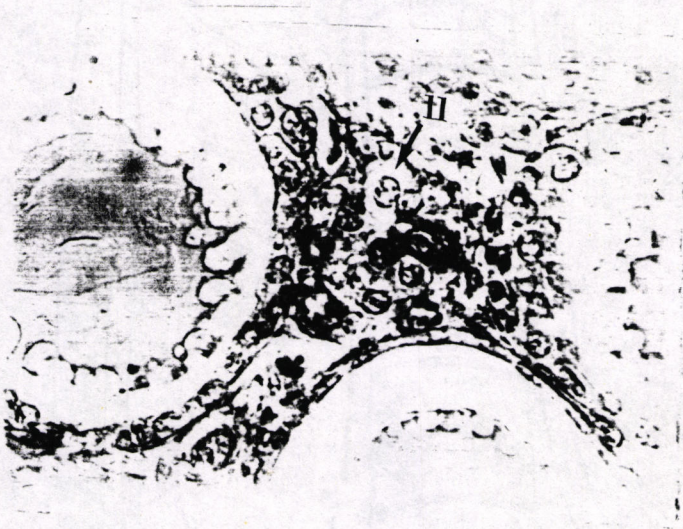


Fig. II: Parafollicular cells of the thyroid gland follicles,
H&E X500

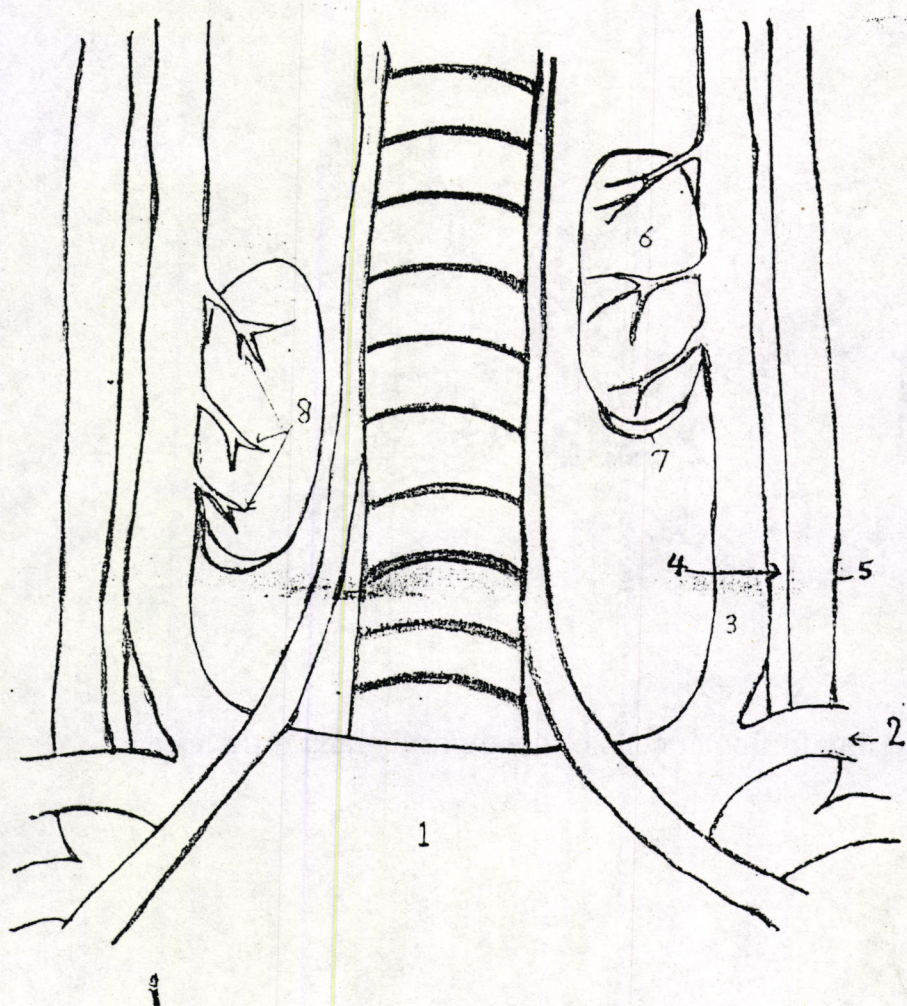


Plate I : Showing the position and vascularization of the thyroid and parathyroid glands in Moorhen.

- 1-Heart 2- Subclavian a. 3- Common carotid a.
4- Vagus n 5- Jugular v. 7- Parathyroid gland
8- Cranial , Middle and Caudal thyroid aa

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دراسة بعض طبغرافية ونسيج الغدد الدرقية وجنيب الدرقية في طير
دجاج الماء (*GALLINULA C. CHLOROPUS*)

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العراق

الخلاصة

تتكون الغدة الدرقية في دجاج الماء ، من فصين منفصلين في مدخل الصدر ويزودان بالدم من الشريان الدرقي القحافي والشريان الدرقي الاوسط والشريان الذيلي . تحاط الغدة الدرقية في دجاج الماء بمحفظة مميزة من النسيج الضام وتنظم متن خلاياها في جريبات مملوءة بمادة الغروان ، ومحاطة بنسيج بيني عالي الوعائية. يقع الزوج الدائري أو البيضوي من الغدد جنيب الدرقية في دجاج الماء في مدخل الصدر قرب أو ملاصقا للقطب الذيلي للغدة الدرقية وتستلم الدم من فروع قصيرة تنشأ من الشريان الدرقي الذيلي وفرع مباشر من الشريان السباتي العام. تحاط الغدد جنيب الدرقية بمحفظة من نسيج ضام رقيق وتنظم متن خلاياها على شكل حبال غير منتظمة ومتفرعة من خلايا رئيسة. لا توجد خلايا حمضية في الغدد جنيب الدرقية في دجاج الماء.