ANATOMICAL AND HISTOLOGICAL STUDY OF THYROID GLAND IN LOCAL IRAQIAN SHEEPS

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ABSTRACT

The present study included the collection of thyroid from eight sheep of south Iraq (Basrah provenence). The samples were fixed by 10% formalin and processed by the routine histological techniques, then stained by H and E, PAS and osmium tetroxide-dichromate, then studied under light microscope. The study obtained, thyroid gland in sheep, lies in the neck, in front of the upper part of the trachea, and it consist of two oval lobes were connected by isthmus. Histologically, the gland surrounded by connective tissue capsule (dense irregular connective tissue) and trabeculae were found extending from the capsule into the substance of the gland, which divided it into lobules. Each lobule consisted of follicular and parafolliculer cells. The follicles filled with colloid, Histochemically, the gland is rich in carbohydrate and lipids, that give positive response for special stain. (Periodic Acid solution (P.A.S) and osmium tetroxide-dichromate Potassium).

KEYWORDS: Local Sheep, Thyroid Gland.

INTRODUCTION

Thyroid gland is considered as the largest endocrine gland, that lies in the neck, in front of the upper part of the trachea, on the mid line ventral to the trachea. (1,2,3). It is consist of two lobes connected a particularly by wide isthmus. (4,5). The gland consist of varying sized follicles which are bounded by a single layer of cuboidal epithelial cells (follicular cells) (6), and basement membrane, surrounding a central lumen filled with a homogenous protein rich colloid (thyroglobulin) (6), and the thyroid gland is the only endocrine gland to store its hormone in large quantities. In active gland colloid is diminished and epithelial cells are tall and columnar (4,5,6) and the thyroid gland is surrounded by a thin capsule of dense irregular connective tissue which trabeculae extend into the parenchyma and interstitial loose connective tissue is sparse and contains dense networks of sinusoidal and lymph capillaries (4,5). From another view, thyroid gland contain other types of cells called parafolliculer cells (functional cell), which found as single cells in the epithelial lining of follicles (7).
Material and Method
Eight adult local sheep were used in present study, after slaughter, surgical incision made on mid line ventral to the trachea and removed the thyroid, and washed with distilled water and dissected, and the sample was fixed in 10% formalin for 48 hours, after routine histological process, paraffin blocks are prepared and 6-8 µm tissue sectioned and stained with Hematoxylin and Eosin) (9,10), Periodic Acid Solution (P.A.S), And osmium tetroxide-dichromate (10,17).

Results
Gross Anatomy
The anatomical study of thyroid gland of sheep revealed that the gland was located near the neck, in front of the upper part of trachea and consisted of two oval lobes (Fig. No. 1, 2).

Histochemical Results
The gland consists of varying sized follicles which are bounded by single layer of cuboidal epithelial cells (follicular cells) (Fig. No. 3, 4), surrounded by a basement membrane. The central lumen filled with a homogenous rich colloid (thyroglobulin) (Fig. No.5) In the active gland colloid is diminished and epithelial cells become tall and columnar.(Fig. No.5).

The thyroid gland is surrounded by a thin capsule of dense irregular connective tissue which trabeculae extended into the parenchyma and interstitial loose connective tissue.(Fig. No. 3)

The parafollicular cells found as single cells in the epithelial lining follicles.(Fig. No. 4, 5), Periodic Acid Solution used for identification carbohydrates in gland shows positive response for distribution of glycoprotein in follicles which appear red color.(Fig. No. 7)

Osmium tetroxide dichromate potassium revealed distribution lipids in gland which appear Black color at follicles and connective tissue(Fig. No. 8, 9)
(Fig:1) Thyroid gland of local sheep

(Fig:2) Thyroid gland A: isthmus, B: thyroid lobe)
(Fig:3) Thyroid gland show, A-Capsule, B-Thyroid lobes, C-Connective tissue. H&E (10X)

(Fig:4) Section of Thyroid Show A-Follicles, B-Follicular cells. H & E (40X)
(Fig:5) Section of Thyroid gland show A-Colloid, B-Parafollicular Cell, (H & E 20X)

(Fig:6) Section of Thyroid show A-Follicular cells, B-Parafollicular cells. H&E(40X).

(Fig:7) Section of Thyroid gland distribution of carbohydrate, A-Follicles, B-Follicular cells. PAS(40X).
Discussion

Anatomical studies of the thyroid gland in sheep, horse, camels referred that the gland lies in the neck in front of the upper part of the trachea(11, 15) this was agree with present study in local sheep. The histological result of thyroid in the local sheep, revealed the gland is enveloped by a thin fibro-elastic capsule, similar in(13,16). Each lobe is surrounded by connective tissue capsule and divided into lobules by thin trabecular (4,5). The lobules show consist of follicles which various size and filled with colloid.(11,16,17). The
parafollicular cells(6,7,16). Histochemical results referred to carbohydrate in follicles similar with (18). Results of Histochemical Examination :-

1- Periodic Acid Solution (P.A.S) stain for used to examination for carbohydrate in the thyroid gland show positive response. distribution of glycoprotein in follicles(13).
2- Osmium tetro oxide show positive response with osmium tetroxide stain specially with follicles and connective tissue(19).

References