A STUDY OF THYROID CARCINOMAS

ETIOLOGY- EARLY DETECTION- TREATMENT

ESSAY

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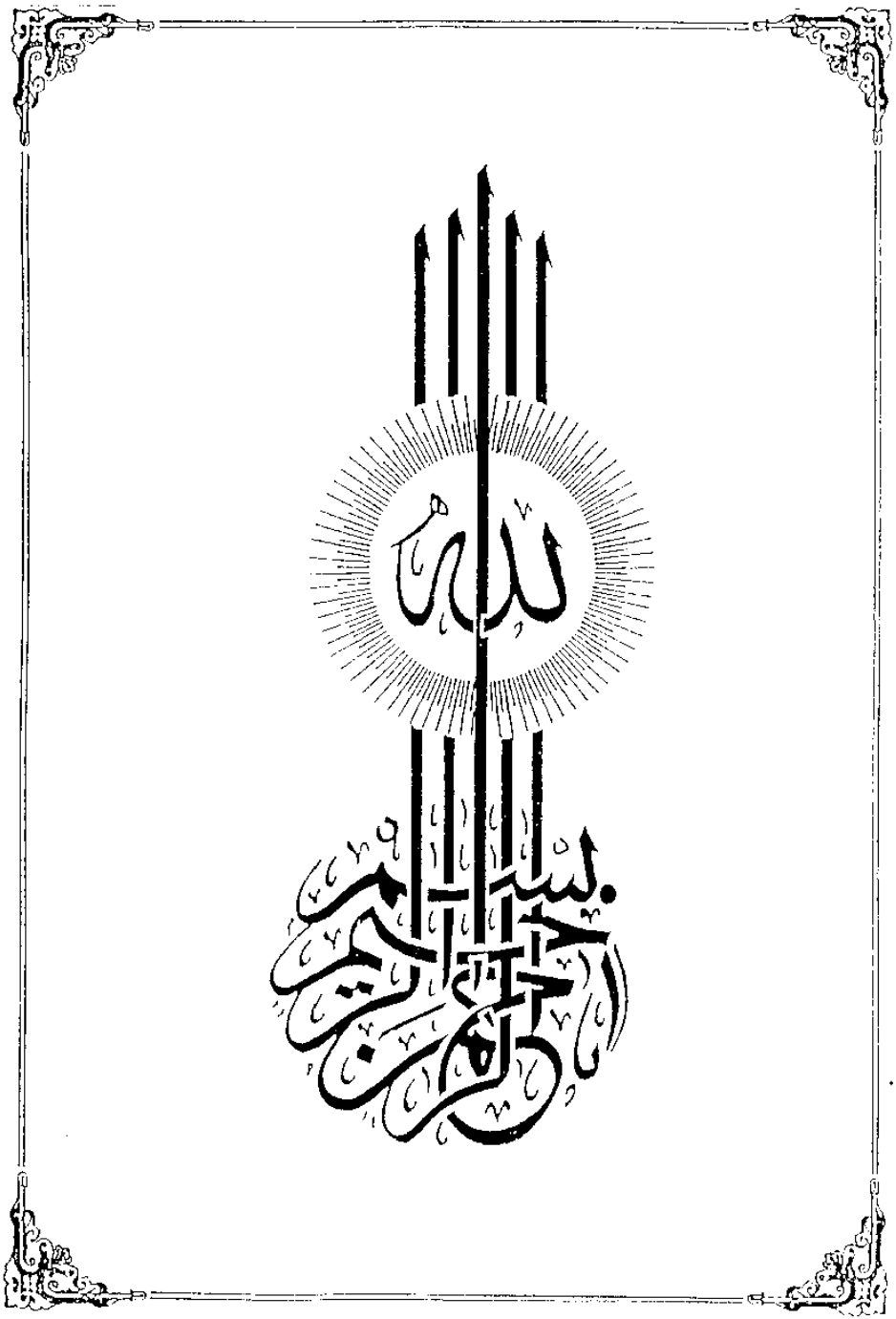

الى راحلى الغـالى ...

ابـــى الحبيب ..

يا نبع الحب و الحنان ... يا فخر الإنسانية و الإنسان

يا إنشودة قلبى فى كـــــــل زمـــــان و مكـــــان

الى روحك الطاهرة اهدى عملى هذا كـــــى أعيـــــش

بين صفحاته عـــلى ذكـــراك ..... ســـلام لـــك

يا حبيب العمر حتى القاك .

ســـامـــــح .

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INTRODUCTION

INTRODUCTION

Carcinoma of the thyroid gland is one of the most detectable of all neoplasms in term of biology. However it behaves in an unusual manner both as regards its wide histological variations and its clinical evolution. For this reason it has aroused our interest which comes to be out of proportion to its low incidence.

As a cancer, it shows extremely variable rate of growth unequaled by any other type of cancer. Thus the spread of the highly differentiated papillary caroinoma of the thyroid in the cervical lymph glands may be so slow as to last many years. On the other hand the highly anaplastic sarcoma-like growth spreads very rapidly both by lymphatics and by the blood stream.

Again this variation in behavior raises special problems as regards the line or lines of treatment to be pursued in any single case, accordingly this is an enormous difference of opinion reflected in the literature concerning even the fundamental rules of management.

Attention has been drawn to the singificant variation in age incidence of thyroid carcinomata, and especially the occasionaly occurence of such a cancer in children, it is not

REVIEW OF LITERATURE

THE NORMAL THYROID GLAND DEVELOPMENT

Embryologically, the thyroid appears about the third week, when the embryo is only about 3.5 to 4.0 mm in length (Harrison, 1978).

It begins as a proliferation of epithelial cells in the floor of developing pharynx, at a point indicated by the foramen cecum, a dimple - like depression at the base of the tongue. As the thyroid premordium descends, it requires mesodermal contributions such as the para pollicular c cells, which will ultimately secrete calcitonin. The thyroid then emerges as a bilobed diverticulum connected to the pharynx by the thyroglossal duct, which eventually becomes obliterated in most cases. With further descent, the thyroid eventually reaches its definitive location below the hyoid bone, anterior to the trachea and laryngeal cartilage and assumes its fully developed configuration of two lateral lobes usually joined by a median isthmus. At the end of the third month of fetal development, follicles containing colloid become visible, and it is probable that the gland begins to release the thyroid hormone at this time (Harrison, 1978).

A contribution from the fourth pouch probably exists. There is some evidence that the calcitonin secreting cells (parafollicular c cells) between the vesicles may develop from the fourth and even the fifth (ultimobranchial body) pouch (Last, 1978).

ANATOMY

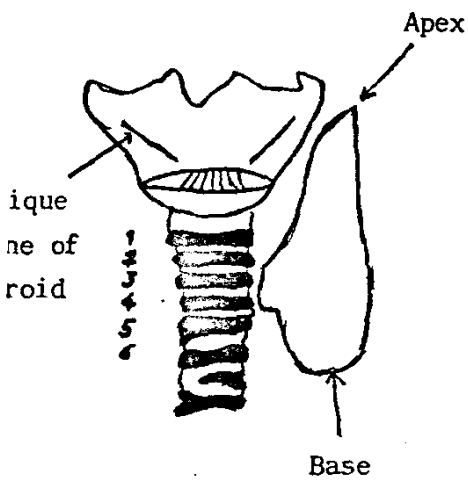
Thyroid gland is brownish red, highly vascular organ, situated anteriorly in the lower part of the neck at a level of fifth sixth and seventh cervical and first thoracic vertebrae (Gray, 1973).

It is ensheathed by the pretracheal layer of cervical fascia, and consists of right and left lobes, connected across the median plane by a narrow region termed isthmus, its weight is variable, usually about 25 gm, it is slightly heavier in females, in whom it becomes enlarged during menstruation and pregnancy (Last, 1980).

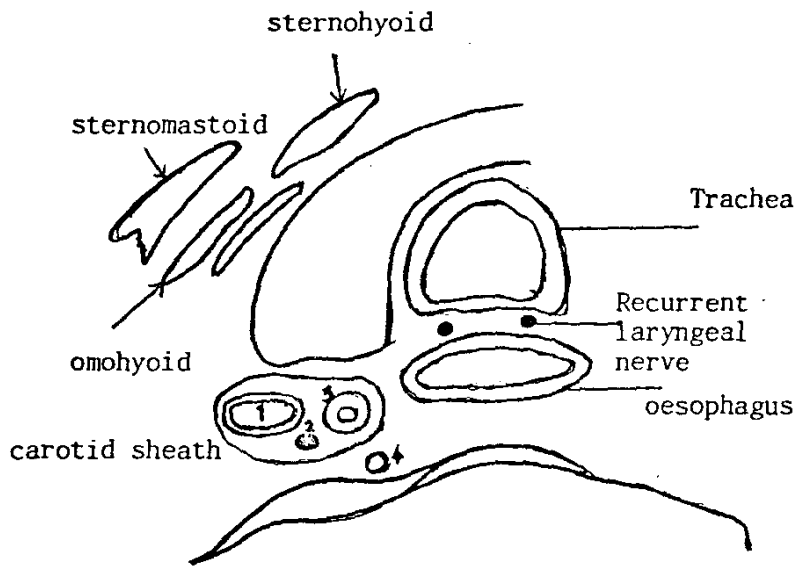
The lobe measures 5 x 2.5 x 2.5 cm., the isthmus measures 3.5 x 1.2 cm., each lobe extends vertically from the middle of the side of the thyroid cartilage to the sixth ring of the trachea. The isthmus covers the second, third and fourth rings of the trachea. A triangular projection of gland tissue called the pyramidal lobe extends upwards from the left side of the upper border of the isthmus, and is connected to the hyoid bone above by a fibrous band, the levator glandulae thyroideae (Mc'Greagor, 1975).

Relations :

Each lobe is roughly triangular on section, the superficial surface is covered by the infrahyoid muscle and the



Extent of lobe



Relations of the thyroid gland

1. Internal jugular vein
2. vagus nerve
3. common carotid artery
4. sympathetic trunk

sternomastoid muscle overlapping it. The medial surface is related to two tubes, the oesophagus and the trachea; two nerves, recurrent and external laryngeal nerves, two muscles, inferior constrictor and cricothyroid. The posterior surface overlaps the common carotid artery and covers the terminal part of the inferior thyroid artery (Last, 1980).

Blood Supply :

There are on each side of the gland two arteries and four veins.

The superior thyroid artery is the first branch given off from the anterior surface of the external carotid, enters the gland superficially, it runs downwards to the upper pole of the lateral lobe, where it breaks up into branches to the front of the gland, branches to the back of the gland, and a branch to anastomose with its fellow of the opposite side along the upper border of the isthmus. This vessel also gives off a branch to the pyramidal lobe which enters near its base where it can easily be ligated (Last, 1980). The second is the inferior thyroid artery which is a branch of thyrocervical trunk (from the first part of subclavian artery, and is a posterior relation of the gland, entering it from its posterior surface. Thyroidea ima artery, is an occasional vessel arising from the arch of the aorta or innominate. When present it enters the lower part of the isthmus (Last, 1980).

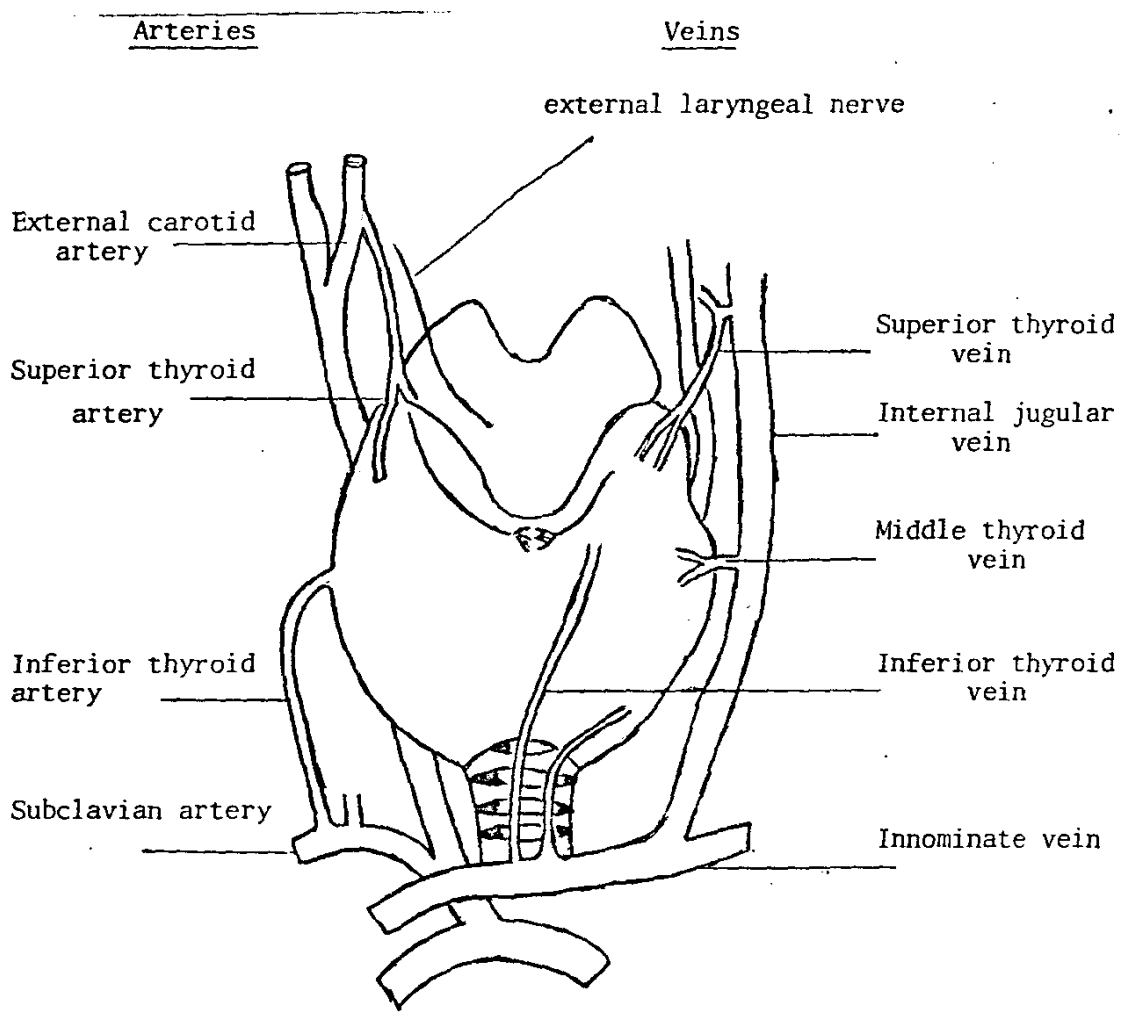


Fig. (I) : The thyroid gland from the front.

Accessory thyroid arteries, are small vessels to oesophagus and trachea, send branches to the thyroid gland. All large arteries to the gland may be tied off, and yet, the blood supply to the gland be surprisingly good because of these accessory vessels (Mc'Greagor, 1975).

The veins of the thyroid gland do not accompany their arteries.

The superior thyroid vein, leaving the upper part of the gland, and taking as its guide the outer border of the omohyoid, crosses the common carotid artery to terminate in the internal jugular vein.

The middle thyroid vein, leaving the gland about its middle, follows the inner border of the omohyoid cross the carotid, ending in the internal jugular. It is a short vessel of much importance in thyroid surgery. It bleeds furiously if torn. So it must be doubly ligated and cut in the process of delivering an intrathoracic extension of a goitre (Mc'Greagor, 1975).

The inferior thyroid vein, leaving the isthmus at its lower, runs downwards in front of the trachea to end in the innominate of the same side. Both inferior thyroid veins may join the left innominate (Last, 1980).

External laryngeal, and recurrent laryngeal nerve comes into intimate relationship with the gland (Mc'Greagor, 1975)

The external laryngeal nerve, is a branch of superior laryngeal nerve, supply the cricothyroid muscle, which is a tensor of the vocal cords. The nerve lies close to the superior thyroid vessels at the superior pole of the thyroid, with the nerve medial, the superior thyroid vein lateral, and the superior thyroid artery between them. Usually, the nerve lies outside the false capsule of the thyroid gland, and can therefore be separated from the vessels by blunt dissection while operating inside this capsule. In some instances, this cannot be accomplished, because the nerve is very close to the artery, or may even run between the branches of the artery, and may then be injured during ligation of the vessels. This can be avoided by ligation of the branches of the superior thyroid artery and vein on the thyroid gland below the superior pole. Injury to the nerve results in hoarseness, a decreased range of pitch and fatigue in speaking (Mc'Greagor, 1975).

The recurrent laryngeal nerve arises from the vagus nerve in the neck, lies in the tracheo-oesophageal groove, and posterior to the inferior thyroid artery, the nerve may be lateral in (28%) or anterolateral in (10%) to the trachea and in (30%) of instances it passes anterior to the inferior