EFFECTS OF DISEASE DIOSRDER ON THYROID FUNCTION IN THE ELDERLY

Thesis
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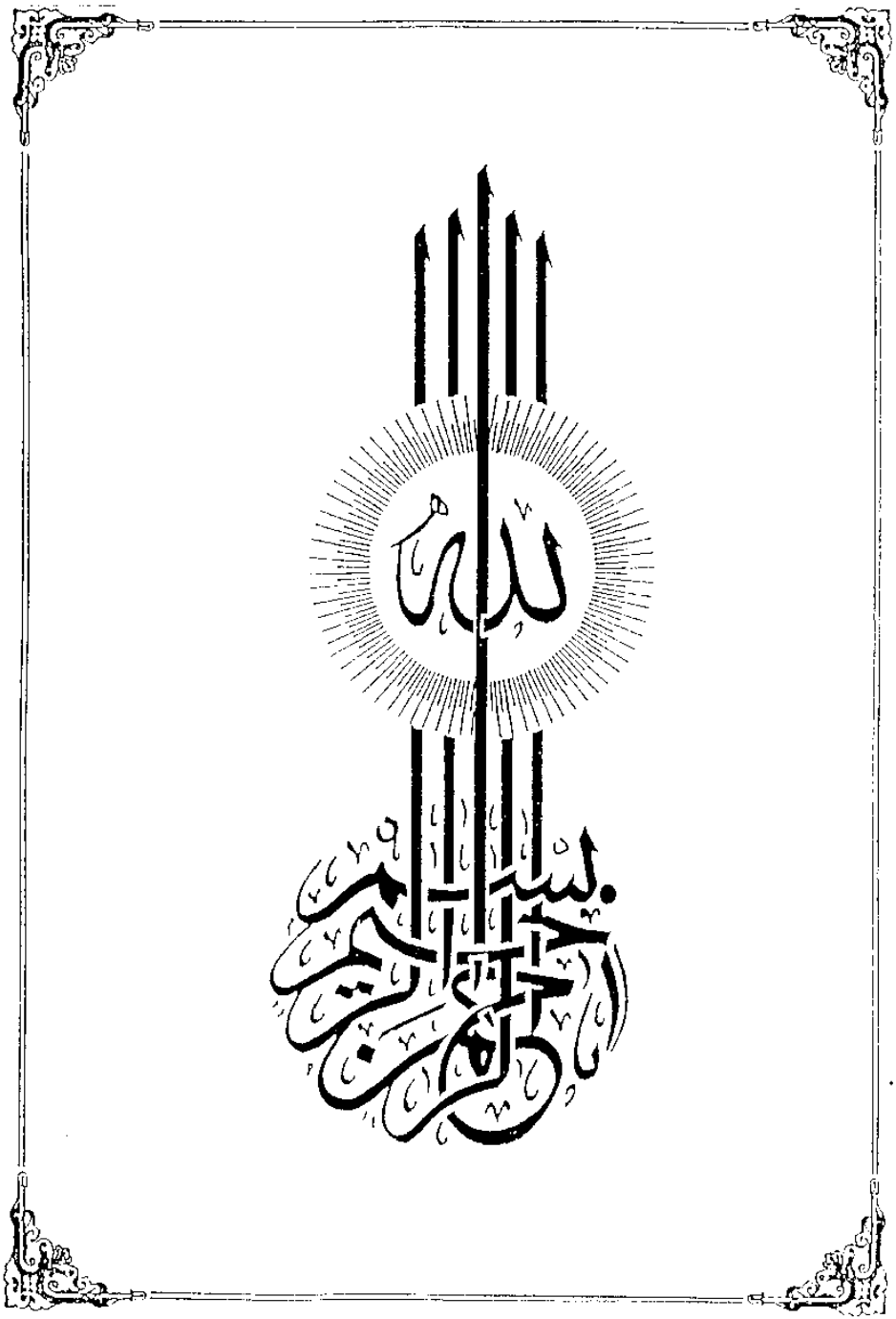

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INTRODUCTION & AIM OF WORK:

The thyroid gland is unique among the endocrine glands in its regulation of metabolic processes in most organs & system by affecting the activity & secretion & degradation rates of various enzymes & other hormones & the responses of their target tissues to them. There is no tissue or organ system escapes the effects of thyroid excess or insufficiency.

- Aging is associated with significant changes in the anatomy of the thyroid gland & in the physiology of hypothalamic – pituitary hormone thyroid axis in addition to tissue responsiveness to thyroid hormone may also be altered with age the reduced thyroid hormone clearance with age explains the reduced daily replacement doses of thyroxine in hypothyroid elderly subjects (Moordian AD; 1995).

-Thyroid diseases are known to occur with increasing frequency in the thyroid disease are known to occur with increasing frequency in the elderly population clinical manifestation can be very subtle & may often be misleading due to advanced age (Stuck L.M. ; Mc Farland KF; 1991)

-Thyroid gland dysfunction is a relatively common clinical problem in elderly people & is associated with significant morbidity if left untreated the clinical features of thyroid disease may be subtle easily or overlooked or misdiagnosed a high index of suspicion is necessary in the selection & interpretation of thyroid function tests it is important to consider both the effect of illness & certain drugs on thyroid function tests (Finucane P: Anderson C ;1995)

-The aim of the work is to study the reflection of associated different presentation & disease in the elderly on thyroid functions.

- This was carried out by measuring thyroid hormone & function in elderly (T_3- T_4-TSH).

REVIEW

DEVELOPMENT OF THYROID GLAND:

The thyroid gland arises as an endodermal diverticulum situated in the midline of the floor of the primitive pharynx , between the tuberculum impar (anteriorly) & the hypobranchial eminence (posteriorly)this diverticulum elongates & forms the thyroglosaal duct . the part of the thyroglossal duct between the hyoid bone & the isthmus of the gland is transformed into a fibrous cord called levator glandulae thyroideae above the hyoid bone , the endodermal cells of the thyroglossal duct form the follicles of the gland while the surrounding mesoderm forms the connective tissue & vessels of the gland .

•ANATOMY OF THYROID GLAND:

-The thyroid gland has the shape of a butterfly it is wrapped & firmly fixed by fibrous tissue to the anterior & lateral parts of the larynx & the trachea it consists of two lobes joined at the median plane by a narrow isthmus . the isthmus lies across the 2^{nd},3^{rd} & 4^{th} tracheal rings.(Pitman ,1962)

-The average weight of the normal non – goitrous adult gland is 15-20g. the width & length of the isthmus is 20mm in average & its thickness is 2-6mm . the lateral lobes from superior to inferior poles usually measure 4cm , their breadth 15-20mm & their thickness 20-39mm (Braverman ,1978).

-The arteries supply the gland are superior & inferior thyroid arteries that arise from the external carotid & thyrocervical trunk of the subclavian arteries .

-The veins from a plexus on the surface of the gland & on the front of the trachea from this plexus the superior , middle & inferior thyroid veins arise . the superior & middle end in the internal jugular vein , whereas the inferior terminates in the left cephalic vein (Johnson , 1955).

-The lymph vessels run in interlobular connective tissue & communicate with a network in the capsule of the gland . they end in the thyroid duct & the right lymphatic duct (Johnson , 1955).

-The thyroid is innervated by both sympathetic & parasympathetic nervous system via fibers arising from the cervical ganglia & the vagus nerve , respectively .in addition to vasomotor innervation , there exist a

network of adrenergic fibers that terminate near the basement membrane of the follicular wall (Fawcett et al ., 1969).

•HISTOLOGY:

The follicles are spherical with average diameter of 300mm .the walls of the follicle consist of a continuous epithelium one cell deep & the parenchyma of the thyroid (Wissig, 1960). There are individual cells of small groups that do not extend to the follicular lumen & may appear as clusters between follicles. These are the C- cells, which secrete calcitonin in response to an increase in serum calcium (Hirsch & Munsen, 1969).

-PHYSIOLOGY OF THYROID HORMONE :

•INTAKE & ABSORPTION OF IODINE:

Water, food & medicine are important main sources of iodine. The iodine intake varies from less than 10Mg /day in areas of extreme deficiency to a few grams / day for person receiving medicinal iodine. (Wynn, 1961)

The concentration of inorganic iodide in the plasma is usually less than 1Mg /dl it is largely extracellular, but small amounts are found in red cells & detectable quantities penetrate the bone. Iodine leaves this compartment through thyroid uptake & urinary excretion. (De Groot, 1966).

•THYROGLOBULIN SYNTHESIS & STORAGE:

Thyroid hormone are iodine containing amino acids of L-configuration, the endoplasmic reticulum of the follicular cells of the thyroid gland is the site for thyroglobulin synthesis. From the cisternae of the endoplasmic reticulum the thyroglobulin is transferred to the Golgi apparatus by an energy dependent process (Jamieson & Palade, 1971).

As the thyroglobulin passes through the Golgi apparatus monosaccharides become incorporated in it (Bouchilloux et al., 1973)
It is then stored in vesicles at the apex of the follicle cell (Ekholm & Wollman, 1975) the vesicles then empty their contents into the follicle lumen, which is the main store of thyroglobulin (Smeds, 1972)