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Thyroid Disorders and Therapy

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Commentary

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Introduction

The thyroid is a butterfly-shaped gland, which rests in the middle of lower neck. It is one of the endocrine gland which regulates body metabolism by producing T₄ and T₃ hormones. The quantity of thyroid hormones is monitored and controlled by the pituitary gland. When the pituitary gland senses the lack of thyroid hormones or high levels of thyroid hormones, it will modify its own TSH hormone, and it sends signal to thyroid.

Causes for Thyroid disorders

A thyroid disorder is a medical condition, which impairs the function of thyroid, includes distinct problems, some of which are most common. These includes : which may occur due to high or low production of thyroid hormone, or due to increased growth of thyroid gland, formation of thyroid nodules or lumps, which may be cancerous.

Hyperthyroidism: this is one of the thyroid disorders which occur due to more production of thyroid hormones ^[1-5] more than the body requirement.

Hypothyroidism: It occurs due to less amount of secretion ^[6-9] of thyroid hormone than the requirement.

Iodine deficiency: Iodine is used by the thyroid gland to produce the hormones. Iodine deficiency ^[10] can be eliminated by use of iodized salt.

Thyroid cancer: occurs due to abnormal growth of cells originating either form follicular or para follicular thyroid cells. These cells in turn give rise to both well-differentiated cancers ^[11-23] (papillary and follicular) and anaplastic thyroid cancer.

Goiter : Goiter is one of the thyroid disorder, resulting due to enlargement of Thyroid gland.

Thyroiditis: occurs due to swelling of thyroid gland, is a inflammatory process, which includes symptoms like fever and Pain.

Sub-acute thyroiditis: Acute inflammatory disorder of thyroid gland, which occurs due to viral infection.

Hashimoto's thyroiditis: Hashimoto's thyroiditis is an auto immune disease, ^[24-28] in which the immune system turns attacks the own body's tissues i.e.thyroid. This can lead to primary hypothyroidism. Hashimoto's thyroiditis is a painless disease of the immune system which is hereditary.

Grave's Disease: It is one of the auto immune disorder ^[29], and is common cause of over active Thyroid gland.

Diagnosis

If thyroid disorders are diagnosed earlier, it could be controlled before the onset of symptoms. It could be difficult to diagnose, because symptoms are often confused with other symptoms. TSH (thyroid stimulating hormone test, is one of the method used to identify thyroid disorders before the onset of symptoms. Blood test can provide the information about the levels of the hormones related to thyroid, which includes:

TSH: TSH is the hormone produced by pituitary gland, which tells the thyroid when to produce the thyroid hormones. Low level of TSH in blood indicates that the thyroid function is excessive (hyperthyroidism), and high level of TSH ^[30-32] indicates that less amount of thyroid hormone is produced (hypothyroidism).

T₄: Excess levels of T₄ hormone in blood indicates an over active thyroid, and low levels of T₄ indicates under active thyroid function.

T₃: Higher levels of T₃ are due to hyperthyroidism, and low levels are caused due to hypothyroidism. Thyroid antibody: Blood test helps to identify the thyroid antibodies. Auto immune ^[33] thyroid diseases like Hashimoto's thyroiditis or Graves' disease, which makes the immune system to release proteins known as antibodies. These antibodies attack the thyroid, considering it as a foreign tissue. Apart from the blood tests, they are several other tests used to diagnose thyroid disorders.

Radioactive iodine uptake (RAIU): Radioactive iodine pill helps to determine the thyroid gland functioning. If thyroid gland, draws high amount of iodine released by the pill, indicates hyperthyroidism, and low RAIU indicates under active thyroid.

Thyroid scan: It is used along with RAIU, which reveals specific regions in thyroid using either too much or too little radio active iodine.

Ultrasound: Ultra sound images reveal the underlying structural causes of thyroid ^[34-45] disorders which may be either tumor or cyst.

Treatment

Antithyroid drugs: An anti thyroid drugs are used to treat thyroid disorders, which usually acts on thyroid hormones. Antithyroid medications includes - propylthiouracil (PTU) and methimazole (also known as Tapazole), which are mostly similar, as they both stop the thyroid from producing T₃ and T₄ hormones. Types of Thyroidectomy

Partial thyroid lobectomy— It is one of the rare procedure which includes removal of part of one thyroid lobe. Thyroid lobectomy — All of one thyroid lobe ^[46] is been removed. Subtotal thyroidectomy —it is usually carried out in toxic thyroid such as primary or secondary and toxic multinodular goiter (MNG). Usually one thyroid lobe, isthmus ^[47] or part of second lobe are been removed. Total thyroidectomy — The complete ^[48-51] thyroid gland is removed. Complete removal of thyroid gland ^[52-55] is usually recommended, as there will not be any chance of relapse or recurrence. However it is recommended for the patients to be on thyroid medication, in order to compensate the lack of thyroid gland functioning.

Other reasons for thyroidectomy includes

- Patient diagnosed with severe Graves' ophthalmopathy.
- As radio iodine treatment is contradicted in pregnant women and who are unwilling to take thionamides, in such instance thyroidectomy can be adapted.

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