GOITRE PROBLEM IN SRI LANKA

Dr. Laxman Watawana
Head, Nuclear Medicine Unit, University of Peradeniya

The thyroid gland is an endocrine gland situated in the neck, on either sides of the trachea. It is a well capsulated gland consisting of acini. Acini are made of cells arranged in a circular manner and the center is filled with globulins. The thyroid gland secretes mainly Thyroxin and Tri-iodo-thyronin (T_3) and this is regulated by a hormone secreted by the pituitary gland known as Thyroid-Stimulating Hormone (TSH).

When there is iodine in the blood circulation it is trapped by the thyroid gland. This iodine is converted into Mono-iodo-thyronin, Di-iodo-thyronin, Tri-ido-thyronin and Thyroxin. For this process the enzyme tyroxidase is vital. When Tri-iodo-thyronin and Thyroxin are formed they are liberated to the blood circulation by active transport.

The active ingredient of this hormone is T_3 and this is essential for peripheral tissue metabolism. Thyroxin is converted into T_3 by the peripheral tissue. Without thyroid hormone living is impossible.

Common Thyroid diseases are:

1) Goitre
2) Hyper thyroidism
3) Hypo thyroidism
4) Thyroiditis
5) Thyroid Cancer

"Goitre" is enlarged thyroid gland. Goitre is a common problem in Sri Lanka and in particular in the wet zone. For goitre to develop there are several causes and one of the most important cause is iodine deficiency. There are other identified causes and one of these being the familial tendancy. Goitre is more common in the wet zone may be due to the wash out of iodine due to high rain fall, and lack of iodine containing foods like sea food. Goitre is more common among females than males.

Goitres are classified into several categories. These being:

1) Simple diffuse enlargement
2) Solitary Nodule
   - Cystic
   - Solid
     - active
     - cold
3) Multinodular goitre
4) Graves' disease
5) Thyroiditis

Simple diffuse enlargement is the commonest disease we come across. This is mainly due to iodine deficiency and to compensate the deficiency the gland becomes enlarged. This is very common among adolescent females. The thyroid gland in enlarged, diffused and soft.

Solitary nodule is a single enlarged thyroid nodule. This could be cystic or solid. Solitary nodule could be:

1) Thyroid cyst
2) Local inflammation of the thyroid gland
3) Functionary tumour (adenoma)
4) Colloid nodule
5) Thyroid cancer
6) Secondary deposits from a primary cancer

The probability of thyroid cancer in the presence of solitary nodule is comparatively high. Therefore if one has a solitary nodule it should be investigated to exclude the probability of a cancer.

Multinodular goitre - As the word describes this type of goitre has multiple lumps in the thyroid gl and. If you leave a simple diffuse goitre without treatment it can become a multinodular goitre. The chance of multinodular goitre to become a cancer is lower than the solitary nodule but still there is a certain risk of it to be a cancer. Therefore it too should be investigated.

Graves' disease - In graves' disease the body produces a substance called Long Acting Thyroid Stimul ator (LAST). This stimulates the thyroid gland to produce excessive amount of thyroid hormone. Patients become thin, develop diarrhoea and excessive sweating and they have protruding eyes. This disease is treatable but if untreated they can get complications like damage to the eye, and heart diseases like atrial fibrillation.

Thyroiditis - This is an inflammation of the thyroid gland and this may be due to viruses, bacteria and or autoimmune disease. They can be present with painful neck or hyper or hypo activity of the thyroid gland.

The common causes of goitre are:

1) Iodine deficiency
2) Iodine Trapping mechanism failure
3) Idiopathic (cause is not known)
4) Drug induced
5) ? Hereditary

Out of these, the iodine deficiency is the commonest cause. The familial tendancy is also important.

Goitre can become malignant. Following features are suggestive of malignancy.

1) A clinically Solitary Thyroid Nodule
2) Multinodular goitre with a dominant inactive nodule.
3) Previous radiation therapy for abnormalities in the headand neck.
4) Thyrotoxicosis due to Graves' disease where there is an inactive nodule.
5) Following a family screening for medullary cancer.
6) Rapidly growing goitre, particularly thyroiditis.

Histologically there are several types of cancer:

a) Papillary cancer
b) Follicular cancer
c) Medullary cancer
d) Anaplastic cancer

Along with goitre some other symptoms and signs are also associated. They include:

1) Hyper thyroidism
2) Hypo thyroidism
3) Thyroiditis
4) Cancer

In Hyper thyroidism the thyroid gland functions excessively. Therefore the peripheral metabolism goes up and the patient can be presented with loss of weight, increased appetite, diarrhoea, tremors of hand, sleepl ess ness and anxiety. This condition could be treated.

In Hypo thyroidism the thyroid gland functions less than it should. The symptoms are lethargy, excessive sleepiness, puffiness of the body, constipation, numbness of the hands etc. This too could be treated easily.