THE BUSINESS TIMES
40TH ANNIVERSARY

Tackling thyroid gland conditions the right way

Dec 03, 2016

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The thyroid gland is a butterfly shaped gland in front of the neck. It produces a thyroid hormone that helps the body use energy, stay warm and keep the brain, heart, muscles, and other organs working as they should.

Thyroid nodules (lumps) can develop in thyroid glands and are common. It is estimated that one in 20 patients will have a thyroid nodule that can be felt. Thyroid nodules are more common in women than in men although if a male has a thyroid nodule, the chance of thyroid cancer is higher.

Patients frequently enquire about the causes of a thyroid nodule or malignancy and wonder if it is related to smoking, diet or lifestyle. The simple answer would be no. Most thyroid nodules grow spontaneously and genetics can possibly be a cause since thyroid nodules have been noted to run in families. Radiation exposure especially during childhood can increase one's risk of thyroid nodules and cancer though this would be an uncommon cause in most patients.

Besides the presence of a neck lump that tends to move with swallowing, there are frequently no other symptoms. Most patients with a thyroid nodule will have a normal thyroid hormone level and thus will not have symptoms of excessive (hyperthyroidism) or inadequate thyroid hormone levels (hypothyroidism) described below.

Patients with advanced thyroid cancer can present compressive symptoms such as breathlessness, inability to eat (as the swallowing tube is compressed), hoarseness and pain.

COMMON THYROID DISEASES

1) Thyroid nodules (lumps)

A thyroid nodule is simply a lump that grows on the thyroid gland. It can be solid or filled with liquid (cystic). A thyroid nodule that is bigger than 1-1.5cm will generally need to be investigated thoroughly. This may include:

Ultrasound scan thyroid:

This will show us features of the thyroid nodules such as the size and features associated with malignancy such as irregular edges, microcalcification and central hypervascularity.

Fine needle aspiration cytology (FNAC):

This involves using a needle to obtain some cells to examine this under microscope. It is able to assist in predicting the probability of malignancy.

Blood tests:

Thyroid function test including T4 (thyroxine) and TSH (thyroid stimulating hormone). T4 exists normally in your body to ensure normal functioning of your organs.

Nuclear scans of the thyroid:

This was frequently done in the past to evaluate thyroid nodules. However, the use of thyroid ultrasound and biopsy have proven so accurate and sensitive that nuclear scanning is no longer considered a first-line method of evaluation. Nuclear scanning is now used in the evaluation of rare nodules that cause hyperthyroidism. In this situation, the nuclear thyroid scan may suggest that no further evaluation or biopsy is needed. In most other situations, neck ultrasound and FNAC remain the best and most accurate way to evaluate all types of thyroid nodules.

Based on the results of the investigations, we can then decide on further management based on international guidelines from, say, the American Thyroid Association (ATA) or National Comprehensive Cancer Network (NCCN). Management will include serial observation with repeat ultrasound thyroid and possibly repeat fine needle aspiration cytology if the lump increases in size in future. This can be done usually when the FNAC result is benign or the lump contains fluid. They can be observed with regular ultrasound scans once every few months to monitor the lump.

Diagnostic lobectomy/Hemithyroidectomy:

This is a surgery where half the thyroid gland is removed and sent for testing. The final histology usually takes about three days to return and this will guide further management.

Total thyroidectomy:

This is performed when the lump is bigger than 1cm and proven to be malignant. The entire thyroid gland is removed and sent for testing to assist in obtaining the stage of the cancer. Further treatment subsequently with radioiodine is necessary usually one month after the surgery to target potential micrometastases.

Radioiodine (RAI):

This is available in a liquid form and can help improve the survival of patients with well-differentiated (papillary or follicular) thyroid cancers and it is standard practice in most cases except when the thyroid cancer is small. For patients with early thyroid cancers usually detected on screening, RAI may not be necessary.

Short-term side-effects of RAI treatment may include neck tenderness and swelling, nausea and vomiting, swelling and tenderness of the salivary glands, dry mouth/eyes.

Longer-term side-effect include low fertility in men especially if they have received a large dose of RAI. Women should avoid becoming pregnant for six months to a year after treatment. No birth defects have been noted in the children born to parents who received radioactive iodine in the past. Both men and women may have a very slightly increased risk of leukaemia in the future though this should not deter one from getting RAI if it is indicated.

Surgical approaches:

Conventional thyroid surgeries are performed with a horizontal skin incision measuring about 6cm in the front of the neck. The gland is then dissected out and care is taken to preserve the recurrent laryngeal nerves (controls the voice box) and the parathyroid glands (control calcium level).

The scar usually heals very well in six months if proper care is taken after surgery. Other approaches include minimally invasive video assisted thyroid surgery (Mivat), robotic thyroid surgery and even transoral surgery. For selected patients, Mivat can be an option whereby the thyroid gland can be dissected out with a scar just measuring 2.5cm in the neck (see picture).

This is an option for patients with a history of hypertrophic or keloid scars. However, patient safety is of utmost importance and complete removal of a suspected thyroid cancer with clear margins is the priority in choosing the appropriate surgical approach. There should never be any compromise on complete clearance of thyroid cancers for the sake of cosmesis. The American Thyroid Association guidelines is very useful in directing the management of patients with thyroid nodules.

2) Hyper/hypothyroidism

Graves Disease:

This is an auto-immune condition where the body produces antibody that stimulates the thyroid gland to enlarge and produce excessively high thyroid hormone levels resulting in hyperthyroidism. Symptoms include rapid, irregular heartbeat (palpitations), unexplained weight loss, muscle weakness, hand tremors, difficulty sleeping, nervousness or irritability, and diarrhoea.

Patients with Graves Disease may also have bulging eyes, double vision and eye dryness possibly requiring an evaluation by an eye specialist.

Treatment of Graves Disease

Medication:

Antithyroid medication can be used to decrease the amount of thyroid hormone production. However, the treatment can take up to 18 months and there is a high relapse rate of more than 50 per cent. During the treatment period, it can be challenging to titrate the medication to obtain a normal thyroid hormone level.

Radioiodine(RAI):

The aim of the treatment is to achieve hypothyroidism in three months. Subsequently, thyroid hormone replacement will have to be initiated. If thyroid function does not normalise within 6-12 months of treatment, a second course at a similar or higher dose can be given. There is a small possibility that RAI can precipitate "thyroid storm". This can be potentially fatal with the patient suffering from heart attacks or heart failure. RAI is also not an option for patients who are pregnant or intending to get pregnant within the next six months.

Surgery:

A total thyroidectomy or subtotal thyroidectomy (leaving a small thyroid remnant behind so the dose of thyroid hormone replacement can be lower) can be performed. This provides a quick solution to a disease that can otherwise require months of medical treatment and is suitable for patients who understand the benefits versus the risks of the surgery.

3) Hashimoto's thyroiditis:

This is an auto-immune condition whereby the body's antibody attacks the thyroid gland resulting in hypothyroidism. Symptoms include fatigue, weakness, weight gain, coarse, dry hair, dry, rough pale skin, hair loss, cold intolerance, muscle cramps and frequent muscle aches, constipation, depression, memory loss, abnormal menstrual cycles, and decreased libido.

Diagnosis is achieved with blood tests including antithyroid antibodies. Long-term monitoring is necessary since most patients end up being hypothyroid and will need thyroid hormone replacement.

The thyroid gland is an important organ in our body that performs essential function. It can occasionally lead to conditions such as thyroid cancers or thyroid hormone levels dysfunction. Well-differentiated thyroid cancers usually have very good outcomes when detected early and patients can be cured. Thyroid hormone levels dysfunction are conditions that need careful management to prevent the harmful side-effects of hyper or hypothyroidism.

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