THYROID CANCER

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Abstract: *Thyroid cancer is a growth of cells that begins in the thyroid gland. The thyroid gland is a butterfly-shaped gland located in the lower neck, just below the Adam's apple. The thyroid gland produces hormones that regulate heart rate, blood pressure, body temperature, and weight. Thyroid cancer may not cause any symptoms at first. But as it grows, it can cause signs and symptoms such as a lump in your neck, a change in your voice, and difficulty swallowing.*

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There are several types of thyroid cancer. Most types grow slowly, but some types can be very aggressive. Most thyroid cancers can be cured with treatment.

The rate of thyroid cancer seems to be increasing. This increase may be due to improved imaging technology that allows health care providers to find small thyroid cancers on CT and MRI scans done for other conditions (incidental thyroid cancer). Thyroid cancers found this way are usually small cancers that respond well to treatment.

Thyroid cancer occurs when thyroid cells develop changes in their DNA. The cell's DNA contains instructions for what to do. The changes, which doctors call mutations, tell the cells to grow and multiply rapidly. The cells

continue to live when healthy cells die naturally. The cells that accumulate form a mass called a tumor.

The tumor can invade nearby tissues and spread (metastasize) to lymph nodes in the neck. Sometimes, cancer cells can spread beyond the neck to the lungs, bones, and other parts of the body. For most thyroid cancers, it is not clear what causes the DNA changes that lead to cancer. Thyroid cancer is divided into types based on the types of cells found in the tumor. Your type is determined when a tissue sample from your cancer is examined under a microscope. The type of thyroid cancer is considered when determining treatment and prognosis.

Types of thyroid cancer include:

Differentiated thyroid cancer. This broad category includes types of thyroid cancer that begin in the cells that produce and store thyroid hormones. These cells are called follicular cells. Differentiated thyroid cancer cells look like healthy cells when viewed under a microscope.

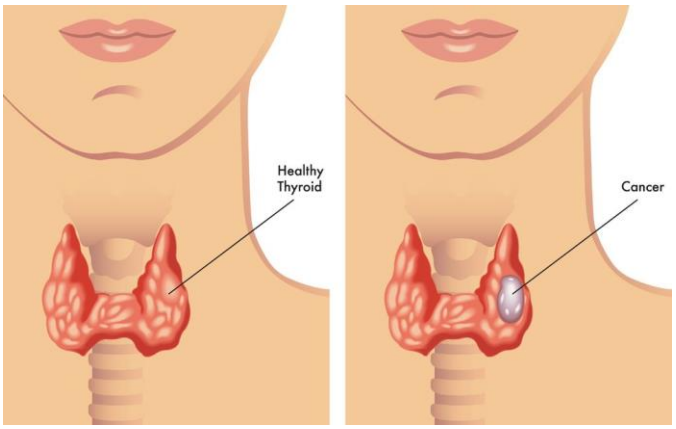
Papillary thyroid cancer. This is the most common type of thyroid cancer. It can occur at any age, but it most often affects people between the ages of 30 and 50. Most papillary thyroid cancers are small and respond well to treatment, even if the cancer cells have spread to the lymph nodes in the neck. A small percentage of papillary thyroid cancers are aggressive and can invade structures in the neck or spread to other parts of the body.

Follicular thyroid cancer. This rare type of thyroid cancer usually affects people over the age of 50. Follicular thyroid cancer cells do not often spread to the lymph nodes in the neck. However, some large and aggressive cancers can spread to other parts of the body. Follicular thyroid cancer often spreads to the lungs and bones.

Hurthle cell thyroid cancer. This rare type of thyroid cancer was previously considered a type of follicular thyroid cancer. It is now considered

its own type because the cancer cells behave differently and respond to different treatments. Hurthle cell thyroid cancer is aggressive and can involve structures in the neck and spread to other parts of the body.

Poorly differentiated thyroid cancer. This rare type of thyroid cancer is more aggressive than other differentiated thyroid cancers and often does not respond to standard treatments.



Anaplastic thyroid cancer. This rare type of thyroid cancer grows quickly and can be difficult to treat. However, treatments can help slow the progression of the disease. Anaplastic thyroid cancer usually occurs in people over the age of 60. It can cause serious signs and symptoms, such as swelling in the neck that can get worse very quickly and cause difficulty breathing and swallowing.

Medullary thyroid cancer. This rare type of thyroid cancer begins in cells in the thyroid gland called C cells, which produce the hormone calcitonin. High levels of calcitonin in the blood can indicate medullary thyroid cancer at a very early stage. Some medullary thyroid cancers are caused by a gene called RET, which is passed from parents to children. Changes in the RET gene can cause familial medullary thyroid cancer and multiple endocrine neoplasia type 2. Familial medullary thyroid cancer increases the risk of thyroid cancer. Multiple endocrine neoplasia type 2 increases the risk of thyroid cancer, adrenal cancer, and other types of cancer. Other rare types. Other very rare types of cancer can begin in the thyroid gland. These include thyroid lymphoma, which begins in the immune system cells of the thyroid gland, and thyroid sarcoma, which begins in the connective tissue cells of the thyroid gland.

Thyroid cancer is three times more common in women than in men. It is most common in women in their 40s and 50s and in men in their 60s and 70s. Other risk factors include:

• Obesity

• Low iodine intake

• Radiation therapy for head and neck cancer, especially during childhood

• Exposure to radioactive fallout from a nuclear weapon or power plant accident

If you have symptoms of thyroid cancer, your healthcare provider may order one or more of these tests:

• Thyroid blood test: This test checks whether your thyroid gland is producing hormones properly. Usually, cancer does not affect your hormonal function.

• Biopsy: During a fine-needle aspiration biopsy, your provider removes cells from your thyroid gland to check for cancer.

• Imaging scans: Imaging tests can detect thyroid cancer and the spread of the cancer. These include ultrasound, radioactive iodine scan, CT scan, and PET scan.

Thyroid cancer is staged from 1 (I) to 4 (IV). The higher the number, the larger the tumor or the more widespread the cancer is. Usually, cancer cells first spread to nearby structures and lymph nodes. Then they spread to distant lymph nodes, organs, and bones. The specifics of thyroid cancer staging systems vary depending on the type of cancer. For some types of thyroid cancer, your age is also important. Talk to your healthcare provider to find out what stage of cancer applies to you.

Surgery is the most common treatment. The surgeon may remove your entire thyroid gland (thyroidectomy). Or they may remove just the diseased part

(lobectomy). They may also remove lymph nodes where the cancer cells are located.

Other treatments include:

Radioiodine therapy: You may need this treatment to kill any remaining cancer cells after surgery. You swallow a pill or liquid that contains radioactive iodine. Only the thyroid tissue absorbs it. The radiation destroys the diseased tissue.

Radiotherapy: Some cancers cannot absorb the iodine in radioiodine therapy. Instead, you may need radiation therapy, which uses a machine to deliver radiation.

Hormone therapy: This treatment stops new thyroid tissue from growing again after surgery. It may prevent the cancer from coming back.

Targeted therapy: This treatment targets specific gene mutations in cancer cells. Doctors use it to treat aggressive or advanced cancers.

Chemotherapy: Chemotherapy uses drugs to kill cancer cells in your body. Doctors rarely use it when treating thyroid cancer. But you may need it for aggressive cancers that don't respond to treatment.

Clinical trial: You may need a clinical trial to get access to new treatments. This is a good option if other treatments don't help enough.

If you have had surgery or radiation therapy on your thyroid gland, you will need thyroid hormone replacement therapy for the rest of your life. You may take synthetic thyroid hormones, such as levothyroxine.

Screening: A genetic test can determine if you were born with a gene change that increases your risk of thyroid cancer. If you have this condition, your doctor may recommend annual screening or surgery to detect and prevent cancer early. Taking potassium iodide: Taking this medication within 24 hours of exposure to radiation during a nuclear disaster may reduce your risk of cancer. Potassium iodide blocks your thyroid gland from absorbing too much

radiation. Receiving a cancer diagnosis, regardless of the type, is distressing. Fortunately, most thyroid cancers respond well to treatment. Your healthcare provider can discuss the best treatment for the type of thyroid cancer you have. After treatment, you may need to take thyroid hormones for the rest of your life. These hormones support vital body functions. You will also need to have regular checkups to monitor your health.

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