



Pediatric Thyroid Cancer

The thyroid is a butterfly shaped gland located at the base of the throat. It has two lobes separated in the middle by a strip of tissue (the isthmus). The thyroid itself secretes three main hormones: (1) Thyroxine contains iodine, needed for growth and metabolism; (2) Triiodothyronine, similar in function to Thyroxine, effects body size, tissues growth, and function; and (3) Calcitonin, which decreases the concentration of calcium in the blood and increases calcium in the bones. All three of these hormones have an important role in your child's growth.

Thyroid cancer is the third most common tumor malignancy in children. It occurs six times more often in females than males and shares several characteristics with adult thyroid cancer patients. Surgery is the preferred treatment for this cancer and although the procedure is often uncomplicated, one of the risks of thyroid surgery involves vocal cord paralysis. Consequently, an otolaryngologist—head and neck surgeon should be consulted.

Types of thyroid cancer in children:

Papillary: This form of thyroid cancer occurs in cells that produce thyroid hormones containing iodine. This type, the most common form of thyroid cancer in children, grows very slowly.

Follicular: This type of thyroid cancer also develops in cells that produce thyroid hormones containing iodine. The disease afflicts a slightly older age group and is less common in children. This type of thyroid cancer is more likely to spread to the neck via blood vessels causing the cancer to spread to other parts of the body, making the disease difficult to control.

Medullary: This rare form of thyroid cancer develops in cells that produce calcitonin, a hormone that does not contain iodine. This cancer tends to spread to other parts of the body and constitutes about 5-10 percent of all thyroid malignancies. Medullary thyroid carcinoma (MTC) in the pediatric population is usually associated with multiple endocrine neoplasia type 2 (MEN2), an inherited genetic form of the cancer.

Anaplastic: This is the fastest growing of the thyroid cancers, with extremely abnormal cells that grow and spread rapidly, especially locally in the head and neck region. This form of cancer usually is found in older patients.

Symptoms:

The symptoms of this disease vary. Your child may have a lump in the neck, continuous swollen lymph nodes, a tight or full feeling in the neck, and/or trouble with breathing or swallowing, hoarseness.

Diagnosis:

If any of these symptoms occur, consult your child's physician for a diagnosis. The diagnosis could consist of a head and neck examination to determine if unusual lumps are present; a blood test to indicate how the thyroid is functioning; a sonography, which uses high-frequency sound waves and a computer to create an image of the thyroid gland; a radioactive iodine scan, which provides information about the thyroid shape and function, identifying areas in the thyroid that do not absorb iodine in the normal way; fine needle biopsy, removal for study of a small part of the tumor; and surgery, where a procedure known as a thyroid lobectomy, necessitates removal of the lobe of the thyroid gland that contains the tumor, for analysis.

Treatments for thyroid cancer:

If the tumor is found to be malignant then surgery is used to remove as much of the tumor as possible either by lobectomy or subtotal thyroidectomy (removal of at least one thyroid lobe and up to a near-total removal of the thyroid gland). If necessary, the otolaryngologist—head and neck surgeon may remove the entire thyroid, in a procedure called a total thyroidectomy. Surgery may be followed by radioactive iodine therapy which destroys cancer cells that are left after surgery and help prevent the disease from returning. Thyroid hormone therapy may need to be administered throughout your child's life when he/she has had surgery to remove the thyroid followed by radioactive iodine treatment to replace normal hormones and slow the growth of cancer cells. If cancer has spread to other parts of the body, chemotherapy, the treatment of disease by means of chemical substances or drugs, may be given. This therapy interferes with the cancer cell's ability to grow or reproduce. Different groups of drugs work in different ways to fight cancer cells and shrink tumors. In general, treatment outcomes for this type of cancer in children tend to be excellent. The best outcome is achieved with teenage girls, papillary type cancer, and a tumor localized to the thyroid gland.

Source: National Cancer Institute "Population-based Outcomes for Pediatric Thyroid Carcinoma," by Nina L. Shapiro MD, and Neil Bhattacharyya MD, *Laryngoscope*. 2005 Feb;115(2):337-40.



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