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## PEDIATRIC THYROID CANCER

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Thyroid nodules are uncommon in childhood, and pediatric thyroid cancer is uncommon. Still, it is the most common endocrine malignancy in children. The thyroid is a butterfly-shaped gland located at the base of the throat. It has two lobes joined in the middle by a strip of tissue (the isthmus). The thyroid secretes three main hormones that control the body's energy and growth: Thyroxine that contains iodine needed for growth and metabolism; Triiodothyronine that also contains iodine and similar in function to Thyroxine; and Calcitonin that 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.

Pediatric thyroid cancer occurs four times more often in females than males, and has similar characteristics as adult thyroid cancer. Surgery is the preferred treatment for this cancer. Although the procedure is typically uncomplicated, risks of thyroid surgery include vocal cord paralysis and low blood calcium (hypocalcemia). An ENT (ear, nose, throat) specialist, or otolaryngologist, or a head and neck surgeon who is experienced with head and neck issues, should be consulted.

### **WHAT ARE THE SYMPTOMS OF PEDIATRIC THYROID CANCER?**

Symptoms of this disease vary. Your child may experience:

- A lump in the neck
- Persistent swollen lymph nodes
- A tight or full feeling in the neck
- Trouble with breathing or swallowing
- Hoarseness

If any of these symptoms occur, consult your child's physician for an evaluation. The evaluation should consist of a head and neck examination to determine if unusual lumps are present. A blood test may be ordered to determine how the thyroid is functioning. Ultrasonography uses sound waves to create an image of the thyroid gland and neck contents such as lymph nodes.

Other tests that may be warranted include a radioactive iodine scan, which provides information about the thyroid shape and function and identifies areas in the thyroid that do not absorb iodine in the normal way, or a fine needle biopsy of any abnormal lump in the thyroid or neck. Also called fine needle aspiration (FNA), a fine needle biopsy is when a needle is inserted into a lump or mass to collect a sample of cells. Sometimes it is necessary to remove a part of the tumor or one of the lobes of the thyroid gland, known as a thyroid lobectomy, for analysis to help establish a diagnosis and plan for management.

### **WHAT ARE THE TYPES OF PEDIATRIC THYROID CANCER?**

*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. This form can spread to the lymph nodes via lymphatics in the neck and occasionally spreads to more distant sites.

*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 more difficult to control.

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*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 five- to 10-percent of all thyroid malignancies. Medullary thyroid carcinoma (MTC) in the pediatric population is usually associated with specific inherited genetic conditions, such as multiple endocrine neoplasia type 2 (MEN2).

*Anaplastic*—This is the fastest growing of the thyroid cancers, with abnormal cells that grow and spread rapidly, especially locally in the neck. This form of cancer is not seen in children.

### **WHAT ARE THE TREATMENT OPTIONS?**

If the tumor is found to be malignant, then surgery is recommended. Surgery may consist of a partial removal such as lobectomy (half), subtotal thyroidectomy (removal of at least one lobe and up to near-total removal of the thyroid gland), or a total thyroidectomy. In children with papillary or follicular thyroid cancer, total or near-total thyroidectomy is currently the standard of practice, as children typically have more extensive disease when diagnosed and higher rates of spreading. This reduces the risk of recurrence. In children, there is an increased need for repeat surgery when less than a total thyroidectomy is performed. Lymph nodes in the neck may need to be removed as part of the treatment for thyroid cancer if there is suspicion of spread of cancer to the lymph nodes.

Surgery may be followed by radioactive iodine therapy to destroy cancer cells that are left after surgery. Thyroid hormone therapy may need to be administered throughout your child's life to replace normal hormones and slow the growth of any residual cancer cells.

If cancer has spread to other parts of the body, chemotherapy (treatment by 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. Radiation treatment may also be required for treatment of some forms of thyroid cancer.

In general, treatment outcomes for this type of cancer in children tend to be excellent. The best outcomes are seen in teenage girls, papillary type cancer, and tumors localized to the thyroid gland.

### **WHAT QUESTIONS SHOULD I ASK MY DOCTOR?**

1. What are my child's particular treatment options?
2. What is my child's prognosis?
3. What are the risks?
4. Will my child need thyroid medication?
5. If one of my children has thyroid cancer, does that mean that my other children are at risk for the same condition?