Papillary Thyroid Carcinoma

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### Papillary Thyroid Carcinoma (PTC)

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#### Background

“Thyroid gland sits in the middle of the neck around the windpipe. It makes a hormone called thyroid hormone, which is important for many metabolic functions” (Jin, J., 2017, p.1925). Papillary thyroid carcinoma is the most common type of thyroid malignancy in the United States. It accounts for 60,220 new cases each year and in 2013 in the United States, it accounted for an estimated 1,850 deaths. (McArdle, Heuther, Brase, & Rote, 2014) There are 4 classifications of thyroid carcinoma. Papillary carcinoma which is what we will be discussing accounts for about 85% of all thyroid carcinomas, follicular carcinomas accounts for 10-15%, medullary or (MTC) only accounts for about 5% of thyroid carcinomas, but it is the most aggressive and deadly forms of thyroid carcinoma. (Chemock & Hagemann, 2014) "If the thyroid becomes cancerous, it doesn’t even account for 1% of thyroid cancers. (Aldrick & Hoffman, 2018) Working with a general pediatric surgeon that performs thyroidectomies weekly due to this common malignancy was one of the main reasons understanding the pathophysiological process is important for many reasons.

#### Pathophysiological Processes

Thyroid Thyroid carcinoma is typically found by either the patient or primary care physician that palpates a small nodule on the thyroid gland. Thyroid nodules are common that palpates a small nodule on the thyroid gland. Thyroid nodules are common (Nguyen, Huang, Park, Khullar, & benign. (Nguyen, Huang, Park, Khullar, & 2015) Lastly, anaplastic is so rare it doesn’t even account for 1% of thyroid carcinoma accounts for in 30% of cases exposed to radiation. (Khullar, & 2015) Many researchers hypothesize that changes in certain genes such as the RET/PTC genes: RET/PTC can help surgeons make the decision that performs thyroidectomies weekly due to this common malignancy was one of the main reasons understanding the pathophysiological process is important for many reasons.

#### Underlying Pathophysiology

Thyroid cells become cancerous when genetic abnormalities occur causing them to mutate. Some of these abnormalities include environmental factors such as radiation exposure. (Khullar, & 2014) Once these gene mutations occur they make these cells grow and multiply. These cancerous cells do not die and continue to grow and spread. Once they have grown and multiplied in that area then they can travel and attach healthy cells of other parts of the body such as the lymph nodes. (Khullar, & 2014) Many researchers hypothesize that changes in certain genes such as the RET gene or the BRAF gene cause the thyroid cells to divide abnormally and this may be the cause of PTC. (Rohan, & 2014) More common in children and people exposed to radiation. (Rohan, & 2014) More common in children and people exposed to radiation. (Rohan, & 2014)

#### Characteristics of PTC

- Peak onset ages 30-50 years
- More common in women than men, 3:1 ratio
- Prognosis is related to tumor size and age
- <1.3cm is a good prognosis
- 55 years old have a much better prognosis
- PTC is most commonly due to radiation exposure
- >50% of the cases exposed to radiation will have metastases to the lymph nodes (Clayman, G., 2018)

#### Significance of Pathophysiology

The significance of these pathophysiological processes is important for many reasons. One of the main reasons understanding the pathophysiological process is for the treatment and cure of thyroid carcinoma. Early detection and diagnosis is key to a favorable prognosis. (Nguyen, Huang, Park, Khullar, & 2015) Therefore, anaplastic is so rare it doesn’t even account for 1% of thyroid carcinomas. (Aldrick & Hoffman, 2018) With working with a general pediatric surgeon that performs thyroidectomies weekly due to this common malignancy was one of the main reasons understanding the pathophysiological processes is important for many reasons.

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#### Risk Factors

- Family history of thyroid cancer
- Family history of goiter
- Whole body radiation
- Exposure to high levels of radiation (Rohan, & 2014)

#### Treatment

A total thyroidectomy is recommended for treatment because 5-10% of thyroid cancer can metastasize to lymph nodes, brain, bones, and lungs. (McArdle, Heuther, Brase, & Rote, 2014) Whole thyroidectomy is recommended for treatment because 5-10% of thyroid cancer can metastasize to lymph nodes, brain, bones, and lungs. (McArdle, Heuther, Brase, & Rote, 2014)

#### Diagnosis Workup

Once a thyroid nodule is found, these are the next steps to take for diagnostic purposes.

- Serum Thyroid-Stimulating Hormone or (TSH) level
- Thyroid and Neck ultrasound (US)
- Abnormal TSH and US then lead to a Thyroid Cancer Classification

#### Figures

**Figure 2. Nodular description showing thyroid cancer within the thyroid**

![Image](https://www.cancer.net/cancer-types/thyroid-cancer/stages)

**Figure 4. 75 year old female with PTC**

![Image](https://www.cancer.net/cancer-types/thyroid-cancer/stages)

### References


### Additional Sources


### Key Terms

- Papillary Thyroid Carcinoma (PTC)
- Thyroid Nodule
- Thyroid Gland
- Thyroidectomy
- Thyroid Nodules