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Thyroid Carcinoma

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Thyroid Carcinoma

Carcinoma of the thyroid gland is the most common endocrine malignancy, with an estimated 18,000 new cases reported each year in the United States.¹ Most of these tumors (80% to 90%) are sporadic *follicular cell–derived thyroid carcinomas*, either of papillary or follicular type, whereas 5% to 15% are *C cell–derived medullary thyroid carcinoma* (MTC).² MTC arises in a minority of cases as a component of the multiple endocrine neoplasia syndrome, type 2 (MEN-2). Other thyroid cancer types, including lymphoma and anaplastic carcinoma, are less common (**Table 1**).

Thyroid carcinoma accounts for approximately 1200 deaths annually in the United States.¹ Nevertheless, with a crude mortality rate of only 6.6%, most patients with thyroid cancer are cured or live with their cancer, often for many years. Recurrence rates after apparent surgical cure range from 10% to 35% depending on the tumor type and stage at diagnosis.³ Tumors may recur sometimes many years after initial, apparently successful treatment,⁴ so that long-term follow-up is required. With almost 200,000 patients in the United States alive after treatment for thyroid cancer, the health burden of long-term follow-up is substantial. The challenge to the clinician is to balance the need for long-term disease surveillance with the considerable cost and possible morbidity associated with the investigations used.

Thyroid carcinomas exhibit the widest range of malignant potential of any human cancer. They range from the almost benign, incidentally discovered papillary microcarcinoma, which probably has no impact on long-term survival,⁵ to the almost universally lethal anaplastic thyroid carcinoma, with an associated median life expectancy of only a few months.⁶ Even within the differentiated cancers, life expectancy and the likelihood of cure vary widely. Therefore, the selection of surgical and postoperative therapy and the intensity and duration of follow-up should be guided by the histology of the tumor, its extent at diagnosis, the success of surgical resection, and the known clinical prognostic variables.

FOLLICULAR CELL–DERIVED THYROID CARCINOMA

Almost 90% of thyroid cancers are derived from the follicular cell. Of these, most are *papillary thyroid carcinoma* (PTC), which accounts for approximately 75% of all thy-

roid cancers.² Between 30% and 50% of these tumors show a follicular growth pattern and are classified as PTC, *follicular variant*. The biologic and clinical behavior of these tumors is indistinguishable from that of classic PTC.

PTC occurs most commonly in patients between the ages of 20 and 50 years, affects women more often than men (a female-to-male ratio of approximately 3:1), and is most often diagnosed following the discovery of a thyroid mass. Rapid enlargement or invasive growth can cause symptoms of dysphagia, pain, stridor, and voice changes related to injury to the recurrent laryngeal nerve. All of these symptoms are uncommon, but their presence in a patient points to a malignant process. Cervical lymph nodes are involved at the time of diagnosis in as many as 30% to 40% of cases, with central compartment nodes in the region of the thyroid bed most often affected.⁷ Therefore, surgical management of PTC should always include exploration of this central compartment. Metastasis may also involve distant sites, most commonly lung and bone,⁸ but this occurs in less than 15% of cases, most often among patients who also present with advanced local disease.

Follicular thyroid carcinoma (FTC) is much less common than PTC, representing less than 10% of thyroid cancers. Although several subtypes of FTC have been described, all are rare with the exception of the oxyphilic cell type, known as *Hürthle cell carcinoma* (HCC). HCC accounts for 20% to 50% of all FTC.² As with PTC, FTC affects women approximately 3 times more often than men, but peak incidence is at a slightly older age, with a median of 50 years. FTC occurs most frequently in areas of iodine deficiency. The falling trend in FTC incidence observed over the last several decades in the United States may reflect the impact of iodine supplementation in this population.⁹ Presentation of FTC is almost identical to that of PTC, with most tumors being diagnosed following the discovery of a neck mass. However, with the exception of the oxyphilic subtype, FTC is less likely than PTC to involve cervical lymph nodes but more likely to involve distant metastases, most often in lung, brain, and bone.¹⁰ The histologic features of each of the major thyroid cancer types are shown in **Figure 1**.

CASE PRESENTATION

Initial Presentation

A 26-year-old woman is referred to an endocrinologist following the discovery of a thyroid nodule.