

## General Management

Part of "29 - Thyroid"

### ***Differentiated Thyroid Cancer***

- **Surgery:** Recommended initial therapy is near-total or total thyroidectomy. After total thyroidectomy for papillary cancer, the recurrence rate was 7.1% and the death rate was 0.3%; with subtotal thyroidectomy, the rates were 18.4% and 1.5%, respectively (9). When both  $^{131}\text{I}$  and thyroid hormone suppression were used after total thyroidectomy, the recurrence rate was 2.6%, and the death rate was 0%. Use of thyroid hormone alone resulted in 0% mortality, but the recurrence rate was 10%; without  $^{131}\text{I}$  and thyroid hormone therapy, the rates were 40% and 13.3%, respectively (9).
- **Iodine 131:** A guide to postoperative management and follow-up may be found in Figure 29-2. No studies have confirmed whether high or low ablation doses are preferable, but lower death and recurrence rates are seen when all traces of residual  $^{131}\text{I}$  uptake are ablated (2,10). Use of 100 to 149 mCi as an empiric ablation dose is attractive, given its apparent success in eliminating residual  $^{131}\text{I}$  uptake after a single dose (2). Thyroid-stimulating hormone levels may be elevated within 2 weeks of total or near-total thyroidectomy. Before  $^{131}\text{I}$  is administered for whole-body imaging, initial ablation dose (if receiving thyroid medication after surgery), repeat ablation dose, thyroid hormone, or levothyroxine sodium must be discontinued for 2 to 3 weeks to allow blood level of thyroid hormone to decrease and thyroid-stimulating hormone level to rise to 30 IU per mL or greater, enabling maximum stimulation of  $^{131}\text{I}$  uptake.

**Fig. 29-2** Flow diagram for the postoperative management and follow-up of differentiated thyroid cancer. (From Grigsby PW, Luk KH. Thyroid. In: Perez CA, Brady LW, eds. *Principles and practice of radiation oncology*, 3rd ed. Philadelphia: Lippincott–Raven, 1998:1157–1179, with permission.)

- **Thyroid hormone:** Regardless of surgical procedure, all patients should be maintained on suppressive doses of long-acting thyroid medication between  $^{131}\text{I}$  treatments.
- **External-beam irradiation:** This is used when the tumor does not take up  $^{131}\text{I}$ .

### ***Medullary Thyroid Cancer***

- Optimal management is early removal of the tumor, especially because medullary

thyroid cancer can metastasize early regardless of whether the patient develops a virulent form of the disease.

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- $^{131}\text{I}$  (150 mCi) has been used to treat local medullary cancer after total thyroidectomy because it is taken up by the follicular cells and irradiates the adjacent C cells (7).

## ***Anaplastic Thyroid Cancer***

- A combination of surgery, irradiation, and chemotherapy (doxorubicin) produces the best results.

## ***Radiation Therapy Techniques***

- Definitive external irradiation requires careful treatment planning because high doses are needed and serious injuries may occur.

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- Generally, carcinomas require up to 70 Gy administered in 7.5 weeks, but lymphomas need only approximately 45 Gy in 4.5 to 5.0 weeks (Fig. 29-3 and Fig. 29-4).

**Fig. 29-3** Diagrams of portals used to treat thyroid carcinoma. **Right:** The (A) area represents the posterior mediastinal portal used to increase the dose to these structures after the tolerance dose of the spinal cord has been reached with large field (45 Gy). **Left:** Additional irradiation is also delivered through an anteroposterior portal in the (B) area to the thyroid. (From Grigsby PW, Luk KH. Thyroid. In: Perez CA, Brady LW, eds. *Principles and practice of radiation oncology*, 3rd ed. Philadelphia: Lippincott–Raven, 1998:1157–1179, with permission.)

**Fig. 29-4** Anteroposterior simulation film of initial large field, including neck and mediastinum, in a patient with a large malignant lymphoma of the thyroid. (From Grigsby PW, Luk KH. Thyroid. In: Perez CA, Brady LW, eds. *Principles and practice of radiation oncology*, 3rd ed. Philadelphia: Lippincott–Raven Publishers, 1998:1157–1179, with permission.)

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Version: rel9.2.0, SourceID 1.9998.1.313