Management of Recurrent Cervical Papillary Thyroid Cancer

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KEYWORDS

• Papillary thyroid cancer • Cervical lymph nodes • Ethanol injection
• Radioactive iodine • Cervical re-operation

KEY POINTS

- Thyroid cancer is the most common endocrine malignancy, and its incidence and prevalence are on the rise.
- Papillary thyroid cancer has been shown to metastasize and recur in the locoregional lymph nodes of the neck.
- Options for treatment of recurrent cervical papillary thyroid cancer include observation, surgery, radioactive iodine ablation, or percutaneous ethanol injection.

INTRODUCTION

Thyroid cancer is the most common endocrine malignancy, and its incidence and prevalence are on the rise. According to the American Cancer Society, the projected incidence of thyroid cancer for 2013 was 60,220 new cases (45,310 in women and 14,910 in men), with 1850 deaths from thyroid cancer (1040 women and 810 men).[1] Fortunately, most of these patients achieve good disease-specific outcomes if treated appropriately at the time of diagnosis. However, up to 30% of patients experience persistent disease or recurrences, often limited to cervical lymph nodes.[2] The management of these recurrent lymph nodes remains controversial, and the current guidelines do not clearly outline the best options. The existing literature consists of retrospective studies with small sample sizes; no prospective, large randomized trials are available that delineate the various treatment modalities. Currently, there are several approaches to patients with recurrent papillary thyroid cancer (PTC) in their cervical lymph nodes, including observation, radioactive iodine therapy, ethanol

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Endocrinol Metab Clin N Am 43 (2014) 565–572
http://dx.doi.org/10.1016/j.ecl.2014.02.014 **endo.theclinics.com**
0889-8529/14/$ – see front matter

injection, and surgery. The management approach should be a joint decision between the health care team and the patient.

BACKGROUND

The incidence of well-differentiated thyroid cancer continues to rise; in particular, the mortality rate of older men with differentiated thyroid cancer is increasing at an alarming rate. There are several risk factors associated with PTC. These include female gender (3 times more common in women), previous exposure to ionizing radiation, and rare hereditary conditions (eg, Cowden syndrome). Approximately 5% of patients with PTC will have familial PTC; the exact genetic cause has not yet been determined. Although mortality from thyroid cancer is low, the recurrence rate is 25% to 35%, making risk stratification a priority. Prognostic factors such as age less than 15 years or greater than or equal to 45 years, male gender, tumor size greater than 4 cm, follicular histology or tall and columnar cell variants, multifocality, initial local tumor invasion, and regional lymph node metastasis are associated with increased risk of recurrence.[3] Prediction of nodal metastases can also be determined based on several of the previously mentioned features, and additionally the genotype – BRAF-positive tumors are associated with higher rates of metastases, and therefore should not be solely observed but treated with more aggressive options.[4] Several risk factors for recurrence also include older age, follicular variant PTC, cervical lymph node involvement, T4 tumors, and stage greater than 4A.[5] Often, it may be difficult to distinguish between persistent and recurrent disease, and many of the patients thought to have recurrences may actually have had residual microscopic disease.

According to the American Thyroid Association (ATA) revised guidelines on the management and treatment of differentiated thyroid cancer from 2009, the initial surgical option for those with a tumor size of greater than 1 cm, is a near-total or total thyroidectomy. Thyroid lobectomy should be reserved for those with low-risk disease, micropapillary carcinoma, unifocality, absence of lymph nodes, and no personal history of head and neck irradiation. All patients with fine-needle aspiration proven differentiated thyroid cancer should be staged preoperatively and undergo a neck ultrasound with node mapping evaluating the contralateral lobe and lymph nodes for the presence of disease.[6] In the presence of metastatic disease in the central or lateral neck, regional lymph node dissection is often indicated.[7] However, performing prophylactic lymph node dissection at the time of thyroidectomy is controversial, and surgical expertise is warranted. However, it allows pathologic identification of metastases and leads to up-staging in patients over the age of 45. This can help guide further treatment options, including utility and dose of radioactive iodine.[8]

The thyroid gland has a rich lymphatic supply, allowing the possibility of thyroid cancer to spread to local lymph nodes in the central and lateral compartments of the neck. The lymph nodes of the neck are divided into 6 levels (**Fig. 1**). Level 1 is split into 2 sublevels: sublevel 1A (submental) and sublevel 2B (submandibular). Level 2 is upper jugular; level 3 is midjugular, and level 4 is lower jugular. Level 5 comprises the posterior triangle nodes including the supraclavicular nodes and spinal accessory nodes. The anterior compartment lymph nodes are located in level 6 and include the pretracheal and paratracheal lymph nodes, precricoid nodes, and perithyroidal lymph nodes.

Neck ultrasound is the imaging modality of choice to monitor well-differentiated thyroid cancer after total thyroidectomy. Certain sonographic features can help determine whether a lymph node is malignant or normal. Worrisome features for the presence of thyroid cancer include shape (taller than wide), irregular margins, lack of an echogenic hilus, the presence of calcifications, and enhanced perinodularvascularity.[9]