Mixed Medullary-Papillary Carcinoma of the Thyroid: A Case Report

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ABSTRACT

Thyroid carcinoma has traditionally been classified into two primary groups based on their respective embryonic origins. Those arising from the embryologic ultimobranchial body and histologic parafollicular C cells are classified as medullary carcinomas while those of foregut endodermal origin arising from the base of the tongue are designated as papillary and follicular carcinomas. Carcinomas displaying characteristics of both medullary and papillary or follicular lesions represent a rare but phenotypically distinct population of tumors. The term mixed medullary-follicular (or papillary) thyroid carcinoma is used to describe these tumors.

INTRODUCTION

With fewer than 40 cases described in the otolaryngology literature, mixed medullary-papillary thyroid carcinoma represents a rare but phenotypically distinct tumor. While isolated medullary carcinoma may be admixed with normal follicular structures, true mixed carcinoma displays morphological and immunological characteristics of medullary and papillary carcinoma within a single lesion.

We report the case of a 73-year-old woman initially evaluated for a multinodular thyroid goiter. The patient denied a family history of medullary thyroid carcinoma or other endocrine neoplasms. Fine needle aspiration of a nodule of the thyroid isthmus suggested a follicular neoplasm with abundant Hurthle cells and colloid present. Considering these findings, the patient underwent a left thyroid lobectomy with isthmusectomy.

Histopathological analysis of the surgical specimen revealed a medullary thyroid carcinoma measuring 0.4 cm in size. Within this lesion, a distinct focus of papillary carcinoma, follicular variant, measuring 0.1 cm was also identified.

Mixed medullary-papillary thyroid carcinoma is a rare clinical entity but merits consideration in the differential diagnosis of thyroid nodules particularly in patients with a family history of thyroid malignancy. The foundation of treatment of this lesion is total thyroidectomy with central compartment node dissection by virtue of the 1 micron remnant thyroid tissue in the anterior neck but was without evidence of metastatic disease.

Figure 1. H and E Stain of Mixed Medullary-Papillary Carcinoma.

DISCUSSION

Mixed medullary-follicular thyroid carcinoma is a rare clinical entity but merits consideration in the differential diagnosis of thyroid masses, particularly in patients with a family history of thyroid cancer. To date, mixed medullary-follicular carcinoma has only been described in small case series, the largest of which enrolls 11 patients.

Since the initial description of this disease entity, the cytologic origin of each component of this tumor has been a point of contention. One school of thought holds that mixed medullary-follicular carcinomas are derived from a single uncommitted stem cell which displays the potential for neoplastic transformation and coexpression of both calcitonin and thyroglobulin. A second hypothesis maintains that mixed tumors result from simultaneous malignant transformation of both follicular and C-cell progenitor stem cells. The most definitive explanation for the origin of mixed tumors abandons the concept of a common progenitor cell, according to this hypothesis, neoplastic transformation of pluripotent stem cells leads to medullary thyroid carcinoma. During medullary carcinoma oncogenesis, normal follicles are trapped within the newly-formed malignancy. As a result of the oncologically favorable local milieu, these hostage follicles are stimulated to proliferate and express a malignant phenotype.

Management of mixed tumors is dictated by the presence of the medullary component. The current National Comprehensive Cancer Network (NCCN) guidelines for lesions <1 cm in greatest dimension with unilateral thyroid involvement include total thyroidectomy with bilateral central compartment (level VI) neck dissections. Lesions >1 cm in greatest dimension or involving both thyroid lobes are best addressed with total thyroidectomy, bilateral central compartment neck dissections, and, at least, a consideration for ipsilateral modified radical neck dissection encompassing levels II-V. Should metastatic disease be identified in the ipsilateral cervical lymphatics, bilateral modified radical neck dissection is indicated. There is little evidence regarding the application of radioactive iodine therapy for mixed tumors although a theoretical benefit of this adjuvant therapy can be extrapolated based on the documented efficacy in well-differentiated thyroid carcinoma.

REFERENCES