A Coexisting of Two Different Thyroid Malignancies: A Collision Phenomenon

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Introduction: Collision tumors are rare clinical entities wherein two histologically distinct tumor types occur at the same anatomic sites. Simultaneous papillary thyroid carcinoma (PTC) and follicular thyroid carcinoma (FTC) of the same thyroid is a very rare occurrence with limited clinical information. Herein, we report a case of PTC and FTC of the same thyroid lobe.

Clinical case: A 79-year-old man presented to the emergency department for evaluation of left hip pain of 2-month duration. Three days before presentation, he sustained a physical trauma to the left side of his body.

X-ray imaging of the left femur revealed a lytic bony lesion measuring approximately 5.2 cm x 4.2 cm at the proximal end of left femur as well as a displaced pathologic fracture of its lesser trochanter.

Biopsies of the bone lytic lesion suggested metastatic follicular thyroid carcinoma. CT of the neck revealed an enlarged thyroid with a cystic lesion as well as 2 nodules in the left lobe of thyroid gland. Total thyroidectomy was performed. Histopathology revealed 2 separate primary malignancies of PTC and FTC.

Following diagnosis, laboratory test results showed TSH 2.6 uIU/mL (reference range, 0.2-4), anti-thyroglobulin antibody (anti Tg) < 1.0 IU/mL (reference range, 0.0-0.9), calcitonin 8.4 pg/mL (reference range, 0-8.4), and CEA 1.1 ng/mL (reference range, 0.0-3.0).

The patient was placed on thyroid hormone replacement therapy and was treated with external beam radiation to his bone metastasis. He was scheduled for later further thyroid ablation. In his follow-up visit, three months later, he reported no pain on ambulation.

Discussion: For each type of thyroid malignancy, several genes have been identified. However, to date, no common gene mutation responsible for the pathogenesis of the different tumor types has been determined. For instance, point mutations of the *RAS* oncogene are found in about 40% of thyroid neoplasms (*N-RAS*, *H-RAS,* and *K-RAS*, in order of decreasing frequency) including both PTC and FTC. No single theory can completely explain the pathogenesis of these tumors in all cases, and so, with the present level of understanding of the disease, a combination of theories must be accepted.

Management of collision tumors of the thyroid gland is usually complex owing to the presence of dual pathology in the tumor tissues and given the fact that literature on this condition is scarce. Generally, the treatment needs to be individualized.

Conclusion: Most likely, a rare phenomenon of simultaneous mutation of different genes can give birth to contemporary different thyroidal neoplasms.

References: Zhu Z, Gandhi M, Nikiforova MN, et al. Molecular profile and clinical-pathologic features of

the follicular variant of papillary thyroid carcinoma. An unusually high prevalence of ras mutations. Am J Clin Pathol 2003; 120:71.