Hyperfunctioning papillary thyroid carcinoma: A case study

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Background:
According to American Thyroid Association guidelines, hyperfunctioning thyroid nodules do not require cytology due to the low risk of malignancy [1]. Papillary thyroid carcinomas from the isthmus are rare with an incidence of 1.0-9.2% [2].

Case Report:

A 26-year-old male presented with a 9-month history of hyperthyroidism, previously treated with carbimazole 15mg/day. He had a strong family history of autoimmune thyroid disease; his mother had hypothyroidism and his brother was diagnosed with Graves' thyrotoxicosis. TSH receptor antibody was negative, TPO antibody 95 KIU/L (0-34), FT3 5.3 pmol/L, FT4: 16.0 pmol/L, and TSH: 2.3 mIU/ml while on antithyroid treatment.

Initial thyroid ultrasound revealed multiple <5mm hypoechoic foci representing pseudonodules /spongiform nodules in both lobes (U2). In the right side of the isthmus was a bulging, well-defined, hypoechoic, solid 1.6 x 0.9cm nodule, lobulated margins, trace peripheral vascularity, without microcalcifications (U2). There was no cervical lymphadenopathy. On the basis of these findings, carbimazole treatment was continued and a routine follow-up ultrasound planned.

On repeated ultrasound at 1 year, the isthmic nodule's dimensions were unchanged at 1.6 X 0.9cm but due to interval change of microcalcifications and extrathyroidal extension, the nodule was re-stratified U3. Fine needle aspiration revealed features of papillary carcinoma. Total thyroidectomy was performed; histopathological examination confirmed a papillary thyroid carcinoma of classic type 1.7 x 1.5 cm; the excision margins were free of carcinoma and the specimen negative for lymphovascular or perineural invasion; background appearances were of chronic lymphocytic thyroiditis; no local nodal disease was detected. Post-procedure, thyrotoxicosis resolved and serum thyroglobulin was undetectable.

Conclusion:
Papillary thyroid carcinoma is sporadic in the context of hyperthyroidism at presentation. In this case, scintigraphy assessment was impeded due to established carbimazole therapy at a relatively high maintenance dose. Routine ultrasound follow-up and re-evaluation were critical to accurate diagnosis and early treatment.

References:

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2. Vasileiadis I, Boutzios G, Karalaki M, Misiakos E, Karatzas T. Papillary thyroid carcinoma of the isthmus: Total thyroidectomy or isthmusectomy. *Am J Surg*. 2018; 216: 135-139.