

Rare Presentation of Papillary Thyroid Cancer

Mahfujul Z. Haque¹, Michael Burcescu², and Zirak Sajjad¹

¹Michigan State University University College of Human Medicine Lansing Campus

²DMC Detroit Receiving Hospital

April 17, 2023

Rare Presentation of Papillary Thyroid Cancer

Mahfujul Z. Haque, BS¹

Michael Burcescu, MD²

Zirak Sajjad, BS¹

¹Michigan State University College of Human Medicine, Grand Rapids, MI, USA

²Detroit Medical Center, Detroit, MI, USA

Word Count: 444

Table/Figure Count: 4

Reference Count: 4

Acknowledgements: N/A

Funding Sources: None

Conflicts of Interest: None

Consent Statement: N/A

Corresponding author:

Mahfujul Haque

15 Michigan St NE,

Grand Rapids, MI 49503

Email: haquema4@msu.edu

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

Key Words: papillary thyroid cancer, thyroid nodule, neoplasm, endocrine cancer

Article Type: Case Image

The patient is a 51-year-old African American female with incidental thyroid nodules identified on MRI of the cervical spine. Patient describes a tender palpable right thyroid nodule but is otherwise asymptomatic. There is no history of tobacco use or toxic occupational exposure. There is no palpable neck mass. Thyroid panel was within normal limits. The majority of parathyroid adenomas are located adjacent and posterior or just inferior to the thyroid gland. Rarely, an intrathyroidal ectopic parathyroid gland may become adenomatous

and mimic thyroid nodule. When it does, it is usually homogenously hypoechoic to thyroid tissue and may demonstrate a peripheral rim of hyper-vascularity. Here we describe the case of an incidental nodule with irregular margins and punctate echogenic foci consistent with a TI-RADS 5 nodule and suggestive of malignancy.

Fine needle aspiration biopsy of right upper thyroid nodule showed moderately cellular with cohesive groups as sheets and singly scattered cells exhibiting nuclear grooves, powdery chromatin, irregular nuclear outlines. A few intranuclear pseudo-inclusions are seen with some colloids in the background. True papillae, psammoma bodies, and necrosis were not detectable despite sampling with 3 adequate passes.

Figure 1A is an axial T1 that demonstrates an unexpected nodule of the right thyroid lobe after gadolinium administration. **Figure 1B** demonstrates the same nodule with a traditional T1 view. **Figure 1C** demonstrates a T2 hyper intensive nodularity of the right thyroid lobe. **Figure 2A** demonstrates a long-axis ultrasound image of the right thyroid lobe revealed a 1.5 x 1.0 x 1.3 cm hypoechoic solid nodule with irregular margins, punctate echogenic foci, and mildly increased vascularity on color Doppler investigation. **Figure 2B** demonstrates a transverse ultrasound image of the right thyroid lobe showed a 1.5 x 1.0 x 1.3 cm hypoechoic solid nodule with irregular margins and punctate echogenic foci. **Figure 3A** demonstrates a longitudinal-axis ultrasound image of the right thyroid lobe with a slight enlargement of the nodule, measuring 1.5 x 1.2 x 1.3 cm, with hypoechoic wider than tall features, irregular margins, and punctate echogenic foci, which are consistent with the previous sonographic evaluation. **Figure 3B** demonstrates a longitudinal-axis color Doppler image of the right thyroid lobe reveals increased vascularity within the thyroid nodule, indicating heightened blood flow to the nodule. **Figure 4A** demonstrates a Longitudinal-axis ultrasound image of the right thyroid lobe with further nodule enlargement to 1.9 x 1.3 x 0.9 cm.

Studies report that 5-15% of all detected thyroid nodules and up to 11% of incidental thyroid nodules, represent malignancy [2]. The SEER database reports the USA incidence of thyroid carcinoma to be 14.9 per 100,000 with a 1:2.8 male to female predilection [3]. Papillary thyroid cancer (PTC), a common endocrine tumor originating from thyroid follicular cells, represents 85% of thyroid malignancy [1]. PTC is invasive and known to metastasize to adjacent structures including: lungs, mediastinal lymph nodes, and bone. Well-established risk factors for thyroid cancer include radiation exposure, family history of thyroid cancer, occupational exposure, and obesity [1].

PTC is associated with favorable mortality of 11-17% and a low recurrence rate of 5-15% [1][4]. Extra-thyroidal growth, larger tumor size, and older age at diagnosis detrimentally impact outcome [1]. The primary treatment for PTC is surgical. Preprocedural considerations include tumor size, metastases, extra-thyroidal extension, and airway compromise. Patients with unifocal PTC, measuring > 4 cm, are candidates for thyroid lobectomy [1][5]. For larger lesions, total or near-total thyroidectomy is often required [1][5]. Ablation with radioactive iodine (RAI) is recommended for patients with residual tumor or metastasis. Additional considerations include patient age, microvascular invasion, and histologic subtyping [1]. RAI is performed 4 - 6 weeks following excision and repeated until residual radiotracer uptake is eliminated [1]. Successful intervention results in decreased serum thyroglobulin within 4 - 6 weeks. Thyroid hormone supplementation reduces tumor stimulation by suppressing TSH production [1]. Sonographic and biochemical recurrence monitoring are typically performed at 6-12 month intervals for at least 5 years.

References

1. Limaem F, Rehman A, Mazzoni T Papillary Thyroid Carcinoma 2022
2. Kant R, Davis A, Verma V Thyroid Nodules: Advances in Evaluation and Management. Am Fam Physician 2020;102 (5):298-304
3. NIH Surveillance, Epidemiology, and End Results Program: Cancer Statistics Explorer (Accessed 12/2021).
4. Haddad RI, Nasr C, Bischoff L, Busaidy NL, Byrd D, Callender G, Dickson P, Duh QY, Ehya H, Goldner W, Haymart M, Hoh C, Hunt JP, Jagaru A, Kandeel F, Kopp P, Lamonica DM, McIver B, Raeburn CD, Ridge JA, Ringel MD, Scheri RP, Shah JP, Sippel R, Smallridge RC, Sturgeon C, Wang

Figure Captions

Figure 1:

A) Axial T1 weighted image, after IV gadolinium administration, of the cervical spine demonstrates an incidental enhancing right thyroid lobe nodule (yellow arrow).

B) Axial T1 weighted image through the cervical spine demonstrates T1 isointense nodularity of the right thyroid lobe (yellow arrow).

C) Axial T2 weighted image through the cervical spine demonstrates T2 hyperintense nodularity of the right thyroid lobe (yellow arrow).

Keywords: ACR TI-RADS Criteria

Figure 2:

A) Long-axis ultrasound image of the right thyroid lobe demonstrates a 1.5 x 1.0 x 1.3 cm hypoechoic wider than tall solid nodule with irregular margins and punctate echogenic foci (yellow arrow). Right thyroid lobe ultrasound in longitudinal (A, B) and transverse (C, D, E) planes demonstrate a 1.5 x 1.0 x 1.3 cm hypoechoic wider than tall solid nodule with irregular margins and punctate echogenic foci (yellow arrow). Mildly increased vascularity is exhibited on color Doppler investigation (B, D).

B) Transverse ultrasound image of the right thyroid lobe demonstrates a 1.5 x 1.0 x 1.3 cm hypoechoic wider than tall solid nodule with irregular margins and punctate echogenic foci (yellow arrow).

Keywords: ACR TI-RADS Criteria

Figure 3:

A) Longitudinal-axis ultrasound image of the right thyroid lobe demonstrates slight nodule enlargement to 1.5 x 1.2 x 1.3 cm (yellow arrow). Hypoechoic wider than tall features with irregular margins and punctate echogenic foci appear similar to previous sonographic evaluation.

b) Longitudinal-axis color Doppler image of the right thyroid lobe demonstrates increased vascularity of the thyroid nodule.

Keywords: ACR TI-RADS Criteria

Figure 4: a) Longitudinal-axis ultrasound image of the right thyroid lobe demonstrates further nodule enlargement to 1.9 x 1.3 x 0.9 cm. There is a very hypoechoic echotexture of the nodule inferior aspect (yellow arrow) when compared to overlying musculature (blue arrow).







