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Visual Vignette

Papillary Thyroid Cancer Presenting as Skull Metastasis

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Case Presentation

A 73-year-old man with a history of non-Hodgkin lymphoma in remission and well-controlled hypertension presented to his primary care physician's office with a slow growing lump on his head. He denied any headaches and visual or auditory symptoms. The lump was initially thought to be a lipoma, and he was advised to follow up. Due to the COVID-19 pandemic, the patient did not follow up. He presented 6 months later with a progressive increase in the size of the lump. Physical examination was notable for an approximately 5 × 3-cm nontender mass with smooth surface, elastic consistency at the left parietal region without any associated skin changes. Subsequent computed tomography showed a large lytic mass with calcification (Fig. 1, arrow), and magnetic resonance imaging confirmed a 6.7 × 6.7 × 3.6-cm left parasagittal extra-axial mass with a 2.6-cm defect in the parietal bone (Fig. 2, arrow).

What is the diagnosis?

Answer

He underwent biopsy of the left parietal mass, which was suggestive of metastatic cancer of thyroid origin as it stained positive for thyroglobulin, thyroid transcription factor-1 and paired box gene 8. Staging chest computed tomography was significant for a partially imaged 2-cm right-sided exophytic thyroid nodule with calcification extending into the thoracic inlet, which was suspicious for follicular neoplasm on fine-needle aspiration (Bethesda IV). The whole body positron emission tomography scan was notable for moderately pronounced uptake within the calvarial mass and right thyroid nodule. He underwent total thyroidectomy, and surgical pathology revealed a 4.8-cm infiltrative follicular variant of papillary thyroid cancer (FV-PTC) with an increased mitotic activity and high proliferative index of up to 5% by MIB1 immunohistochemistry. Subsequent left craniotomy confirmed the diagnosis of metastatic thyroid cancer. After 150-mCi radioactive iodine treatment, the whole body scan showed

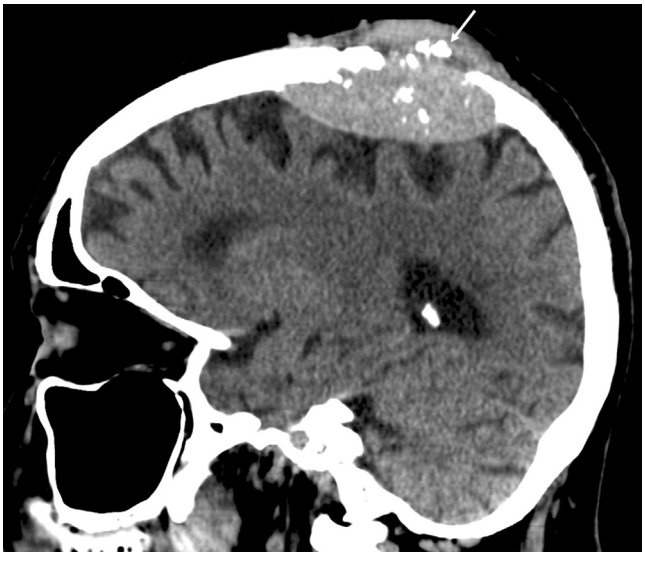

Fig 1.

Abbreviations: FV-PTC, follicular variant of papillary thyroid cancer; PTC, papillary thyroid cancer.

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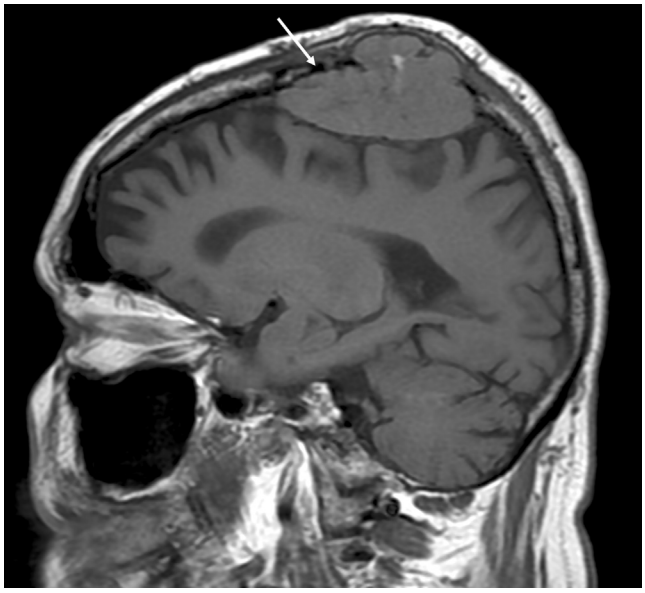

Fig 2.

iodine-131 uptake at the left craniotomy site, consistent with residual tumor. The postoperative unstimulated thyroglobulin level decreased to 7 ng/mL from 3718 ng/mL at the time of diagnosis. This case highlights an unusual presentation of FV-PTC with a single-site skull metastasis. The skull is an uncommon location (2.5%) of osseous metastases for differentiated thyroid cancer, but this is associated with a mean survival of only 4.5 years.[1] Osseous metastases are much more frequent in follicular thyroid cancers (7%-28%) than in papillary thyroid cancer (PTC) (1.4%-7%).[2] A recent study showed that only 21 cases of PTC with skull metastases were reported, with 8 of them having FV-PTC.[3] Skull metastasis from PTC typically occurs years after primary cancer diagnosis. However, our case is unusual in that the initial presentation was a single osseous metastasis to the skull, and a similar case has only rarely been reported.[4] As a result of their rarity, PTC metastasis in the skull can easily be mistaken for osteosarcoma, multiple myeloma, or metastasis from renal cell cancer.[5] A high clinical index of suspicion is required to diagnose this condition as treatment may be delayed if skull metastasis is not on the differential diagnoses. In retrospect, a detailed physical examination, which was not possible due to the pandemic, may have noted the thyroid nodule leading to timely imaging and diagnosis.

Disclosure

The authors have no multiplicity of interest to disclose.

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