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Follicular variant papillary thyroid carcinoma with a twist

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ABSTRACT

BACKGROUND: We report an adnexal lesion, which turned out to be a metastasis to the scalp from a left sided follicular variant papillary thyroid cancer. The patient has had history of right multi-nodular goiter 10 years prior to presentation.

CASE PRESENTATION: A 75-year old lady presented with a cutaneous lesion about 1 year post left total thyroidectomy for FVPTC. She underwent surgical excision of the lesion and histology revealed it to be metastases from a thyroid carcinoma.

DISCUSSION: Cutaneous metastases from thyroid carcinomas are relatively uncommon in clinical practice. A worldwide literature review reveals that follicular carcinoma has a greater preponderance than papillary carcinoma for cutaneous metastasis and that the majority of skin metastases from either papillary or follicular thyroid cancer are localized to the head and neck, with the scalp as the commonest site.

CONCLUSION: Skin metastasis from papillary and follicular thyroid carcinoma is an uncommon occurrence and these lesions should be differentiated from primary skin tumors. They are very important to recognize as early recognition can lead to accurate and prompt diagnosis leading to timely treatment. The scalp has been found to be the commonest site of cutaneous metastasis that may appear benign.

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1. Introduction

Papillary thyroid cancer (PTC) and follicular thyroid cancer (FTC) are follicular cell-derived carcinomas. Both are differentiated forms of thyroid carcinoma; characterized by slow growth and an indolent biological behavior. Differentiated thyroid cancers, which ordinarily behave in an indolent manner, can have unusual metastatic presentations and patterns [1]. Follicular variant papillary thyroid cancer (FVPTC) has a follicular architectural pattern but the nuclear features are that of the conventional PTC. It has also been hypothesized that FVPTC behaves in a similar way, clinically, to conventional papillary thyroid carcinoma [2]. However, on clinico-pathological features, FVPTC has been shown to have a lower rate of lymph node metastases, are more often encapsulated and shows extra-thyroidal invasion less often than PTC [2]. PTC is the most frequent type of thyroid malignancy, and the usual metastasis sites include the loco-regional lymph nodes. Distant metastasis is rare and usually involves the lungs, liver, bones and brain [3]. Spread through lymphatic route is common in papil-

lary thyroid carcinoma but haematogenous dissemination leading to cutaneous metastases is rare. A solitary cutaneous lesion may be the first evidence of disseminated malignancy in a patient with occult papillary thyroid carcinoma [4]. Cutaneous metastases from thyroid carcinoma are relatively uncommon in clinical practice, but they are very important to recognize. Early recognition can lead to accurate, prompt diagnosis and timely treatment [5].

2. Case history

A 75 year-old woman presented in the medical outpatient with flu-like symptoms and cough for greater than a week. CXR (Fig. 4) showed multiple pulmonary nodules in both lung fields, more in lower zones. CT-Scan of Neck, Thorax and Abdomen and pelvis with contrast was performed. It revealed similar pulmonary findings but with a large-sized attenuation nodule in the left lobe of the thyroid and absent right thyroid lobe. There was also suspicious metastasis to the right lobe of the Liver. She underwent a CT-guided lung biopsy that showed features consistent with metastatic follicular carcinoma. Complete left thyroidectomy was performed. Histology confirmed a 25 mm sized FVPTC pT₂N₀M₁ tumor (Fig. 2). Post surgery patient was ablated with high dose ¹³¹I therapy. The patient was started on levothyroxine. Her thyroglobulin levels were >1000 µg/L pre and one month post surgery. It was monitored closely during subsequent follow-up.

Abbreviations: WBI, whole body scan; PTC, papillary thyroid carcinoma; FVPTC, follicular variant papillary thyroid carcinoma.

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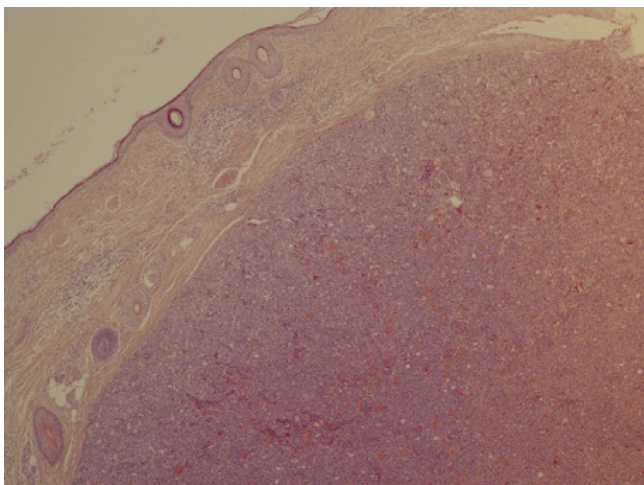


Fig. 1. Metastatic papillary carcinoma of the thyroid in the dermis and subcutaneous tissue of the scalp (H&E, 4x).

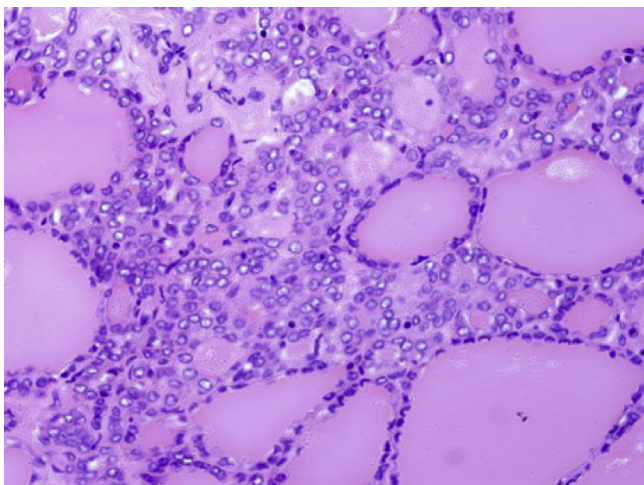


Fig. 2. Follicular variant papillary carcinoma of the thyroid. Follicles are of varying size and contain hyper-eosinophilic colloid. The classic nuclear morphology seen with this type is clear and enlarged, with margination of chromatin. (H&E, 20x)



Fig. 3. Macroscopic picture of the Scalp metastases on the fronto-temporal aspect of the patient.

About 1 year post left total thyroidectomy, patient presented in the surgical outpatient clinic with a hemangiomas-like ridge lesion on the scalp (Fig. 3). The lesion was excised in toto and primary wound closure done. Histological evaluation showed a metastatic papillary thyroid carcinoma (Fig. 1). Patient has been

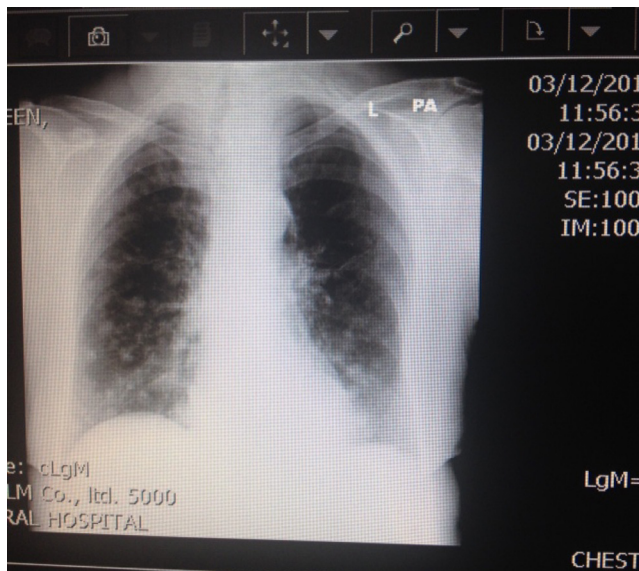


Fig. 4. Multiple pulmonary nodules in both lung fields, more in lower zones.

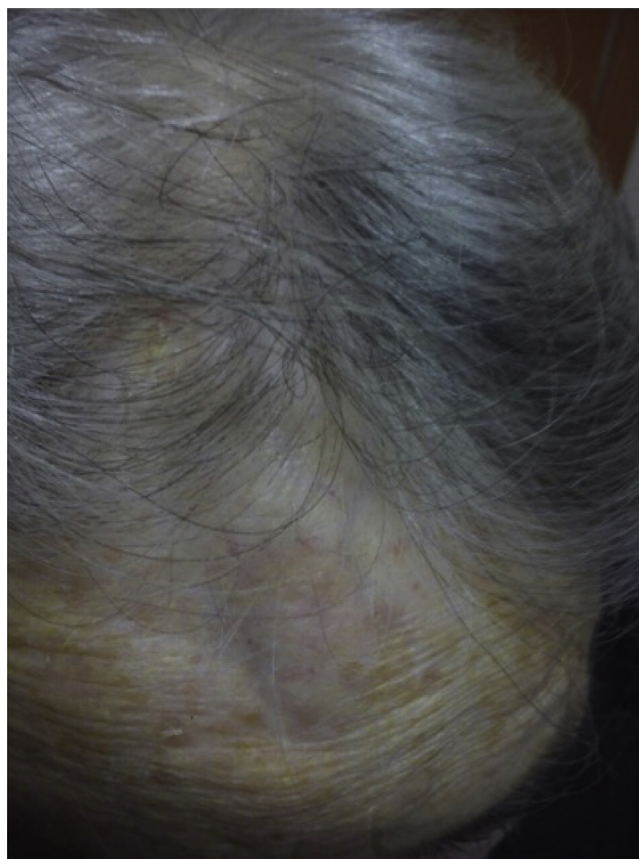


Fig. 5. Macroscopic picture of the healed scalp lesion at one year and 7 months (19 months).

continuously monitored in the radiotherapy and endocrine outpatients as well as in surgical outpatient. So far, a total of 4 doses of radioactive Iodine therapy for evaluation of response and progress have been instituted. The scalp wound has healed completely (Fig. 5). Her most recent NM WBI scans showed evidence of disease progression within the lungs. The disease progression is related to the recent rise in thyroglobulin assay of 9526.5 µg/L with normal

Anti-Thyroglobulin antibodies. Otherwise, our patient feels well except for a persistent dry mouth.

3. Discussion

Cutaneous metastasis from thyroid carcinoma is rare. Dahl et al. reported 43 cases of thyroid carcinoma with skin metastasis in a review of the literature between 1964 and 1997. Papillary thyroid carcinoma (PTC) was the most common histologic type representing 1% of cases [10]. In contrast Koller et al. reported that follicular thyroid carcinoma (FTC) is more likely to have cutaneous metastasis [11]. In both reports, scalp was the commonest site of cutaneous metastasis [10,11].

Dermal lesions typically present as slowly growing erythematous or purple plaques or nodules, usually on the scalp, face, or neck. The presence of dermal metastases portends a poor prognosis, because visceral metastatic disease is almost invariably present. Median survival after diagnosis of cutaneous metastases is only 19 months [12]. In our case, our patient presented about 10 months post-surgical treatment of primary thyroid cancer. NM Iodine whole body scan conducted at one year and 6 months showed evidence of disease progression within the thorax. However, our patient is clinically well excepting for persistent dry mouth.

Sel. uk et al. [9], in a literature review found 38 cases of scalp metastases from thyroid carcinoma. They found follicular thyroid carcinoma is the most common histologic type representing 46% of case followed by PTC at 35%, with medullary thyroid carcinoma (MTC) contributing 16% of cases. Only 1 case of anaplastic carcinoma was reported contributing 3% of all cases of scalp metastasis from thyroid carcinomas. They concluded that FTC has a greater tendency than other thyroid carcinomas to metastasize to scalp as a distinct cutaneous area.

This case report showed a particular feature. The thyroid tissue from the left total thyroidectomy showed evidence of chronic lymphocytic (Hashimoto) thyroiditis with an oncocyctic change in follicular epithelial cells. However, no lymph node was identified on the specimens and no further lymph node dissection was done.

The histology of the left thyroid carcinoma revealed a follicular variant type of PTC (Fig. 2). The metastatic site revealed papillary architecture. This is the usual occurrence in FVPTC, where the metastatic site normally has a papillary pattern and a follicular pattern seen at primary site [6]. However, Chakraborty et al. reported a rare occurrence of a FVPTC with the follicular architecture maintained at the metastatic site [7]. The scalp is the most common site of cutaneous metastases and usually occurs in the setting of a metastatic disease. This relates to local vascular factors essential for the highly complex nature of metastases [8].

According to a review by Salajegheh et al., histology examination of specimen is accepted as the only reliable way to diagnose FVPTC. They reported a very low sensitivity with fine needle aspiration for the identification of FVPTC, but found it useful in diagnosing PTC [2]. However, with a scalp lesion suspected to be a metastatic focus, identification of the primary origin is not always possible with histo-pathological examination. An immunohistochemical (IHC) method becomes a useful diagnostic tool to reveal the site of the primary tumor [9]. This was helpful in our case, where the source of lung metastases were determined by immunohistochemical methods showing tumor cells positive for TTF-1, pancytokeratin AE1/3 and Thyroglobulin and negative for neuroendocrine markers.

Zidan et al., [13] reported that the optimal extent of surgery is debatable, perhaps because of confounding effect of medical therapy. They stated that there were similar percentages of patients who underwent total thyroidectomy and subtotal thyroidectomy in both PTC AND FVPTC, and there was no difference in survival between the thyroidectomy group and subtotal thyroidectomy

group. Ninety-two percent of patients with PTC and 94% of patients with FVPTC were treated with I¹³¹ for ablation of remnant thyroid tissue and ablation was successful after a single I¹³¹ dose in 91% of patients with PTC and 92% of patients with FVPTC. They concluded that FVPTC is a common subtype of PTC and that patient with FVPTC and PTC showed similar clinical characteristics and prognostic factors.

4. Conclusion

In this report, we presented a case of a 75 year-old female with scalp metastasis about one year post left total thyroidectomy for a FVPTC. Cutaneous metastases of a thyroid carcinoma can be erroneously taken for a primary skin lesion. Hence, a high index of suspicion becomes of great importance and a needful tool, especially in an unusual or subtle presentation. Therefore, the presence of new dermal lesions in a patient with a history of thyroid cancer should lead to a detailed examination of the skin and an excisional biopsy in order to make a diagnosis. This case report emphasizes the need for increased knowledge and awareness of the possibility of rare metastatic deposits of thyroid cancers on unusual sites.

Conflict of interest

There are no conflicts of interest in this report.

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We have no funding for this report.

Ethical approval

This is a case report. We do not need any ethical approval.

Authors' contributions

Fuad Aftab conceived and coordinated the report.

Obinna Nwaeze, Stephen Obidike edited patient records.

Obinna Nwaeze prepared the report and inserted the relevant figures.

Dorinda Mullen examined the histological material, and provided the legends. All authors read and approved the final manuscript.

Consent

The authors thank the patient for providing her consent and cooperation.

Guarantor

Mr Fuad Aftab and Dr Obinna Nwaeze.

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