

Metastasis of Follicular Variant of Papillary Thyroid Carcinoma to Scalp, Masquerading As Adnexal Tumor: A Rare Presentation

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Abstract

A 55-year-old female presented with ulcerated swelling over the scalp. Clinically, the case was diagnosed as adnexal tumor of skin. Fine needle aspiration cytology (FNAC) from the lesion showed characteristic micro-follicles with typical nuclear features of papillary thyroid carcinoma. Later, diligent clinical examination revealed a small thyroid nodule and FNAC from the same, showed similar cytomorphological features, indicating possibility of follicular variant of papillary thyroid carcinoma. Biopsy of the scalp swelling and thyroid nodule confirmed the same. Identification of typical nuclear features in cytology helps in differentiating follicular variant papillary carcinoma from follicular neoplasms and, predominant presence of microfollicles favour follicular variant of papillary thyroid carcinoma (FVPTC). Spread through lymphatic route is common in papillary 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.

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INTRODUCTION

Papillary thyroid carcinoma (PTC) is the commonest malignancy of thyroid. It is biologically indolent and has excellent prognosis. PTC usually invades lymphatics leading to regional lymph node metastases. Haematogenous spread rarely occur, leading to distant metastases in lung, bone and brain. However, cutaneous metastases are distinctly uncommon [1].

Fine needle aspiration cytology (FNAC) is the screening test and is accurate in diagnosing usual type of PTC (UTPTC). However, Follicular variant of PTC (FVPTC) is difficult to diagnose as, papillae are absent, and characteristic nuclear features are variable [2]. Herewith, we are describing a patient with occult papillary carcinoma, who has presented with scalp metastases.

CASE PRESENTATION

A 55-year-old female presented with history of a swelling in the scalp since one and half years. The swelling was gradually increasing in size and had ulcerated recently. On examination, there was an ulcerated nodule with induration in the left parietal region of scalp, measuring 5x 3x 2cm. Her general and systemic examination was unremarkable and, clinically diagnosed as adnexal tumor of skin. FNAC from the swelling was done after formal consent and revealed predominantly microfollicles and small sheets. The cells showed mild to moderate pleomorphism with vesicular oval nuclei having intranuclear inclusions and grooving, suggestive of metastatic follicular variant of papillary thyroid carcinoma. X-Ray of skull showed no bone involvement.

Careful re-examination of the patient revealed a thyroid nodule in the left lobe. Ultrasonography of neck demonstrated hypoechoic irregular nodule with high levels of blood flow in the left lobe of thyroid. No other lesions were seen in the isthmus and right lobe of thyroid. Regional lymphadenopathy was not seen. Ultrasound guided FNA from nodule showed similar cytomorphological features with nucleomegaly, intranuclear inclusions and occasional nuclear grooves (**Figure 1**). Computerized Tomography (CT) of head and neck revealed lesion confined to scalp and left lobe of thyroid. No extrathyroidal local extension was seen. CT of chest and abdomen were unremarkable.

Biopsy from scalp lesion was done and microscopy revealed, predominantly small to medium sized follicles along with trabaculae of cells with no papillary structures. A few of the follicles had colloid. The cells had oval vesicular nucleus with nuclear grooving and intranuclear inclusions (**Figure 2A and B**). Necrosis, atypical mitotic figures, marked pleomorphism and psammoma bodies were absent.

Subtotal thyroidectomy specimen showed a grey white irregular nodule (3.0 x 2.0 x 1cm) in left lobe (**Figure 3**). Multiple bits from thyroid nodule were subjected to histopathology, revealed infiltrating tumor with partial encapsulation and desmoplasia in the surrounding stroma. Tumor consisted of predominantly follicles, which were lined by cells having ground glass nucleus, nuclear grooves and occasional intranuclear inclusions

(**Figure 4A and B**). Vascular invasion was seen within the lesion. Surgical borders were free from the tumor. Histopathologically the case was diagnosed as FVPTC with scalp metastasis.

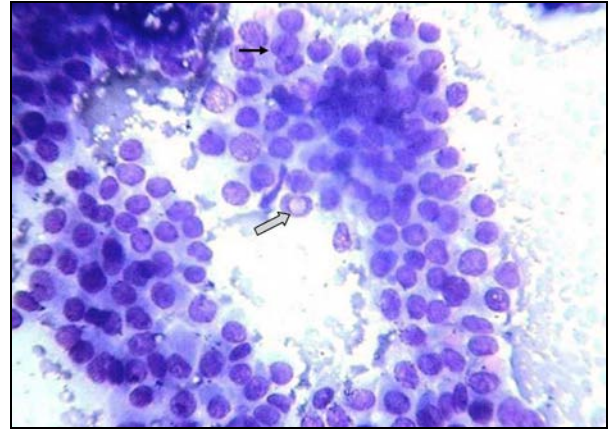


Figure 1. Fine needle aspiration of thyroid nodule: Follicular cells in syncytiae and follicles and show intranuclear cytoplasmic inclusion (black arrow), and nuclear grooves (white arrow) (MGG, x 400).

Patient was categorized under high-risk group according to AMES (Age, Metastases, Extent of primary cancer and Size of tumor) risk-group definition system and was treated with radioactive iodine and thyroxine. Patient did not turn up for follow-up visits.

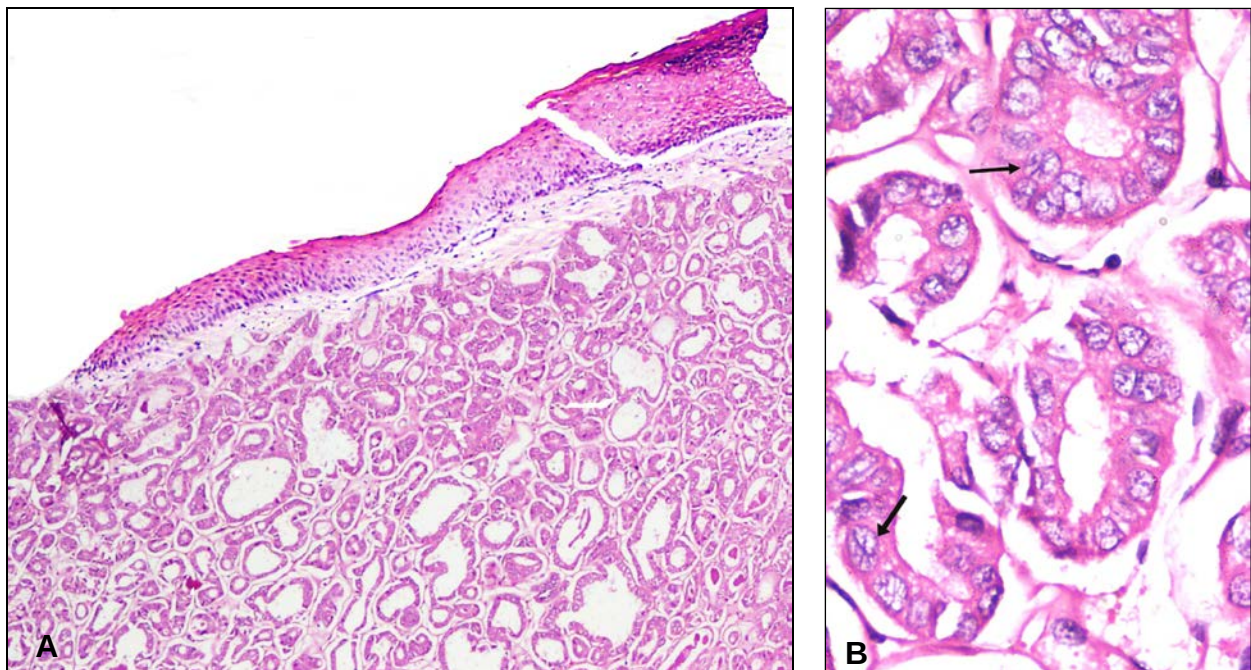


Figure 2. A: Histopathology of scalp lesion: Infiltrating tumor beneath the epidermis comprises predominantly of follicles (H&E, x 100). **B:** Follicular cells have ground glass nucleus and show transapolar nuclear grooves (black arrow) (H&E, x 400).



Figure 3. Subtotal thyroidectomy specimen. The grey-white nodule, which is generally devoid of colloid and contains microcysts, is seen in the subcapsular area.

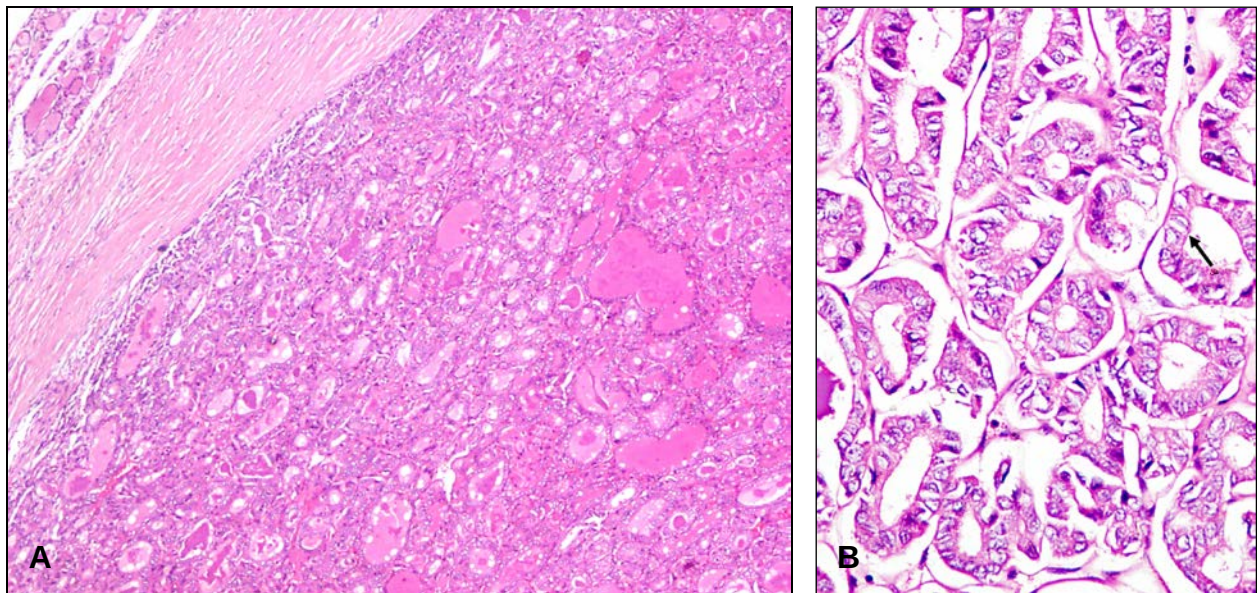


Figure 4. A: Histopathology of Thyroid nodule: Nodule predominantly consists of follicles (H&E, x 40). **B:** Follicular cells show ground glass nucleus and transpolar nuclear grooves (black arrow) (H&E, x 200).

DISCUSSION

Thyroid carcinoma metastatic to skin is rare. If the skin is involved, scalp and face would be the usual sites of involvement. This is attributed to rich dermal capillary network of scalp and face that may trap tumor cell emboli from circulation and provide environment for successful formation of metastatic foci [3]. Diagnosis of thyroid carcinoma metastatic to skin can be difficult without detailed clinical history and examination [1 and 3]. This case report describes a solitary cutaneous lesion as the first evidence of disseminated malignancy in a patient with papillary thyroid carcinoma.

FNAC is the powerful screening and diagnostic tool for discriminating surgical and non-surgical thyroid nodules and is highly accurate in diagnosing UTPTC. However, efficacy of cytology in identifying different histological variants is controversial. Among the variants of PTC, follicular variant is common. FNAC had high diagnostic specificity (83%) and low sensitivity (42%) for FVPTC [4]. Incidence of lymph node metastases is lesser in follicular variant than in usual type.

Presence of nuclear features, such as grooves, intranuclear inclusions and powdery chromatin were statistically significant in the majority of FVPTC cases [5]. Architecture might play the most important and definitive role in differentiating UTPTC from FVPTC but it is vulnerable, only if sampling is inadequate or follicles are destroyed. Hence, follicular variant is difficult to diagnose [3 and 4].

The presence of cellular patterns like, numerous colloid balls and rosette like microfollicles in the aspirate suggest the diagnosis of FVPTC and even helps to differentiate it from other thyroid lesions [6]. However, in our case mainly, the microfollicles were present and colloid was scanty in the aspirates from thyroid and scalp swelling.

The presence of more than three intranuclear inclusions in the enlarged nuclei on single aspirate is almost pathognomonic of PTC [7]. In the absence of intranuclear inclusions, the presence of more than or equal to 20% nuclear grooves is virtually diagnostic of thyroid neoplasm, most likely papillary carcinoma [8]. Intranuclear inclusions and occasional nuclear grooves were present in aspirates from both scalp swelling and thyroid nodule of our case. Usually presence of characteristic nuclear features distinguishes between FVPTC and follicular neoplasm [4].

Histopathology usually confirms the diagnosis of FVPTC. However, immunohistochemical demonstration of markers like rets/ PTC, HBME-1, CK-19 and CD 10 may be useful when morphological features and nuclear features in metastatic foci are less

marked. Thus, immunohistochemistry is useful and can confirm the diagnosis in such cases [4].

Cutaneous metastasis of papillary thyroid carcinoma to nose [9], scalp [10, 11], thigh [12] and breast [12] was reported. Loureiro et al [12] reported a case of FVPTC with three cutaneous and one breast metastases in the absence of a locally invasive tumor. Regional lymph node spread, larger primary tumor size and age (>45 years) are the independent poor prognostic factors of PTC [13].

Adnexal tumours of skin can be easily distinguished from metastatic thyroid carcinoma by their cytomorphological features. However, presence of occasional rosettes and eosinophilic spherical cytoplasmic inclusions that are located near the nuclei or within the nuclear indentations in the aspirates from Merkel cell carcinoma may mimic the cytomorphological features of metastatic PTC. But diligent search for primary and immunohistochemistry distinguish them [7].

In conclusion, cutaneous metastasis of thyroid carcinoma is a diagnostic challenge. However, detailed clinical examination along with cytohistomorphological features of aspirate hints the origin and the type of neoplasm.

CONFLICTS OF INTEREST

The authors declare that they have no conflict of interest.

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