Eruptive tumors of the follicular infundibulum in photo-exposed skin

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INTRODUCTION

Tumor of the follicular infundibulum (TFI) is a rare benign adnexal neoplasm that commonly presents as a solitary asymptomatic scaly papule or nodule on the head and neck of elderly patients. An eruptive variant, known as *infundibulomatosis*, has been described and may present as multiple hypopigmented macules or papules, with irregular borders.[1,2] In addition, TFI may be associated with other cutaneous neoplasms, such as basal cell carcinoma, nevus sebaceous, and trichilemmoma, among others,[3] and with Cowden syndrome.[4] More recently, an atypical clinical variant involving the face and posterior calves was described in the Brazilian literature.[5] We describe a similar case.

CASE REPORT

A 54-year-old man presented to the dermatology clinic with a 3-year history of fixed, asymptomatic lesions on the forehead and posterior calves. He had a history of hyperlipidemia but was otherwise healthy. There were no recently added medications. There was no personal or family history of Cowden syndrome or malignancy, including breast, thyroid, kidney, or colorectal cancers. He rarely used sunscreen and bicycled approximately 30 miles per week. On examination, there were atrophic erythematous linear scaly papules coalescing into plaques on the forehead and bilateral posterior calves (Fig 1, *A* and *B*). There was no rash elsewhere on the body. Biopsies performed on the forehead and left calf showed platelike anastomosing columns of epithelial cells with regular nuclei and abundant pink cytoplasms emanating from the undersurface of the epidermis with minimal overlying parakeratosis (Fig 2, *A* and *B*). The clinical and histopathologic findings were consistent with a diagnosis of multiple tumors of the follicular infundibulum, or infundibulomatosis. The minimal parakeratosis could be explained by an overlying eczematous process or secondary changes. Given the extensive distribution of the TFI and its benign nature, the patient opted for clinical monitoring of the lesions.

Abbreviations used:

BCC:	basal cell carcinoma
PTEN:	phosphatase and tensin homolog
TFI:	tumor of the follicular infundibulum

DISCUSSION

The first case report of TFI was published in 1961[6] and described a patient with multiple hypopigmented papules on the head and neck. Most cases reported since then described solitary tumors of the head and neck region in the elderly. Clinically, the lesions appear as a smooth or slightly scaly papule or nodule that may be mistaken for a basal cell carcinoma (BCC).

More recently, several cases of multiple TFI, also known as *infundibulomatosis*, have been described. These lesions may occur in younger patients and can assume a variety of clinical manifestations including multiple hypopigmented macules, papules, or atrophic plaques with irregular or angulated borders.[1,2] Similar to their solitary counterparts, multiple TFI almost always cluster on the head and neck region. However, recently Haddad et al[5] reported a case in which TFI not only involved the head and neck but also the posterior calves. We present a case with a similar clinical appearance and distribution and suggest that multiple TFI may have a predilection for the posterior calves in a subset of

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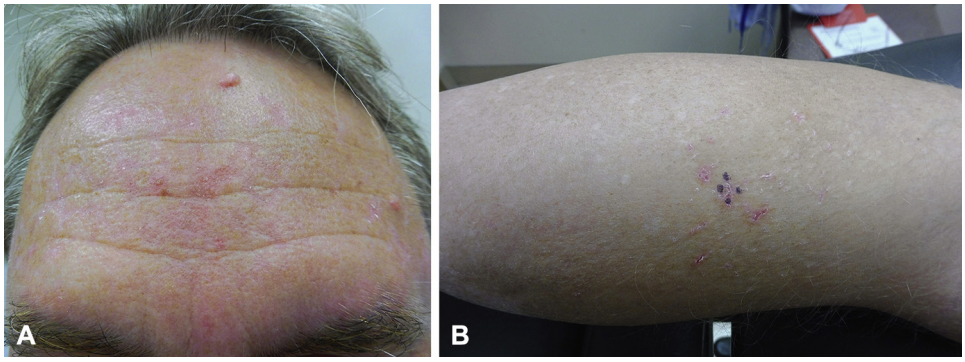

Fig 1. Tumor of the follicular infundibulum presenting as atrophic erythematous linear scaly papules coalescing into plaques on the forehead (**A**) and calves (**B**).

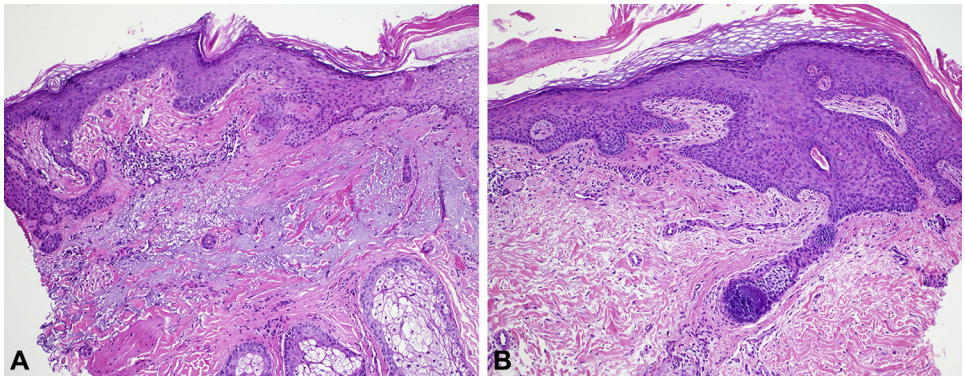

Fig 2. Histopathologic examination of forehead biopsy (**A**) and calf biopsy (**B**) shows platelike anastomosing columns of epithelial cells with regular nuclei and abundant pink cytoplasms. (Hematoxylin-eosin stain; original magnification: ×100.)

patients. Our patient was a cyclist whose calves received a disproportionate amount of sunlight, suggesting that this unique finding might be caused by increased sun exposure.

Although the underlying etiology of TFI is unknown, its association with Cowden syndrome offers a theoretical possibility for disease pathogenesis.[5] Cowden syndrome is associated with a loss of function germline mutation in the tumor suppressor phosphatase and tensin homolog (*PTEN*), which regulates the phosphoinositide 3-kinase and rapamycin signaling pathways. This leads to increased cell proliferation, cell cycle progression, and decreased apoptosis, resulting in multiple hamartomas (eg, trichilemmomas, TFI) and malignancy (eg, breast, thyroid, kidney, and colorectal cancers). It is unknown if cases of TFI not associated with Cowden syndrome share a similar pathophysiology. However, it is plausible that a ultraviolet light–induced, acquired *PTEN* mutation could drive these tumors, which might explain their predilection for sun-exposed areas and their occasional association with other forms of cutaneous malignancy, for example BCC.[3,7] Sporadic TFI, unlike the TFI associated with Cowden syndrome, is not associated with an increased risk of internal malignancy.[5]

Definitive diagnosis of TFI is made by biopsy. Histopathologic analysis finds a platelike proliferation of anastomosing pale keratinocytes without atypia that interconnects with the epidermis and follicular structures. This pattern is well preserved across the different clinical lesions of TFI.[8] Cells stain positive for PAS because of the presence of glycogen. In addition, TFI shows staining of scattered Merkel cells with CK20 and stains negative with Ber-Ep4, which can distinguish TFI from BCC.[8] Of note, based on histomorphology and staining patterns, some investigators suggest that the tumor displays isthmic differentiation, possibly in addition to infundibular differentiation.[8] In this regard, tumor of the follicular infundibulum may be a misnomer.

The treatment options for patients with TFI are limited and generally ineffective. Topical keratolytics and topical corticosteroids have been tried with minimal success.[1] Long-term treatment with etretinate has led to partial clearing of lesions.[1]

Cryotherapy has been used with good results in a limited number of cases.[9] Curettage and excision may be curative, but the resultant scarring may be as cosmetically disturbing as the original lesion.[1] In terms of prognosis, TFI is generally considered benign. However, there is a single case report of a patient with more than 100 lesions who had transformation of 2 tumors into BCC.[7] Thus, it seems reasonable to monitor these patients for malignant transformation. Further, because TFI is associated with Cowden's syndrome, patients should be screened for a personal or family history of this disorder and its associated neoplasms, such as multiple hamartomas and internal malignancy.

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