

Eccrine syringofibroadenoma of the Sole: A case report

Warissanan Tangtiwiat MD*, Niorn Boonpuen MD*,**.

*Institute of Dermatology, Department of Medical Services, Ministry of Public Health, Bangkok, Thailand.

**Faculty of Medicine, Rangsit University, Pathum Thani, Thailand.

ABSTRACT:

Eccrine syringofibroadenomas (ESFA) are rare benign adnexal tumors originating from the eccrine sweat gland ducts. This condition can appear as either solitary or multiple hyperkeratotic lesions on the extremities of middle-aged to elderly individuals. This report describes an unusual presentation of the condition in a 48-year-old Thai man who presented with a long-standing, asymptomatic erythematous hyperkeratotic plaque on the right sole. Histopathological analysis revealed epidermal hyperplasia with multiple anastomosing epithelial strands forming a characteristic lattice-like network, consistent with ESFA. The patient underwent cryotherapy with liquid nitrogen, resulting in partial clinical improvement. This case demonstrates an uncommon plantar presentation of ESFA and emphasizes the importance of early recognition and histopathological confirmation for appropriate management.

Key words: adnexal tumor, eccrine syringofibroadenoma, plantar hyperkeratosis

Introduction

Eccrine syringofibroadenoma (ESFA) is a rare, non-cancerous skin tumor that develops from eccrine sweat gland ducts or cells in the skin. Clinically, it presents in a diverse array of forms ranging from isolated lesions to multiple hyperkeratotic papules and nodules, most commonly affecting the extremities. Unusual involvement of the nail apparatus nevi¹ and organoid nevi² has also been documented.

ESFA typically affects middle-aged to elderly patients and can be classified into five clinical subtypes based on Starink's classification modified by French: solitary ESFA³, non-familial unilateral linear ESFA⁴, multiple ESFA associated with ectodermal dysplasia (Clouston's syndrome⁵ and Schopf's syndrome⁶, familial ESFA with ophthalmological abnormalities⁷, and reactive ESFA⁸ (Table 1). Although generally benign, rare cases of malignant transformation have been reported, either within longstanding eccrine syringofibroadenoma or in association with eccrine porocarcinoma⁹. In one such case,

the patient developed diffuse plantar hyperkeratosis, which may have resulted from a postzygotic somatic mutation occurring during early embryonic development.

The variable clinical presentation and overlapping histopathologic features of ESFA present significant diagnostic challenges, necessitating careful distinction from other fibroepithelial and adnexal proliferations. The principal differential diagnoses are fibroepithelioma of Pinkus, a variant of basal cell carcinoma that may display thin branching epithelial strands but typically demonstrates peripheral palisading and stromal retraction; eccrine poroma¹⁰, which is characterized by a lobular proliferation of poroid cells with less prominent anastomosing architecture; and syringoma, which features small ductal structures with tadpole-shaped morphology rather than an interconnected network. Additionally, reactive epithelial proliferations such as pseudoepitheliomatous hyperplasia may resemble ESFA, particularly in chronic inflammatory or ulcerated contexts, but do not

exhibit consistent eccrine ductal differentiation. It is also essential to exclude squamous cell carcinoma, especially in cases of reactive ESFA or lesions with cytologic atypia, due to the potential for coexistence and misinterpretation.



Figure 1 Localized, scaly, erythematous papules, nodules, and plaques on the left sole (A) and the right sole (B)

Case Report

A 48-year-old male patient from Thailand presented with a 13-year history of asymptomatic fissures affecting both heels. The symptoms spontaneously resolved on the left heel, but on the right sole, he developed a larger, solitary, asymptomatic erythematous hyperkeratotic plaque, which gradually extended to involve the plantar aspect of the right foot (Figure 1). There was no history of trauma, chronic ulceration, or any known underlying comorbidities. However, as the

lesion on the right heel became increasingly indurated, the patient began to experience difficulty to walk. Physical examination revealed a well-demarcated, asymptomatic erythematous hyperkeratotic plaque on the right sole without malodor. Hair, nails, teeth, and sweating were normal. No lymphadenopathy or other cutaneous or systemic abnormalities were noted.

A skin biopsy was performed on the lesion on his right heel, and the results revealed epidermal hyperplasia with elongation of the rete ridges and multiple anastomosing epithelial strands forming a lattice-like network attached to the epidermal undersurface. Eccrine ducts were identified within the epithelial structures, and a rich fibrovascular stroma was observed between the cords. There were no features of dysplasia or malignancy (Figure 2). The dermis has mild inflammation without any fibrosis, and there is a noticeable presence of lymphocytes and plasma cells. Additional immunohistochemical staining was not performed because of financial limitations; however, periodic acid–Schiff (PAS) staining demonstrated positive luminal material within the ductal structures (Figure 3).

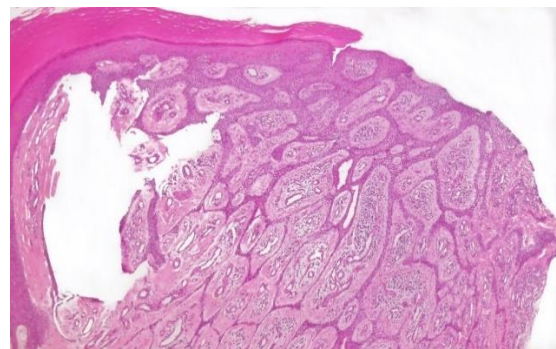


Figure 2 Histopathology revealed epidermal hyperplasia, characterized by the elongation of rete ridges and the formation of multiple anastomosing epithelial cords and strands, creating a lattice-like pattern that is connected to the undersurface of the epidermis. (H&E 200X)

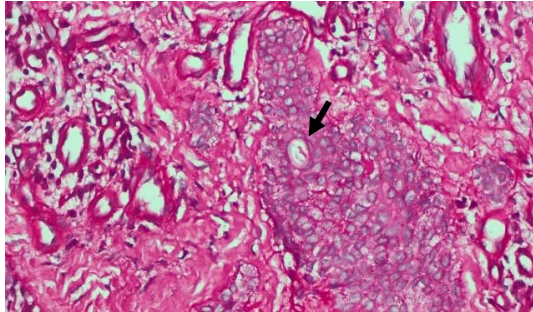


Figure 3 Periodic acid–Schiff (PAS) staining demonstrated positive luminal material within the ductal structures. (H&E, 400X, black arrow)

Discussion

ESFA was described in 1963 by Mascaro as a rare adnexal tumor deriving from the acrosyringial portion of the eccrine duct arising most often on the extremities of elderly individuals, it can occur in younger patients¹¹. Clinically, it might be misinterpreted as granulomatous infections or cancers like squamous cell carcinoma¹². Our patient presented with a solitary hyperkeratotic plaque

localized to the right sole, without abnormalities of the hair, nails, teeth, or sweating, and without features of ectodermal dysplasia. Clinically and histopathologically, this presentation is most consistent with solitary ESFA. In contrast to previously reported cases associated with hidrotic ectodermal dysplasia¹³, our patient exhibited no syndromic features, supporting classification as a sporadic solitary form. Notably, this case differs from previously reported solitary ESFA in its plantar location, plaque-like morphology rather than a nodular presentation, and prolonged disease duration prior to diagnosis. The histopathological differential diagnoses include fibroepithelioma of Pinkus¹⁴, eccrine poroma, well-differentiated squamous cell carcinoma¹¹, and syringoma. However, the presence of characteristic anastomosing epithelial cords forming a lattice-like pattern with identifiable eccrine ducts, along with the absence of cytologic atypia, supports the diagnosis of ESFA.

Table 1 Subtypes of eccrine syringofibroadenoma (ESFA) based on Starink's classification modified by French

Subtypes of (ESFA)	Solitary ESFA	Non-familial unilateral linear ESFA (nevroid ES)	Multiple ESFA with hidrotic ectodermal dysplasia	Familial ESFA with ophthalmologic abnormalities	Reactive ESFA
Clinical features	Single, often verrucous-like lesion	Unilaterally as multiple papules and plaques distributed symmetrically or linearly	Multiple erythematous papules	Nevroid pattern eccrine syringofibroadenomatosis	Pinkish papules to large verrucous plaques
Age	The middle aged or elderly	Adolescence or early adulthood	Adolescence or elderly	Early childhood	Elderly
Common site	Extremities	Extremities	Limbs and especially the palms and soles	Extremities	Extremities
Associated syndrome	No associated cutaneous anomalies	No associated cutaneous anomalies	Schöpf-Schulz-Passarge syndrome*, and Clouston's syndrome†	Multiple periocular and ocular abnormalities‡	Inflammatory dermatosis and tumors§

*Schöpf-Schulz-Passarge syndrome (SSPS) is an uncommon autosomal dominant form of ectodermal dysplasia characterized by hypodontia, sparse hair, dystrophic nails, palmoplantar keratoderma, and apocrine hidrocystoma located near the eyes and eyelid margins.

†Clouston's syndrome is an autosomal dominant form of ectodermal dysplasia that presents with dystrophic nails and sparse hair.

‡Some of these abnormalities, including cicatricial entropion, cicatricial ectropion, and meibomian gland absence, may have contributed to secondary corneal scarring and visual loss.

§Inflammatory dermatoses arising in the setting of chronic venous stasis, persistent foot ulcers, nail trauma, burn scars, leprosy, nevus sebaceus, enterostomy sites, bullous pemphigoid, epidermolysis bullosa, or erosive palmoplantar lichen planus.

The definitive diagnosis of ESFA relies on histopathological examination and exclusion of infectious or neoplastic conditions. In our case, the diagnosis was confirmed through a skin biopsy. It is a rare tumor of the acrosyringium. Given its malignant propensity, complete excision is the mainstay of treatment. However, in the present case, the patient declined surgical intervention. In situation where excision is not feasible due to extensive disease, anatomically challenging locations, or patient preference, close clinical monitoring with periodic biopsy is recommended. Therefore, cryotherapy with liquid nitrogen was selected as an alternative treatment, in combination with topical potent corticosteroids, emollients, and keratolytic agents¹⁵. Following treatment, partial clinical improvement was observed, with a reduction in lesion thickness and fissuring. Alternative therapeutic modalities, such as pulsed dye laser¹⁶, have been reported in recalcitrant cases of ESFA that were unresponsive to cryotherapy and electrodesiccation¹⁷.

Author Contributions

Conceptualization: [Warissanan T., Nior B]; Methodology: [Warissanan T.]; Formal analysis and investigation: [Warissanan T., Nior B.]; Writing – original draft preparation: [Warissanan T.]; Writing – review and editing: [Warissanan T., Nior B]; Supervision: [Nior B]. All authors have read and agreed to the published version of the manuscript.”

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Ethics Statements

Ethical review and approval were waived for this study due to the nature of case report. Written informed consent was obtained from the patient for the publication of potentially identifiable clinical images.

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None

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

AI Declaration

During the preparation of this work, the authors used Gemini 3.5 Flash-Lite improve language readability and grammar. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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