

Case Report

Dermoscopy and Reflectance Confocal Microscopy as Auxiliary Diagnostic Tools for Subungual Eccrine Poroma: A Case Report

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Abstract

A 71-year old female, visited the outpatient complained with the mass under the nail on the right middle finger over 40 years. It began as a invasive erythema with clear border under the lateral margin of the middle finger nail, without pain or itching. The erythema slowly enlarged with the rough and thickened surface, occasionally rupturing or bleeding. Dermoscopy and Reflectance Confocal Microscopy (RCM) and skin histopathology confirmed subungual eccrine poroma. The tumor was completely removed directed by skin imaging techniques and there was no recurrence. It suggested that skin imaging techniques could be used as an auxiliary diagnostic tool for subungual eccrine poroma.

Keywords: Eccrine poroma; Subungual; Dermoscopy; Reflectance confocal microscopy.

Introduction

Subungual eccrine poroma is one of the rare benign tumors originated from sweat glands, the gold standard for diagnosis of which is histopathology. Due to the particularity of the subungual eccrine poroma, the rash of subungual eccrine poroma has no obvious specificity and no obvious symptoms, and it is easy to delay treatment and misdiagnosis. The use of dermoscopy and reflective confocal microscopy has improved the diagnosis of subungual tumors including eccrine poroma. Here we reported a case of subungual eccrine poroma which provided direction for its diagnosis and surgical resection by dermoscopy and reflectance confocal microscopy as auxiliary tools.

Case presentation

A 71-year-old woman, a housewife, visited our outpatient complained with the mass under the nail on the right middle finger over 40 years. It began as a invasive erythema with clear

border under the lateral margin of the middle finger nail, without pain or itching. The erythema slowly enlarged with the rough and thickened surface, occasionally rupturing or bleeding. The patient did not report previous trauma or surgeries. There was no positive family history.

General examination did not reveal any abnormalities. Dermatological examination showed a invasive red plaque, with rough surface, erosion scab under the lateral edge of the middle finger nail, with the size of 0.5 cm × 1.5 cm and the brown spots on the nail surface (Figure 1), without tenderness. Examination of the axilla did not reveal lymphadenopathy.

Laboratory results showed normal blood cell counts, blood chemistry and coagulation function. Dermoscopy revealed the pink background, morphological vascular structure, atypical hairpin vessels, focal spherical or circular coiled vessels, scattered pink ball, white halo, yellow white, pink without structural

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area, and purple brown bleeding spots under the nail bed were observed (Figure 2). RCM showed mild hypertrophy of the epidermis, tumor mass in the dermis, with more cystic and lumen-like structures and a low refractive profile and heterogeneous cell structure. Superficial dermis vessels were significantly dilated and congested, and there was little infiltration of inflammatory cells around the canal (XZ scan) (Figures 4A,4B), which suggested eccrine poroma. Skin biopsy was performed and the histopathology showed that the mild hypertrophic epidermis, visible tumor mass connected to the epidermis composed of small basal cells with a downgrowth pattern, without peripheral palisaded arranged cells. The dermal vessels were significantly dilated, with a few of inflammatory cells infiltration (Figures 5A,5B). Immunohistochemistry showed the positive results for EMA and CK, scattered positive for Bcl-2 and negative for CEA and S100. About 10 percent cells of the tumor was positive for Ki67 (Figure 6). The final diagnosis was made as subungual eccrine poroma.

The patient underwent a tumor resection under the local anesthesia. Dermoscopy after nail extraction showed invasive erythema and dilated capillaries involved almost all of the nail bed surface, the yellow-white interlaced area around the vessels, and pink balls (Figure 3). During the operation, the tumor was surgically removed completely directed by the dermoscope. There was no recurrence by follow-up for half a year.



Figure 1: The clinical manifestation of subungual eccrine poroma A invasive red plaque, with rough surface, erosion scab under the lateral edge of the middle finger nail, with the size of 0.5 cm × 1.5 cm and the brown spots on the nail surface.



Figure 2: Dermoscopic findings of subungual eccrine poroma before nail extraction.

Dermoscopy revealed the pink background, morphological vascular structure, atypical hairpin vessels, focal spherical or circular coiled vessels, scattered pink ball, white halo, yellow white, pink without structural area, and purple brown bleeding spots under the nail bed were observed (×50).



Figure 3: Dermoscopic findings of subungual eccrine poroma after nail extraction.

Dermoscopy after nail extraction showed invasive erythema and dilated capillaries involved almost all of the nail bed surface, the yellow-white interlaced area around the vessels, and pink balls (× 50).

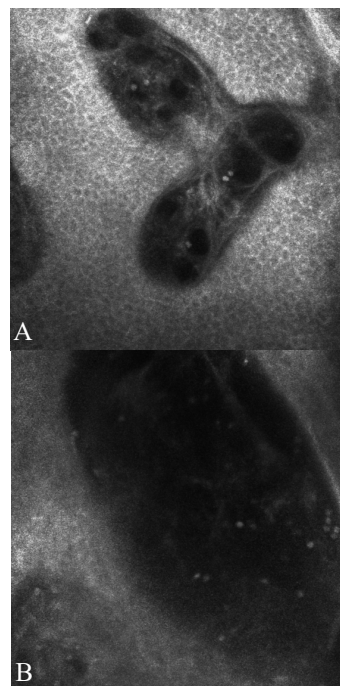


Figure 4: RCM findings of subungual eccrine poroma.

Mild hypertrophy of the epidermis, tumor mass in the dermis, with more cystic and lumen-like structures and a low refractive profile and heterogeneous cell structure (4A). Superficial dermis vessels were significantly dilated and congested, and there was little infiltration of inflammatory cells around the canal (4B) (XZ scan).

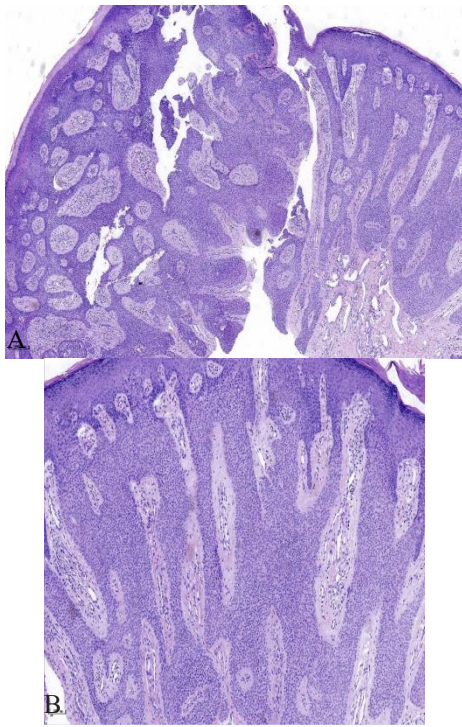


Figure 5: The histopathology of subungual eccrine poroma.

The mild hypertrophic epidermis, visible tumor mass connected to the epidermis composed of small basal cells with a downgrowth pattern, without peripheral palisaded arranged cells. The dermal vessels were significantly dilated, with a few of inflammatory cells infiltration (5A HE staining $\times 50$; 5B HE staining $\times 100$).

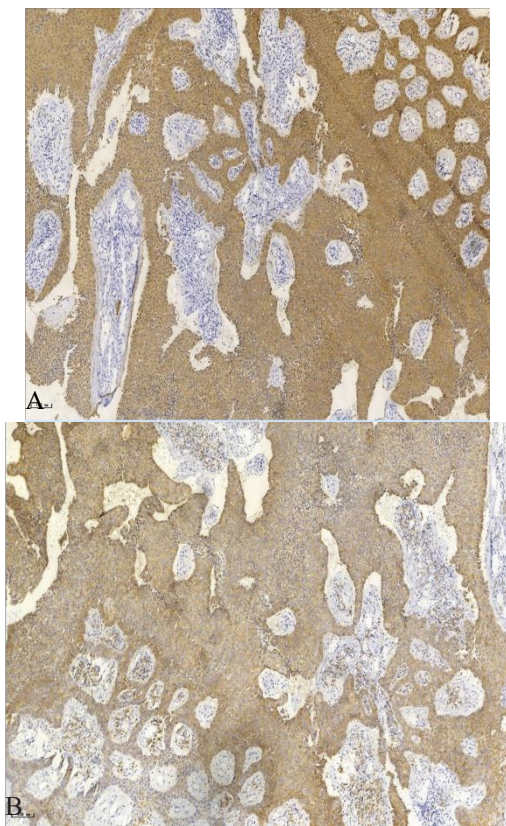


Figure 6: The immunohistochemistry for EMA and CK of subungual eccrine poroma.

The immunohistochemistry showed the positive results for EMA (6A) and CK (6B) (SP staining $\times 100$).

Discussion

Eccrine poroma is one of the benign cutaneous appendage tumors differentiated into the terminal sweat gland duct which originates from the eccrine gland duct component in the dermis and epidermis. Generally, it is commonly found in the palmoplantar area with rich eccrine glands, such as the lateral edge of the palmoplantar of the foot. Occasionally it is also reported to occur in the trunk, eyelid, subungual sites and so on [2,3]. Eccrine poroma is relatively rare and only about 10% of the sweat gland tumors, which account for 1% of primary skin tumors [1]. Most patients are over 40 years of age [4]. Typical clinical manifestations are solitary, soft skin color to red papules or nodules and subungual eccrine poroma is rarely reported, only with more than 10 cases reported by PubMed search. The etiology and pathogenesis of eccrine poroma are unclear, which are related to solar injury, radiation exposure, trauma and human papillomavirus infection.

The diagnosis of subungual eccrine poroma is mainly based on the histopathological examination [4]. Its typical histopathological findings include the well-demarcated tumor located in the upper part of the epidermis extending from the epidermis to dermis with clear demarcation between normal keratinocytes with the tumor cells, and dilated dermal capillaries rounded with little lymphocytes. Tumor cells are cubical or round basal cells with the uniform size round and deep nucleus, some with transparent cytoplasm, with tight intercellular junctions and peripheral palisaded arrangement. Clinically, it is difficult to take the biopsy for the subungual eccrine poroma for the special anatomical location.

Recently dermoscopy and RCM have been favored clinically for their non-invasive, painless and fast features. Therefore, they are of great significance in the diagnosis of nail-related diseases and provide a reference for the preliminary diagnosis of diseases. The main manifestations of eccrine poroma under dermoscopy are multiple red space, glomerular vessels, hairpin vessels with floral and foliar vascular and polymorphism vascular pattern, spherical/lacunar structure, frog egg appearance and acne opening [5], which can provide important clues for the diagnosis of subungual eccrine poroma. The RCM features of subungual eccrine poroma include multiple cystic cavity, lumen-like structure and a low refractive profile. The polymorphic vascular structures and scattered pink globules correspond to the tortuous and dilated capillaries in the nail bed and the rich capillary structures in the interstitium. Pink-white unstructured areas and white to pink halos were associated with specific histopathological features, including fibrotic tissue proliferation and fibrinoid oedema surrounding several dilating vessels, respectively [6]. Among the RCM parameters, "fence-less cord", "dark hole," "prominent vascularization" and "rich matrix" were positively associated with eccrine poroma in the univariate analysis. By the cluster analysis, RCM features correspond to 97% with the histopathological diagnosis of eccrine poroma in cases [7]. In our case, a tumor mass was visible in the dermis of RCM, with more cystic cavity and luminal structures and without heteromorphous cells, which conformed to the RCM characteristics of eccrine hidradenoma.

With skin imaging techniques, subungual eccrine poroma should be differentiated from other nail diseases such as onychomycosis, nail psoriasis, subungual squamous cell carcinoma, subungual hemorrhage and subungual malignant melanoma, and so on, all of which can cause nail changes such as nail loss or nail dissection. But each of them has corresponding typical

clinical manifestations. Onychomycosis involving the nail desk showed the tip of the serrated scales is facing the proximal end and the high refractive structure was observed under the deck with RCM. In nail psoriasis, yellow and white flocculent can be seen above and below the diseased nail, untypical vascular dilation on the reddish base of nail bed, white, unstructured area, yellow and white scales. Hyperplastic, dilated capillaries in the dermal papilla and inflammatory cells infiltration can be seen by RCM. Subungual Squamous Cell Carcinoma (SSCC) is characterized by black or red lines, irregular blood vessels, and patchy bleeding or diffuse homogeneous stain in the subungual haemorrhage by dermoscopy. Under the RCM, SSCC was discovered the disorganized skin structure with focal distribution of nucleated cells in the epidermis and dermis, abnormal keratinocytes in the prickle layer and typical hornbead structure. Dark areas were observed under the deck with RCM, and no obvious pigment particles were observed. Subungual melanoma melanoma shows an irregular brown pigmented band of different shades and widths with a width greater than 3mm with positive Hutchinson sign. With RCM, subungual in-situ malignant melanoma is characterized by single proliferation of melanocytes. Melanocytes are distributed irregularly in the basal layer with atypia and concentrated chromatin. Subungual invasive malignant melanoma often involves the subdermis, with obvious cell atypia and invasive growth pattern.

In our case, dermoscopy and RCM showed the typical imaging findings of subungual eccrine poroma, which was very helpful for clinical diagnosis. Moreover, the invasive scope of the tumor was fully exposed under the dermoscopy during the surgical treatment, which provided a reference scope of surgical resection to completely remove the tumor. Dermoscopy and RCM, as a new auxiliary examination and diagnosis techniques are helpful for the diagnosis and treatment by operation of subungual eccrine poroma.

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