

Dermscopy of Biett's sign and differential diagnosis with annular maculo-papular rashes with scaling

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Laurent-Théodore Biett (1781–1840), a Swiss-born dermatologist, first described the thin white ring of scaling on the surface of secondary syphilis papules since known as “Biett’s collarete.”¹ Although the clinical features allow the diagnosis of secondary syphilis in most cases, it may be at times difficult to differentiate it from other annular maculo-papular dermatoses with scaling. Dermoscopy has been most often used to improve the diagnostic accuracy in the clinical evaluation of pigmented skin lesions but it has also been found useful in the assessment of vascular structures that are not visible to the naked eye. As a consequence, dermoscopy has been more widely employed for the differential diagnosis of even non-pigmented skin conditions including tumors and also inflammatory and infectious dermatoses.²⁻⁷ Though some dermoscopic features appear to be highly specific for a particular disease, others can be seen in more than one entity and are subsequently considered “non-specific.” However, a “non-specific” dermoscopic feature may be rendered particularly valuable when coupled with certain other clinical and/or dermoscopic criteria, forming a set of features that are relatively specific for certain disorders.

Biett's Sign in Secondary Syphilis

An otherwise healthy 21-year-old man presented with a 2-week history of non-pruritic maculo-papular rash involving the trunk and distal portions of the arms and legs. The rash began on the palms and soles and over 48 hours spread to involve the trunk and extremities. There was no associated fever, lethargy, headache or arthralgia.

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Physical examination showed erythematous, copper-colored, oval and circular macules and papules, 2–7 mm in diameter. On the palms and soles, some lesions were annular in shape with slight peripheral hyperkeratosis [Figure 1a]. Dermoscopy of the hyperkeratotic palmar lesions [Figure 1b] revealed diffuse monomorphic dotted and glomerular vessels on a diffuse, yellowish red background. A circular scaling edge (outward direction) was evident within the lesions: This appearance was interpreted as typical Biett’s sign on dermoscopy, suggesting secondary syphilis. The sign was detected also in surrounding non-scaly lesions. There were no mucosal lesions, alopecia or lymphadenopathy. A venereal disease research laboratory (VDRL) test was positive at a titer of 1:640 and a *Treponema pallidum* hemagglutination assay (TPHA) was reactive confirming the suspicion of secondary syphilis. Penicillin G benzathine (2.4 million units) was administered intramuscularly in a single dose and the rash disappeared in 2 weeks.

Differential Diagnoses

Syphilis is known as the *great mimicker* due to its polymorphic appearance. Secondary syphilis has varied cutaneous features and Biett’s sign is considered a strong indicator of secondary syphilis.¹

However, many different skin diseases may have lesions with a similar annular maculo-papular erythematous morphology and scaling, e.g., pityriasis rosea of Gibert,^{2,3} actinic porokeratosis,⁴ erythema annulare centrifugum,⁵ granuloma annulare,⁷ subacute or discoid lupus erythematosus⁶ and certain annular variants of psoriasis.³ Some of these also have palmo-plantar involvement where these need to be differentiated from the rash of secondary syphilis. In these cases, dermoscopy makes it possible to differentiate Biett’s sign of secondary syphilis from the annular scaling lesions typical of other diseases.

In darker skin, the dermoscopic features of scaling are similar but the vascular structures (and, consequently, the erythema) are usually less evident.

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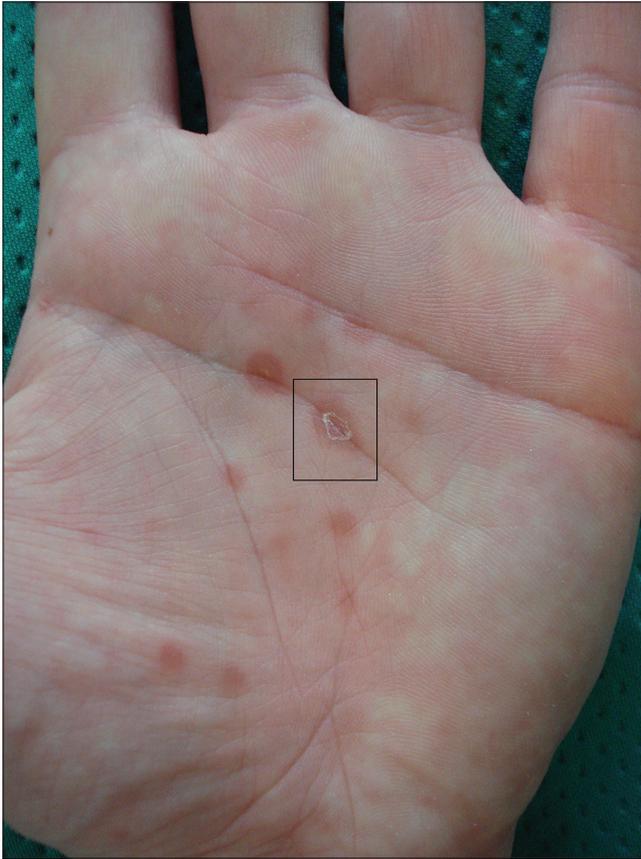


Figure 1a: Maculopapular lesions of the palm in a 28-year-old man

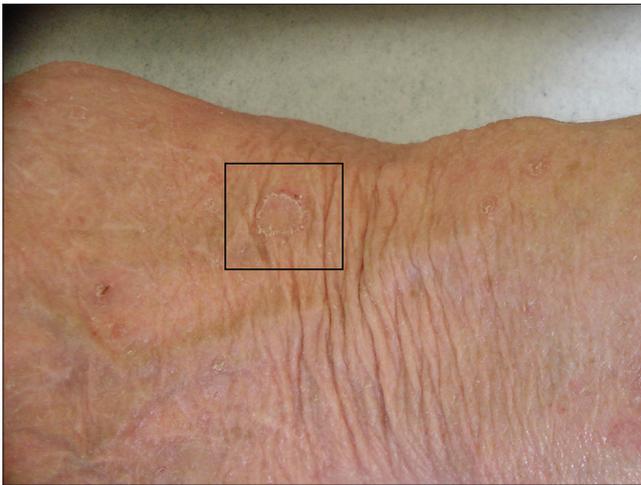


Figure 2a: Actinic porokeratosis lesion in a 75-year-old woman

Actinic porokeratosis

Annular lesions of actinic porokeratosis show an irregular, thicker and more elevated collarette than Bielt's sign, especially on the hands [Figure 2a]. Dermoscopic examination reveals rough, uneven scales attached at the peripheral and internal borders of the scaling edge, indicating peeling directed both inwardly and outwardly [Figure 2b].



Figure 1b: "Bielt's collarette" on dermoscopy: The central papule is encircled by a continuous homogeneous ring of scales which is surrounded by an erythematous halo; peeling is progressing in an outward direction

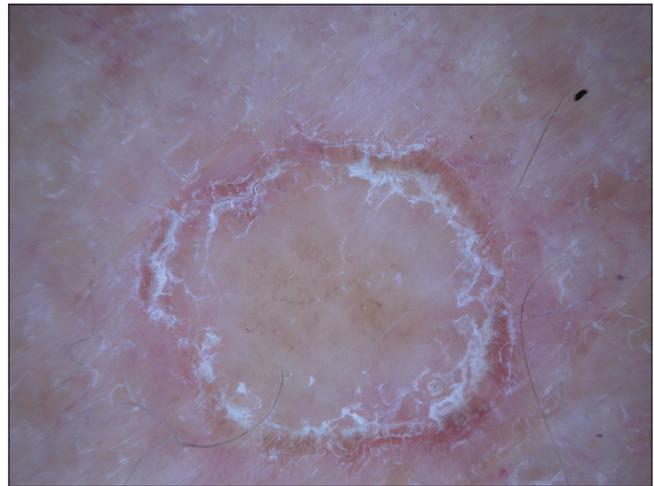


Figure 2b: Dermoscopy shows a thick scaling edge with rough scales and peeling, proceeding both inwardly and outwardly

Erythema annulare centrifugum

Homogeneous collarette scaling is also present in lesions of erythema annulare centrifugum which may manifest on both extremities and trunk. However, these scales are fine and fragile [Figure 3a] and the scaling edge appears irregular, thinner and with no clear direction of peeling when observed by dermoscopy [Figure 3b].

Pityriasis rosea

Annular lesions of pityriasis rosea usually present with a spreading erythematous border of diffuse irregular scaling [Figure 4a] which may clinically resemble a collarette. However, dermoscopic observation reveals a pattern of multiple fine fragments of scales with undefined direction [Figure 4b].²

Discoid lupus erythematosus

Discoid lupus erythematosus may manifest with annular to circinate lesions on the hands or as erythematous plaques with thick adherent



Figure 3a: Axillary lesion of erythema annulare centrifugum in a 43-year-old man



Figure 3b: On dermoscopy, the scaling edge is irregular and thin, scales appear very fine with an unclear direction of peeling



Figure 4a: Annular pityriasis rosea lesions on the thigh of a 34-year-old man



Figure 4b: On dermoscopy, lesional borders appear to have multiple fine scales with undefined direction of peeling



Figure 5a: Subacute cutaneous lupus erythematosus on the hand of a 57-year-old woman



Figure 5b: Dermoscopy reveals thick adherent scales covering the plaque, both peripherally and centrally, whereas no direction of scaling is evident



Figure 6a: Granuloma annulare lesions on the leg of a 51-year-old woman: multiple annular patches with fine scaling, erythematous raised border and pale center

scales [Figure 5a]. Dermoscopy highlights diffuse pink areas, arborizing vessels and irregular scales with no specific direction of peeling [Figure 5b].

Granuloma annulare

Finally, lesions of granuloma annulare can sometimes present as annular plaques with fine scaling and erythematous raised borders [Figure 6a].⁷ Under dermoscopy [Figure 6b], these lesions demonstrate a non-specific diffuse scaling pattern over both the center and periphery of the lesion with no specific direction of peeling. In addition, arborizing vessels appear to be homogeneously distributed all over the slightly elevated border.

Conclusion

We underline that although dermoscopy is traditionally used for the diagnosis of skin tumors, it has also become increasingly useful as an adjunct in the clinical diagnosis of a variety of inflammatory and infectious skin, hair and scalp disorders.



Figure 6b: Dermoscopy highlights non-specific diffuse scaling pattern all over the border with arborizing vessels homogeneously arranged

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Conflicts of interest

There are no conflicts of interest.

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