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Dermoscopy of Riehl's melanosis: a case report and a short review of the literature

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Abstract

Riehl's melanosis (RM) is a pigmentary disorder, more common in individuals with dark skin phototypes, considered a form of pigmented contact dermatitis. In this paper we present a case of RM due to the rubber component of a work facial mask in which dermoscopy and patch test were the most important tools to help physicians in diagnosis. In addition, we reviewed the main dermoscopic clues that may be useful in differential diagnosis with others facial pigmentary disorders.

Introduction

Riehl's melanosis (RM) is a pigmentary disorder, more common in individuals with dark phototypes (Fitzpatrick III-VI). It is regarded as a form of pigmented contact dermatitis caused by repeated contact with small amounts of allergens (cosmetic and textile materials). Clinically, it presents as diffuse or reticulated hyperpigmentation, ranging in color from brown to gray blue, that typically affects the face and neck region¹. Diagnosis is typically established through clinical evaluation but when the presentation is ambiguous histopathology is the gold standard and when patch testing is available it is a useful corroborative and diagnostic tool². However, histopathology is an invasive procedure and therefore dermoscopy, a rapid non-invasive diagnostic tool, can be useful for the diagnosis of RM, but there are limited descriptions of dermoscopic patterns in the literature. The main outcome was to describe a case of RM dermoscopically diagnosed and to review its main dermoscopic clues that may be useful in differential diagnosis with others facial pigmentary disorders.

Case presentation

A 45-year-old man from Bangladesh (phototype V), was referred to our clinic with a progressive facial hyperpigmentation reporting that it had worsened in recent months. Upon physical examination, we observed a circular-shaped hyperpigmented area on his face, extending from the forehead to the chin (Fig. 1a). He denied any history of atopy or contact with irritating substances on his face and was otherwise healthy. The only relevant anamnestic information was his work activity at a shipyard, where he used special anti-gas work masks with full face coverage. Dermoscopy revealed a pseudo-network with non-pigmented prominent follicular openings, associated with peripheral pigmentation admixed with gray dots/granules and perifollicular whitish halos (Fig. 1b). The main diagnostic hypothesis was hyperpigmentation due to the rubber component of the work facial mask. Other differential diagnoses, including berloque dermatitis, exogenous ochronosis, and hyperpigmented discoid lupus, were excluded based on clinical appearance, dermoscopy and the patient's history.

To further support the diagnosis, the patient underwent a patch test, which came back positive for rubber components. In this case, histopathology was not performed. The diagnosis of Riehl's melanosis was made, and the patient was treated with topical mometasone furoate for two months, in combination with azelaic acid gel, sunscreen and avoiding contact with the work mask. After four months a moderate improvement was noted despite the persistence of hyperpigmentation, although less pronounced.

Review of the literature

To identify eligible studies, an electronic search of papers published up to December 2023 was performed using MEDLINE database using the search terms: "Riehl's melanosis" (OR "pigmented contact dermatitis") AND "dermoscopy". A total of 5 articles were identified and analyzed; they included single case reports, case series, clinical reports, and review of the literature. Table 1 summarizes the typical dermoscopic findings and table 2 their histopathological correlations.

In literature the most common dermoscopic clues of RM were pigmented pseudonetwork (reported in 100% of cases), grey dots/granules (100%) and telangiectatic vessels (73.3%-100%)³⁻⁷. A specific dermoscopic clue of RM is flour-like slight scales (53%-66.7%)³⁻⁷, not seen in other hyperpigmentary disorders and more prominently observed in RM located on the neck, compared to RM of the face^{4,7}. Other less frequently dermoscopic features were perifollicular whitish/hypopigmented halo (46.7%-100%) and follicular keratotic plugs (46.7%-66.7%)³⁻⁷. A significant overlap in dermoscopic features exists between pigmented facial dermatitis; pseudonetwork, grey dots, and telangiectasias were described not only in RM but also in lichen planus pigmentosus (LPP) and erythema dyschromicum perstans (EDP); however, perifollicular whitish halo and follicular keratotic plugs were described as useful clues to differentiate RM from LPP and EDP^{3,4}.

Conclusions

Our case highlights the challenges in diagnosing RM, as the clinical morphology is variable and there are no established diagnostic criteria. Recent observational studies have suggested that dermoscopy is a promising non-invasive tool to assist clinicians in identifying and differentiating pigmentary disorders²⁻⁷. Patch testing is also recommended for diagnosing RM, due to its higher positivity rates (up to 80%) in RM patients compared to other pigmentary disorders^{2,9}. Patch test plays an important role in finding out the causative allergens of RM and serves as a basis for avoiding the substance in the treatment plan⁹. The primary limitation of this article is that dermoscopic features were based on low-quality evidence (e.g., case-series/case-reports) and further high-quality studies will be needed in the future.

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Figure 1: a) clinical appearance of Riehl's melanosis, circular-shaped hyperpigmented area involving the face, from forehead to chin; b) dermoscopy appearance of Riehl's melanosis: pseudo-network with non-pigmented prominent follicular openings associated with peripheral pigmentation admixed with gray dots/granules and perifollicular whitish halo.

Table 1. Frequency of dermoscopic features of Riehl's melanosis in literature references.

| Reference | Number of patients | Dermoscopic findings | | | | | |
|------------------------|--------------------|--------------------------|--------------------|--------------------------|------------------------|-----------------------------|----------------------------|
| | | Pigmentary pseudonetwork | Grey dots/granules | Flour-like slight scales | Telangiectatic vessels | Perifollicular whitish halo | Follicular keratotic plugs |
| Krueger L et al [3] | 15 | 100% | 100% | 53% | 100% | 47% | 47% |
| Wang L, Xu AE [4] | 15 | 100% | 100% | 53.3% | 100% | 46.7% | 46.7% |
| Sitohang IBS et al [5] | 1 | 100% | 100% | - | 100% | 100% | - |
| Shen PC et al [6] | 30 | 100% | 100% | 50% | 73.3% | 60% | 20% |
| Yim JH et al [7] | 9 | 100% | 100% | 66.7% | 100% | 66.7% | 66.7% |

Table 2. Correlation between dermoscopic features and histological background.

| Dermoscopic findings | Histological background |
|-----------------------------|------------------------------------|
| Pigmentary pseudonetwork | Pigment incontinence in the dermis |
| Grey dots/granules | Pigment incontinence in the dermis |
| Telangiectatic vessels | Dilated dermal vessels |
| Flour-like slight scales | Epidermal hyperkeratosis |
| Perifollicular whitish halo | Perifollicular fibrosis |
| Follicular keratotic plugs | Follicular hyperkeratosis |