

Ashy dermatosis in the setting of a positive patch test – is it Riehl's Melanosis?

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We read with great interest the article by Tienthavorn et al. on hyperpigmentation due to erythema dyschromicum perstans (EDP), lichen planus pigmentosus and pigmented contact dermatitis.¹ This article highlighted the conclusion that clinical history, histopathology, DIF and patch testing can help differentiate these three dermatologic conditions that present with hyperpigmentation. The authors highlighted that whereas 46.5% of the 43 patients in the study were clinically diagnosed with EDP, only 35.3% were confirmed by biopsy. In the cases with a clinical diagnosis of EDP, 40% of the patients had positive patch tests, suggesting a potential allergic etiology of EDP. Given the low power of the study, there remains the possibility that the positive patch tests were of unknown relevance and incidental findings. That said, it would be prudent to consider whether the positive patch tests had a relevant causal association with the development of the EDP and the potential margin of error in diagnosing EDP, secondary to post-inflammatory hyperpigmentation from a low-grade contact dermatitis. Furthermore, a table delineating the clinical diagnoses, specific patch test results, and histopathologic results would be most useful. Finally, evidence that the avoidance of contact allergen improved hyperpigmentation would also help to substantiate the potential association in these cases.

Previous reports have linked EDP with allergy. In a case series from Panama, a group of native field workers in banana plantations with histologically proven EDP were found to have chlorthalonil allergy confirmed by patch test.² Though it is impossible to infer causality in a case series, the fact that 34 of these individuals with allergy to chlorthalonil developed EDP strongly suggests that the exposure may have caused their skin changes. Moreover, it has been shown that repeated ingestions of small amounts of ammonium nitrate (a fertilizer) can provoke clinically and histologically consistent EDP, which was reported in a boy in 1975.³ This case report supported Pinkus' hypothesis that this presentation may indeed be related to an environmental exposure. Thus, the positive patch tests in cases with EDP in Tienthavorn et al. (2014) may have pointed to an allergy that then invoked the clinical presentation of EDP. Though this cause and effect pattern would be difficult to show experimentally, the timecourse between the allergen exposure and the development of the EDP would have been helpful in considering this hypothesis.

Another issue is whether the 10% of patients with a clinical but not histopathological diagnosis of EDP and positive patch tests actually had a low-grade 'pigmented' contact dermatitis (aka Riehl's Melanosis), which is a known cause of post-inflammatory hyperpigmentation.⁴ In 1994, a case of a plumber with a clinically relevant positive patch test was associated with a previous misdiagnosis of EDP.⁵ In the final line of the article, Tienthavorn and colleagues suggested that avoiding contact allergens may help decrease the hyperpigmentation, if this is indeed the case, it would suggest a diagnosis of contact dermatitis rather than EDP. The fact that post-inflammatory hyperpigmentation occurs during the natural evolution and progression of inflammatory disorders, such as contact dermatitis, however, confounds the process.

Nonetheless, we congratulate the authors on the largest sample examining this important topic to date and for highlighting the importance of considering multiple pieces of data (such as recommending patch testing when the clinical presentation and histopathologic results are not congruent), especially when considering overlapping diagnoses.



Conflicts of Interest

Sharon E. Jacob served as an independent investigator on the safety and efficacy of T.R.U.E. Test™ (Smart Practice; Phoenix, AZ) panels 1.1, 2.1, and 3.1 in children and adolescents, Pediatric Research Equity Act (PREA-1) trial and now serves as an investigator on PREA-2. She has served as a consultant for Johnson & Johnson. She has no conflicts of interest associated with the subject matter in this manuscript. Maggie Chow has no relevant disclosures or conflicts of interest.

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Reply

We greatly appreciate the interest in our article, and understand the concern of patients with the problem of hyperpigmentation.

Regarding your issue about Riehl's melanosis, our patients mostly had a more generalized distribution of pigmentation. Riehl's melanosis, a form of contact dermatitis associated with cosmetics or fragrance allergy, is mainly distributed on the face and neck.^{1,2} PCD and Riehl's melanosis both are low grade contact dermatitis, and can cause similar histologic profiles. One possible explanation is that we did skin biopsies at later stages in some patients, and no observations suggested definitive EDP in those areas. Ultimately, we believe that those EDP patients with or without correlated histologic findings who show relevantly positive patch testing should be diagnosed as PCD.

Many of these patients originally were diagnosed with EDP or LPP, if they hadn't provided significant history about contact allergies. We suggest to exclude all possible causes, especially systemic diseases, by interviewing the patient, doing a physical examination, and offering patch testing panels before diagnosing EDP or LPP.

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