

Pigmented contact dermatitis with histology of lichenoid dermatitis : A reported case.

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ABSTRACT:

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We report a case of 32-year-old female who developed hyperpigmented skin for 3 years. Skin lesions were generalized hyperpigmented macules and histological finding was lichenoid dermatitis. Provisional diagnosis was lichen planus pigmentosus before closed patch test and photopatch test shown allergic contact dermatitis to fragrance mix II, cinnamic alcohol, cinnamic aldehyde, ylang ylang oil, and potassium dichromate . This patient was finally diagnosed as pigmented contact dermatitis. In conclusion, we believed that patch test should be performed in the case with LPP to identified the cause. Further study in a larger number of cases is required in Thailand to provide the exact causative factors of these skin diseases.

Key words: Pigmented contact dermatitis, Allergic dermatitis, Lichen planus pigmentosus, patch test

บทคัดย่อ:

ทงเกียรติ เทียนถาวร พุกกลิ่น ตรีนุโกศล รายงานผู้ป่วยโรค **PIGMENTED CONTACT DERMATITIS** ที่มีพยาธิสภาพเป็น **LICHENOID DERMATITIS** วารสารโรคผิวหนัง 2555; 28: 137-142.

สถาบันโรคผิวหนัง กรมการแพทย์ กระทรวงสาธารณสุข

ผู้ป่วยหญิงไทยอายุ สามสิบสองปี มาปรึกษาด้วยรอยผื่นดำมากขึ้นที่บริเวณใบหน้า ลำคอ แขน มา 3 ปี ผลทางพยาธิวิทยา เป็น lichenoid dermatitis ผู้ป่วยได้รับการวินิจฉัยในครั้งแรกเป็นโรค Lichen planus pigmentosus (LPP) ผู้ป่วยได้รับการส่งตรวจเพิ่มเติมโดยทำการทดสอบผื่นแพ้สัมผัส (Closed patch test) และ ผื่นแพ้สัมผัสแสงแดด (photopatch test) ให้ผลบวกแบบผื่นแพ้สัมผัส (allergic contact dermatitis) กับสาร fragrance mix II, cinnamic alcohol, cinnamic aldehyde, ylang ylang oil, and potassium dichromate ผู้ป่วยได้รับการวินิจฉัยเป็นโรค pigmented contact dermatitis โดยสรุปทางคณะแพทย์เล็งเห็นประโยชน์ในการทดสอบผื่นแพ้สัมผัสในรายที่สงสัยโรคที่ก่อให้เกิดรอยดำ LPP เพื่อการวินิจฉัยที่ถูกต้อง โดยยังต้องมีการศึกษาในผู้ป่วยในจำนวนมากขึ้นเพื่อหาสาเหตุก่อโรคในกลุ่มโรคดังกล่าว

คำสำคัญ: ผื่นแพ้สัมผัสแบบรอยดำ, โรค ashy dermatosis, โรค lichen planus pigmentosus, การทดสอบผื่นแพ้สัมผัส

Wide spread or localized hyperpigmentation is associated with a large number of conditions and may be due to genetic or nevoid factors such as metabolic, endocrine, chemical, physical, nutritional, post inflammatory or tumor. Skin inflammatory reaction would disturb the dermoepidermal junction causing melanin to pass into dermis to give rise to persistent hyperpigmentation. Many skin diseases also have similar clinical manifestation, for instances, lichen planus pigmentosus, ashy dermatosis, fixed drug eruption, and etc. Hyperpigmentation may also occur in course of allergic and irritant contact dermatitis. History taking, thorough physical examination, histological findings and proper investigation could differentiate among these conditions.

Case report

A 32-year-old atopic woman came to outpatient department with chief complaint of asymptomatic skin pigmentation since May 2007 which was initially located at face, then it gradually spread to neck and both extensor surface of arms (figure 1-2) No previous erythema of the lesions was detected before darkening of the skin. She also claimed uncomfortable feeling with itching sensation whilst exposing near construction area and using fragrance-containing products. Physical examination showed multiple ill-defined slate grey hyperpigmented patches at both cheeks, neck, anterior chest and both extensor surface of arms. No abnormality was detected elsewhere including oral mucosa, palms and soles. She had been

using over-the-counter products regularly but denied using any herbal medicine. Laboratory investigation including CBC, UA, TSH, FT3, FT4 and serum electrolyte were done and no without abnormalities shown.

Dermatopathological examination was performed and showing hyperkeratosis, hypergranulosis and epidermal atrophy in association of dense lichenoid infiltration of lymphocytes and numerous melanophages within thickened papillary dermis. Microscopic diagnosis was lichenoid dermatitis.(figure 3)



Figure 1



Figure 2

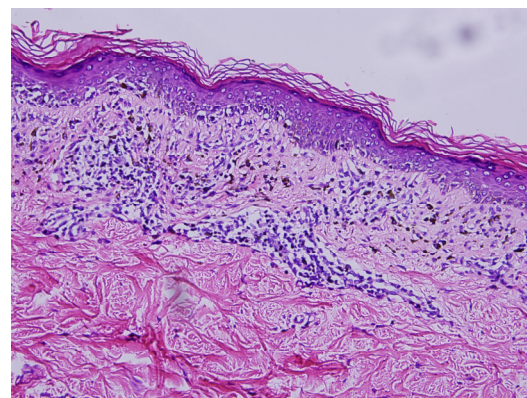


Figure 3 Histopathological examination (40X)



Figure 4

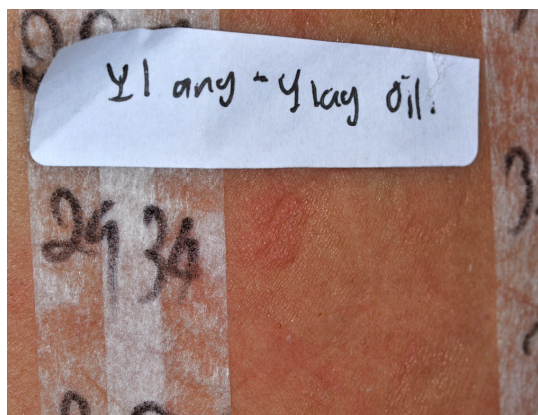


Figure 5

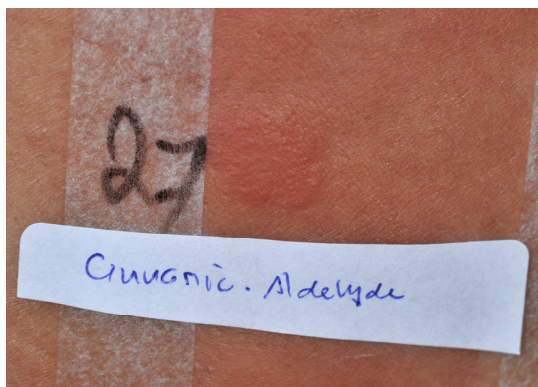


Figure 6

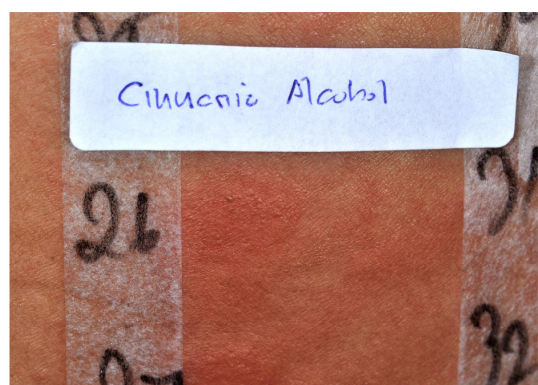


Figure 8

Closed patch tests were done with standard series, cosmetic series, and perfume series. Relevantly positive result were found as follows; fragrance mix II, cinnamic alcohol, cinnamic aldehyde, ylang ylang oil, and potassium dichromate. (figure 4-6) Photopatch test with standard series showed allergic contact dermatitis to fragrance mix. Conclusively, this patient has allergic contact dermatitis due to previously mentioned allergens.

This patient was initially treated as ash dermatosis or lichen planus pigmentosus with topical low potency corticosteroid, 0.025% tretinoin, hydroquinone, and sunscreen with minimal improvement. Definite diagnosis of pigmented contact dermatitis was made after closed patch test showed positive result. She was advised to avoid using fragranced-containing products. She still had slight skin pigmentation on her last visit on January 2012.

Discussion

Pigmented contact dermatitis (PCD) is a non-eczematous variant of contact dermatitis characterized by erythema, papules, swelling, and itching with little or no sign of dermatitis. These symptoms occurred when the causative allergens came into contact with skin, provoking ordinary dermatitis. Hyperpigmentation is considered to be brought by frequent and repeated contact of very small amount of contact sensitizer, mainly the textile, fragrance or washing material.¹

The term "pigmented contact dermatitis" was coined by Osmunsen in 1970², a Danish dermatologist

who described an epidemic of melanosis in Copenhagen. In a series of excellent observations and investigations, he proved that the melanosis was in fact due to contact dermatitis caused by “optical whitener” present in a washing powder. A mixture of two “pyrazoline” derivatives was believed to be a causative chemical to induce PCD.³

Pigmented cosmetic contact dermatitis (PCCD) is a variant of PCD; the only differences being the causative allergen and the sites affected. Nakayama *et al.* proposed the term “pigmented cosmetic dermatitis” to describe this condition.⁴ Diffuse or patchy brown pigmentation was also the clinical manifestation with predilection on face and forehead. Patch testing with various chemicals used in cosmetic industry and cosmetic used by the patient with “as is” reveals positive reaction to many ingredients in cosmetic. Commonly reported causative contact allergens are fragrances (e.g. benzyl salicylate, cinnamic derivative, balsam of Peru), pigments, coal tar dyes, lanolin products and parabens.

The main histology of PCD is basal cell liquefaction accompanied by the formation of melanophages in papillary dermis. Nakayama *et al.* believe the liquefaction is provoked by accumulation of low concentration of fragrance to produce type 4 allergic cytolytic reaction to the epidermal basal layer.⁴ The melanin from destroyed cell is sprayed into papillary dermis and ingested by macrophages. Those

could be suggestive of the lichenoid allergic reaction rather than toxic reaction.

Those who have scanty melanin, such as Caucasian, would not produce these conditions and those who have abundant melanin, such as black women, would not undergo changes skin color by this histopathological procedure. It is mostly Asians or Mexicans who suffer from this abnormal pigmentation.⁵

Patch testing is of immense value in the diagnosis of PCD. Close patch tests of standard series, fragrance series, cosmetic series and the personnel products are recommend to be tested in patient with suspicious diagnosis of PCD or PCCD. Photopatch test should also be done. Papule, vesicle, brown pigment may develop as a positive result at the patched sites. Study using screening patch tests for pigmented contact dermatitis in Israel revealed the highest yield with European standard series and Scandinavian photo series; approximately ½ of patients (14 from 29).⁶ The reported relevantly positive allergens were nickel sulfate, fragrance mixed, potassium dichromate, neomycin, colophony, Kathon CG, Amerchol L-101, evernic acid, Grotan BK, amylcinnamic aldehyde, sandalwood, formaldehyde and 4-tert-butylcatechol.

The provocative use test (PUT) or repeated open application test (ROAT) by application of suspected patient’s products at antecubital skin twice daily for 4-5 days should be done if closed patch testing is equivocal. These methods could be used alternatively on the face or other affected area.⁷

Lichen planus pigmentosus could be one of the differential diagnosis of generalized hyperpigmented patient with lichenoid histologic reaction. Bhutani LK regarded LPP as different entity from pigmented contact dermatitis (PCD) as to clinical manifestation, histopathology, causative chemicals, the dramatic effect of allergen control.⁸

We report here the case with presentation of hyperpigmented skin accompanied by histology of lichenoid dermatitis. This patient was previously diagnosed as idiopathic hyperpigmentation skin disease as LPP. Many treatment regimens had been prescribed without significant improvement. With thorough history taking and physical examination, PCD was suspicious. Closed patch test was done with standard series, cosmetic series, and perfume series. Fragrance-mix II, cinnamic alcohol, cinnamic aldehyde, ylang-ylang and potassium dichromate showed relevantly positive results.

Skin hyperpigmentation may developed from various causes. The appropriate investigation should be

properly performed in each patient. Systemic disease should be ruled out. We also believe that idiopathic skin diseases e.g. LPP, ashy dermatosis, PCD and PCCD are overlapping diseases both in clinical and histological presentations. Closed patch test with or without photopatch test should be investigated to confirm the causes and diagnosis. Many studies in this field have been done in many Asian countries but never in Thailand. Further study with larger number of patients should be done.

References

1. Robert L. Reischel, Joseph F. Fowler, Jr. Non eczematous contact dermatitis. Fisher's contact dermatitis. Hamilton: BC Decker Inc: 2008. p. 88-109.
2. Osmundsen PE. Pigmented contact dermatitis. Br J Dermatol. 1970;83:296-301.
3. Sheno SD, Rao R. Pigmented contact dermatitis. Indian J Dermatol Venereol Leprol. 2007;73(5):285-7.
4. Nakayama H, Matsuo S, Hayakawa K, Takashi K, Shigematsu T, Ota S. Pigmented cosmetic dermatitis. Int J Dermatol. 1984;23:299-305.
5. Ebihara T, Nakayama H. Pigmented contact dermatitis. Clin Dermatol. 1997;15(4):593-9.
6. Trattner A, Hodak E, David M. Screening patch tests for Pigmented contact dermatitis in Israel. Contact Dermatitis. 1999;40:155-7.
7. Rietschel RL, Fowler Jr JF. Allergy to preservatives and vehicles in cosmetics and toiletries. Fisher's Contact Dermatitis, 5th ed. Philadelphia: Lipponcot Williams and Wilkins; 2001. p. 211-59.
8. Bhutani LK. Pigmented contact dermatitis vs lichen planus pigmentosus. Int J Dermatol. 1977;16:860-2.