Clinic Features of Co-existence of Nevus Depigmentosus and Vitiligo: Two Cases and Literature Review

Hui Zhou[1], Renxiang Mao[1], Diqing Luo[1], Mukai Chen[1], Jiande Han[1*]

[1] Department of Dermatology, First Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, 510080, P.R.China

*Correspondence should be addressed to Jiande Han (hanjd58@126.com)

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Abstract

Nevus depigmentosus (ND) is a rare, congenital non-progressive hypomelanosis, whereas vitiligo is a commonly acquired progressive depigmenting disorder. The concomitance of these two distinct leukodermas were rarely reported in the medical science. We reported two Chinese male patients with ND associated with vitiligo and reviewed the relevant literature regarding this co-existence phenomenon. Both cases were male. One was 3 years old, the other was 38-year-old. Both cases had two distinct types of leukodermas. One type of leukoderma were the stable hypopigmented patches, appeared at birth or at an early age. These patches showed an off-white colored accentuation under Wood's lamp and no response to topical steroid therapy. However, the other type of leukoderma were acquired progressive depigmented macules, which developed a chalky-white glow on Wood's lamp examination and had a good response to steroids. Referring already published literature, 4 cases, including the present 2 cases revealed they are of the same gender (male) and all the patients were of Asian origin. This research contributed well for awareness of physicians that ND may coexist with vitiligo. Both entities need to be differentiated as they have different therapies and prognoses.

Keywords Nevus depigmentosus; Vitiligo; Coexistent

Background

Nevus depigmentosus (ND) is a rare, congenital, nonprogressive hypopigmented disorder. It has sometimes been associated with other skin diseases, including acquired melanocytic nevus[1], partial unilateral lentiginosis[2] as well as inflammatory linear epidermal nevus[3], and rarely vitiligo[4]. Careful review of literature was conducted and it was noticed that only two cases of Korean male patients (45 and 11 years of age) were reported with ND coexisting with vitiligo[4-5]. Another pair of reported cases of the same gender (male) of 3 and 38 years age was presented with similar conditions.

Methods

Two Chinese male patients with ND coexistent with vitiligo were reported and the associated literature was also reviewed.

Case 1

A 3-year-old Chinese boy was presented with asymptomatic hypopigmented patches on his upper medial aspect of left thigh and ipsilateral forehead. The lesions appeared on the left thigh without noticeable time, which were diagnosed as vitiligo in other hospital and had been treated with topical steroids for 6 months. No signs of improvement were noticed after the use of steroids. One year later, progressive depigmented macules appeared on his left forehead after a bruise. He had no other autoimmune diseases. Discussing the family history, his father was found allergic rhinitis and one of his maternal aunts had systemic erythematous lupus.

Physical examination revealed 2mm×2mm to 35mm×13mm depigmented macules with poliosis on the left forehead (Figure1a), as well as two hypopigmented patches 3cm×2cm to 10cm×12 cm in size without poliosis and with hyperpigmented borders on ipsilateral thigh (Figure1b). Under vigorous stroking, all lesions showed flare. Under Wood's lamp, the hypopigmented patches on the thigh showed an off-white accentuation, whereas the lesions on forehead appeared as a chalky-white accentuation. Results of routine laboratory tests, including complete blood count, antinuclear and thyroid antibodies were found normal or negative. Skin biopsy of the left thigh showed no obvious decrease in the number of melanocytes identified as MART-1 positive cells in the basal layer. During electron microscopy (EM), the presence of melanocytes with sparse melanosomes

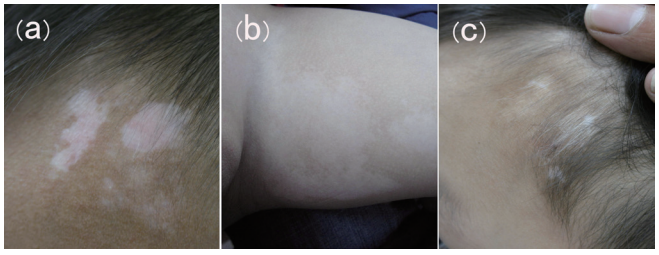

Figure 1
(a) Depigmented macules with poliosis on left forehead of patient. (b) Hypopigmented patch with serrated margins on the upper medial aspect of the left thigh. Biopsy location is marked by the arrow heads. (c) Significant repigmentation is seen in the previously depigmented macules after 4 months of treatment.

was confirmed. The patient was diagnosed as ND in concomitance with focal vitiligo. He was prescribed topical steroid cream and 0.03% tacrolimus alternately for 4 months. After a 4 months period, significant repigmentation on the forehead was noticed, but no response on the left thigh was seen (Figure. 1c). After about 13 months, the follow-up showed that ND lesions persisted.

Case 2

A 38-year-old Chinese man was referred to the hospital for the evaluation of two distinct types of hypopigmented lesions. Since he was born, the lesions on the left thigh were present, stable in shape and distribution. Those lesions showed no response to topical steroid while the lesions on his dorsum of feet were discovered four years ago. Subsequently the lesions on his dorsum of feet enlarged progressively and disseminated to other parts such as the upper right thigh, groin, and even to the primary hypopigmented

patches on the left thigh. He had no personal history of thyroid disease or other autoimmune diseases. His mother had a history of late onset diabetes. No family history of vitiligo, ND, thyroid disease or premature hair graying was reported. Physical examination revealed several hypopigmented patches 2cm×2cm to 30cm× 25cm in size with serrated, irregular borders involved the upper and lateral aspects of the left thigh, and were absence of hyperpigmentated borders, poliosis or whirling (Figure.2a), which showed an offwhite accentuation on Wood's lamp examination (Figure.2b). In contrast, discrete depigmented lesions found on his extremities, bilateral lumboabdominal region, groins, thighs and even part of the connate hypopigmented patches on the left thigh had a chalky-white glow under Wood's lamp. Laboratory results including thyroid function screening were all normal. The patient was diagnosed as ND in concomitance with nonsegmental vitiligo, and was administered with both systemic prednisone and topical compound halomethasone. After 8-weeks treatment, the vitiligo lesions responded well to the therapies while the ND lesions showed no response.

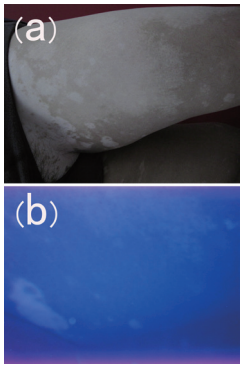

Figure 2
(a) Serrated, irregular bordered macule on the upper and lateral aspects of left thigh. (b) Under Wood's lamp illumination, the lesion of ND showed an off-white accentuation (stellate) in contrast to the chalky-white accentuation (arrow) observed in the adjacent lesion of vitiligo.

Discussion

ND is characterized by nevoid or quasidermatomal hypopigmented macules of varied size with discrete, irregular or serrated margins. The lesions were stable throughout lifetime. Under Wood's lamp, the involved skin showed an off-white accentuation (compared to chalky-white in vitiligo). Histopathology revealed the presence of normal or slightly decreased number of melanocytes with morphological abnormalities in the melanosomes[6-7]. The pathogenesis remained unknown, but it was considered to be an unknown genetic mutation occurring late in the embryogenetic process, when the somatic structures were defined, involving only a segment of the body and determining clinically a mosaicism[8]. The mutation seems to cause a functional defect of melanocytes in regard to melanin synthesis and melanosome transfer. The commonly clinical diagnostic criteria proposed by Coupe[9] (1967) are as follows: (1) leukoderma present at birth or early onset in life; (2) no alteration in distribution of leukoderma throughout life; (3) no alteration in texture or sensation in the affected area; and (4) absence of hyperpigmented border.

Obviously, not all ND cases fit the strict criteria, for some patients ignore the exact time of onset owing to the asymptomatic lesions. Therefore, in cases with diagnostic difficulties, besides Wood's lamp examination, a biopsy is needed to differentiate ND from other hypomelanoses, especially segmental vitiligo.

The hypopigmented lesions in both cases appeared at birth or at an early age, had an off-white accentuation under Wood's lamp, and showed no response to steroid therapy. Moreover, they showed normal number of melanocytes by MART-1 immunostain and existence of melanocyte with sparse melanosomes by EM (As indicated in case 1). These results suggested that these lesions were concordant with ND. In contrast, the acquired depigmented lesions developed in both patients were compatible with vitiligo, because they were progressive and showed a good response to steroid therapy. Vitiligo is the most common acquired chronic depigmenting disorder characterized by chalk-white patches, which usually increase in size with time, corresponding to a substantial loss of functioning epidermal[10]. According to the distinctive clinical features and natural histories, it can be roughly divided into two major types:nonsegmental vitiligo (NSV) and segmental vitiligo (SV)[11]. The pathologic feature of vitiligo is a loss of epidermal melanocytes. Although the mechanisms involved in the vanishing of melanocytes remains unclear, the detection of monoclonal and polyclonal antibodies directed against melanocytes in blood and melanocyte-specific CD8+ T lymphocytes in lesions suggested that it may have an autoimmune basis[10].

Vitiligo has been reported in association with many other disorders, mainly autoimmune endocrinopathies[12], including Hashimoto's thyroiditis,

pernicious anemia, halo melanocytic nevi, alopecia areata, but its concomittance with ND was rarely seen. We conjectured that the present occurrence is probably due to somatic mosaic defects in the cutaneous pigmentary unit as well as a probable immune attack of the melanocytes. However, it is hard to eliminate the possibility that such phenomenon is an accidental event. Of course, further such cases, if reported will be helpful for its mechanism. Another interesting finding in our second patient was that vitiligo eruption involved ND lesions. We considered that the colocalizaion of ND and vitiligo may be due to the result of melanocyte-specific autoimmune elimination of both 'normal' melanocytes in vitiligo and abnormal melanocytes (melanocytes with functional defects resulting from a somatic mutation) in ND.

All the reported cases were of Asian origin[4-5]. The reason probably was due to color contrast in dark-skinned people, which urged the patients with such condition to seek treatment. As the two entities may be concomitant and each one has a different prognosis, physicians should pay more attention to this coexistent phenomenon.

Acknowledgement

None.

Competing Financial Interests

The authors declare no competing financial interests.

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