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A Report on Applying Digital Epiluminescence Dermoscopy to Guide Topical Treatment for Generalised Vitiligo

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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Short Research Article

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ABSTRACT

We have reported on utilising digital epiluminescence dermoscopy to detect the sparing of perifollicular pigments in localised vitiligo. These spotty zones might be the most acute autoimmune battle line.

We saw a 68-year-old gentleman with five-year history of segmental/generalised vitiligo. He declined systemic treatments. These spotty zones mentioned above were identified by epiluminescence dermoscopy. We advised him to apply a very potent topical corticosteroid two times per week to these zones. Much improvement was seen in two months. Complete remission was achieved in another two months.

We discussed on the roles of epiluminescence dermoscopy on the diagnosis and treatments of patients with all types of vitiligo where the perifollicular pigment sparing zones were too small to be identifiable by naked eyes.

Keywords: Depigmentation; hypopigmentation; interfollicular; perifollicular.

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ABBREVIATIONS

GV : Generalised Vitiligo
DED : Digital Epiluminescence Dermoscopy
QOL : Quality of Life

1. INTRODUCTION

Generalised vitiligo (GV) is a disfiguring disease affecting the self image, daily life, and many social issues of sufferers [1]. We have previously reported on the application of digital epiluminescence dermoscopy (DED) in detecting the sparing of perifollicular pigments in localised vitiligo [2]. Such pattern should be the most acute autoimmune battle line between involved and uninvolved skin. We report here a patient with generalised vitiligo treated by DED-guided topical treatment.

2. PATIENT REPORT

A 68-year-old gentleman attended our care for five-year-long period of a generalised depigmented disease affecting his trunk and four extremities. He was suffering from systemic hypertension on an angiotensin receptor blocker, diabetes mellitus on oral hypoglycaemic agents, and dyslipoproteinaemia on a statin. He was an ex-smoker having ceased five years ago. He was a social drinker.

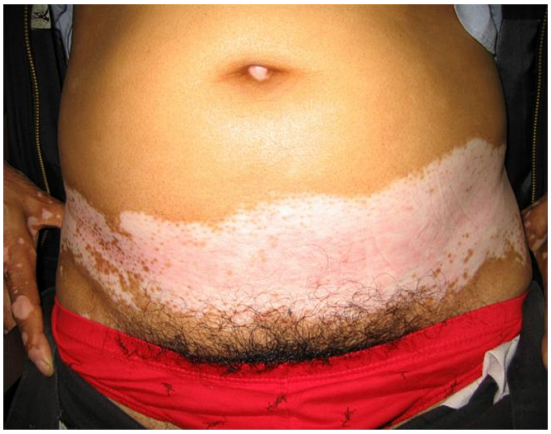

Fig. 1a. Segmental/generalised vitiligo in a male subject with spotty zones

Examination revealed a band of depigmentation running in a transverse orientation on the anterior abdominal wall, inferior to the umbilicus (Fig. 1a above). One would make a diagnosis of segmental vitiligo when the truncal part of Fig. 1a was noticed. However, clear inspection would reveal depigmented patches on the right hand and fingers.

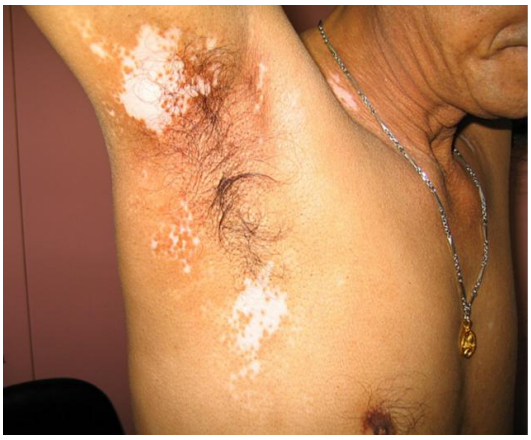

Fig. 1b. Further depigmented areas with sharp and angulated margins in the right axilla and right lateral trunk

His scalp, face, and back were relatively devoid of patches of depigmentation. His neck and both axillae were involved, with the right axilla shown in Fig. 1b above.

The patient volunteered that it was not his truncal and axillary lesions that particularly affected his self image and quality of life. It was his two hands which were troubling him, as depicted in Fig. 1c. He could not shake hands with people in this physical appearance.

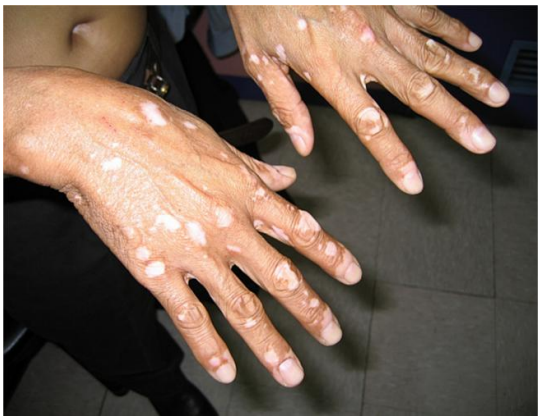

Fig. 1c. Depigmented lesions with sharp margin on the dorsi of hands, thumbs, and fingers

Fig. 1a and 1b also demonstrate the peculiar dotted pigments at lesional edges. The corresponding dermoscopic appearances were

highlighted as Fig. 2a and 2b respectively. Both were taken with high-magnification by digital epiluminescence dermoscopy with the level of cross-polarisation set to ten (level 1: no cross-polarisation; level 12: highest cross-polarisation for our equipment).

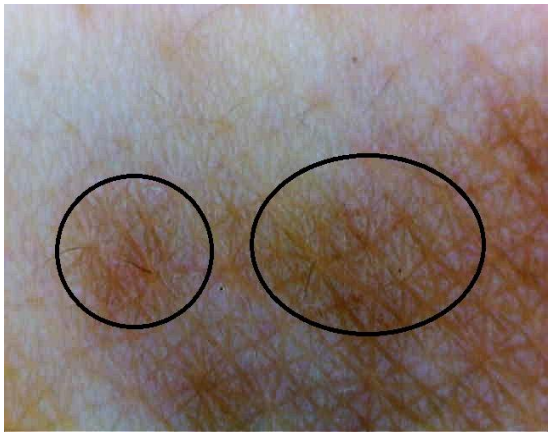

Fig. 2a. Two patches of pigmented skin in the pigmented vs depigmented areas. The areas of perifollicular sparing of depigmentation are outlined in black

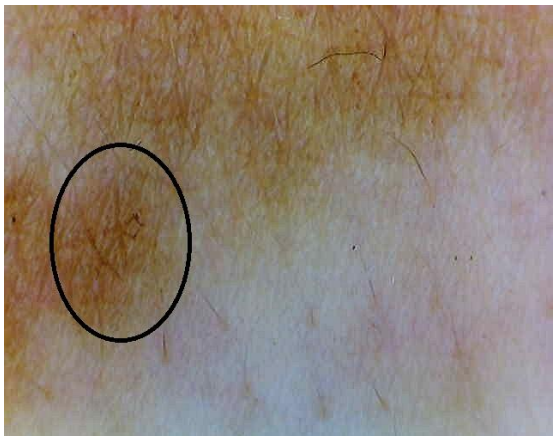

Fig. 2b. One more example of sparing of perifollicular pigments. The area of perifollicular sparing of depigmentation is outlined in black

There was no laboratory abnormality in his routine tests.

The patient declined systemic treatments. As we believe that the system-specific autoimmunity in vitiligo should be most active in the zones with depigmented interfollicular pigments and spared perifollicular pigments, we advised him to apply topical corticosteroid to the most active areas of the disease. The dose was 0.05% clobetasol propionate (Dermovate^{TM}) ointment, to be applied twice weekly. We took several clinical photos covering the trunk and limbs of the patient, examined him with DED, marked the transitional sites on the image files, printed the images, handed such to him, and advised him to apply the ointment on the sites marked.

We saw the patient every month. Two months later, much progress was seen (Fig. 2a – 2b). Almost all battlefield lines were reclining from the pigmented zones to the dotted zones and to the depigmented zones. Improvements for all skin areas, shown or not shown in Fig. 3a, 3b and 3c were startling. The patient was already feeling comfortable to offer handshakes to other people.

The topical corticosteroids were completely stopped one month later. Virtually all traces of PV were gone then. Unfortunately, clinical photos showing complete remission were not available.

3. DISCUSSION

Vitiligo – any type concerned – casts significant impacts on the quality of life (QOL) of patients [1]. The presence of lesions on the visible parts and the extensiveness of lesions was reported to be significantly associated with impairments in QOL [3]. Specific scales are now in place to assess the impact of vitiligo on the QOL of individual patients [4-6].

Topical and systemic treatments are available for vitiligo. Such depends on many factors, not necessarily on the percentage of skin surface affected *per se*. Our patient expressed his wish not to embark on systemic treatment. We thus prescribed a potent corticosteroid for him to apply twice per week. This was a highly important decision to make, catering for the efficacy and potential adverse effects of the drug. We would like to focus the topical treatment to the most active areas of the disease. These sites were most likely at the transitional sites with sparing of the perifollicular melanocytes. We therefore advised the patient to apply the fluorinated corticosteroid mainly on these sites.

Applying corticosteroids twice a week is unusually low. We elected to commence on this low dosage owing to our experience for other patients with marginal or non-marginal vitiligo.

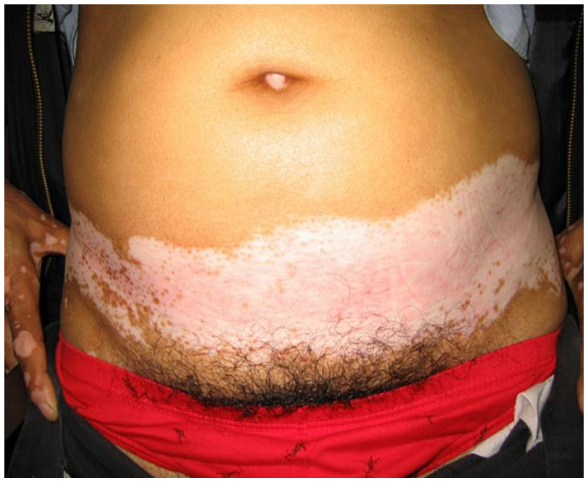

Fig. 1a. (For comparison) Segmental/ generalised vitiligo in a male subject with spotty zones

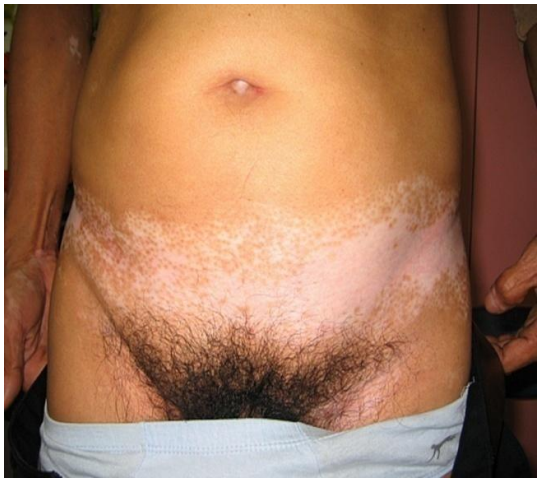

Fig. 3a. Upon application of highly potent topical corticosteroids for two months, repigmentation was in definite progress. Please compare this with Fig. 1a

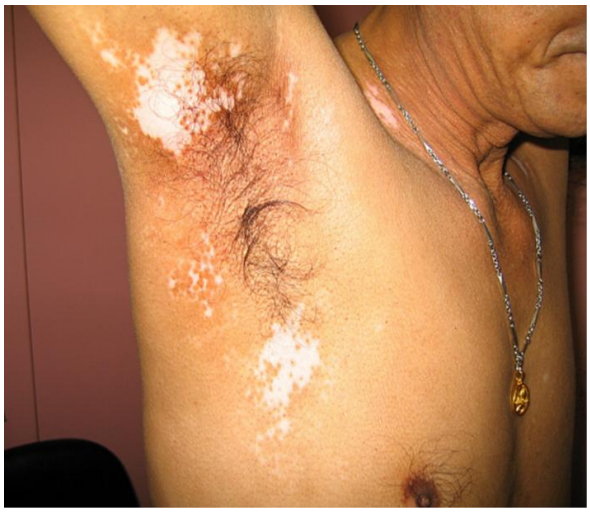

Fig. 1b. (For comparison) Further depigmented areas with sharp and angulated margins in the right axilla and right lateral trunk

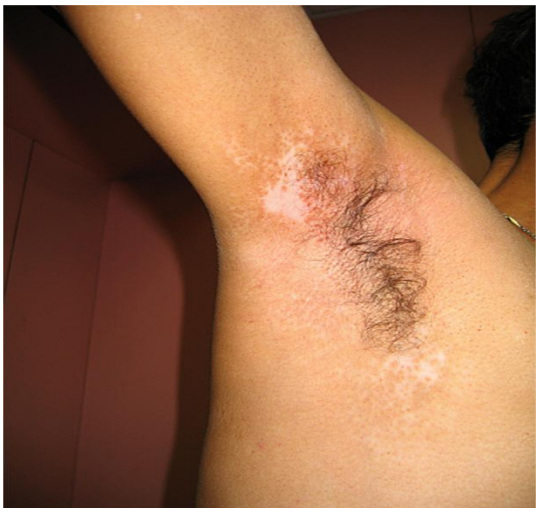

Fig. 3b. Previous lesions of vitiligo on the right axilla and right lateral aspect of trunk largely remised. Please compare this with Fig. 1b

The progress of the patient is clearly shown if one compares Fig. 1a and Fig. 3a, Fig. 2a and Fig. 3a, and Fig. 1c against Fig. 1c. Yes, there existed an element of spontaneous remission by the deactivation of the organ-specific-auto-immunological system of the patient. However, the timing of two months was too short for the re-pigmentation to be attributed to endogenous factors. We thus postulate, with qualitative substantiation, that the remission was related to an exogenous factor – topical corticosteroids.

However, the affected body area of the patient was extensive. Having had a highly potent corticosteroid prescribed, we harboured a valid concern – cutaneous absorption leading to adverse effects systemically. This was particularly important as he was suffering from diabetes mellitus. We therefore advised the patient to apply the ointment mainly to the transitional zone with sparing of perifollicular pigments. We based this piece of advice on biological plausibility.

This plausibility rests with the hypothesis that there exists two populations of melanocytes – perifollicular ones and interfollicular ones. For some unknown reasons, the autoimmunity – likely to be cell-mediated – invades the interfollicular melanocytes first, before attacking the perifollicular melanocytes. In the transitional zone, the perifollicular pigments are therefore still intact, while the interfollicular pigments are already gone [7,8]. This is the underlying mechanism for the dotted zone to be seen, and why we advised our patient to apply the medication to this zone.

We put DED into the picture here for two reasons. Firstly, for some patients with early or focal vitiligo, the presence of such perifollicular sparing pattern cannot be appreciated by naked eyes. DED would then be applied to confirm or to refute a diagnosis of vitiligo [2].

Secondly, while the perifollicular pigment-sparing dots were largely visible by the naked eyes for this patient, this is not the case for many other patients. In these circumstances, we could perform DED, mark such by skin pencils, take and print clinical photos, then release the patient home to apply corticosteroids accordingly. Fig. 4 depicts the back of a patient with GV, with perifollicular sparing configuration largely invisible to the naked eyes. These areas were detected by DED (on the upper parts of the lesion) and annotated by dark ovals.

Dermoscopy is increasing being applied to diagnose and assess skin diseases other than melanomas or other malignant diseases. It has been reported that dermoscopy increases the efficacies in diagnosing common inflammatory diseases including plaque psoriasis, [9,10] lichen planus (Lopez), [9] pityriasis rosea, [10,11] and lichen planus [10]. Dermatoscope has also been reported to be applicable in diagnosing vascular and infectious diseases [12]. We have previously reported the first applications of DED to assist in the diagnosis of pityriasis rosea, [11] pseudofolliculitis, [13] condyloma acuminata, [14] pediculosis pubis, [15] and pearly penile papules [16]. However, these reports only covered the application of DED for diagnostic purposes. For this report, the use of DED directly assisted the treatment of the patient. Currently, we have already been performing DED-guided micro-surgeries, and hope to be able to report such in the not too distant future.

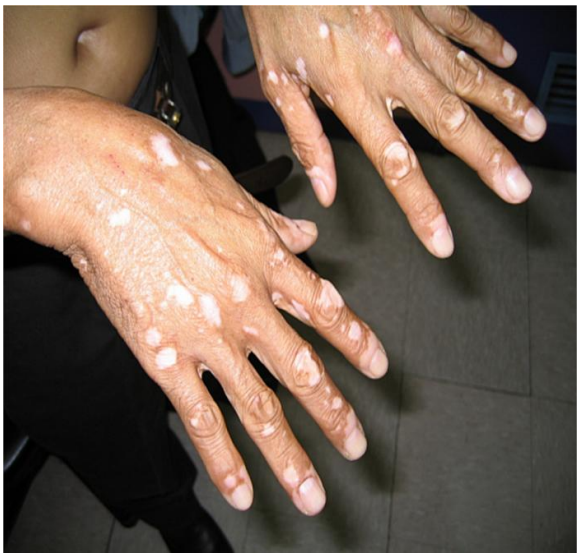

Fig. 1c. (For comparison) Depigmented lesions with sharp margin on the dorsi of hands, thumbs, and fingers

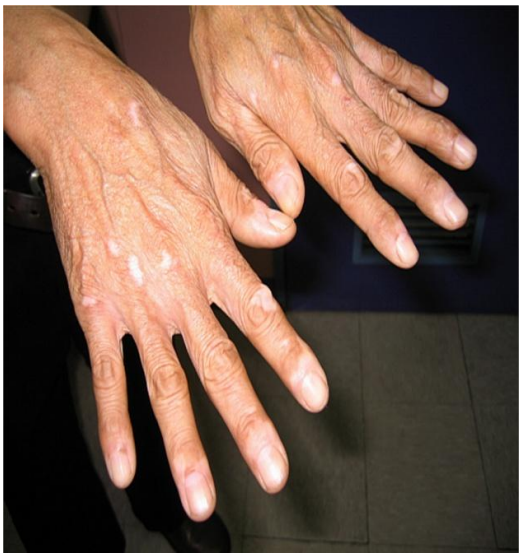

Fig. 3c. To the patient with generalised vitiligo, disease remission was most pertinent on his hands, thumbs, and fingers as he could not have a handshake with other people. Please compare this with Fig. 1c

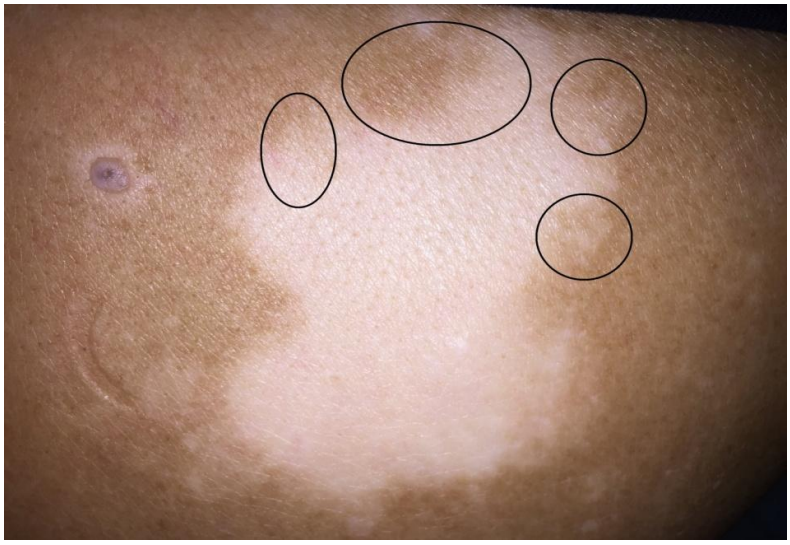

Fig. 4. The back of another patient with generalised vitiligo. Only epiluminescence dermoscopy can locate the zones of perifollicular sparing of depigmentation. These areas were detected by digital epiluminescence dermoscopy (on the upper parts of the lesion), and annotated by dark ovals

4. CONCLUSION

DED-guided topical treatment for GV seems to be effective for a patient with generalised vitiligo. This treatment method might be particularly beneficial for patients with small perifollicular pigment-sparing zones. Further studies including randomised controlled trials would be necessary to confirm the efficacy of this approach.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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