Concurrence of Multiple Cutaneous Malignancies on Sun-exposed Vitiligo Skin of a Patient: A Case Report and Review of the Literature

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Abstract
There are very few published studies in the literature examining the association between vitiligo and skin cancers and only some anecdotal reports about phototherapy-associated nonmelanoma skin carcinoma (NMSC) in patients with vitiligo. Herein, we report a case of an 84-year-old male with widespread vitiligo with concurrent onset of two primary cutaneous malignancies in sun-exposed vitiligo skin. The association between vitiligo and NMSC deserves further assessment. Chronic sun damage might be a possible causative factor for the development of NMSC in the vitiligo patient.

KEY WORDS: Nonmelanoma skin carcinoma, sun-exposed areas, vitiligo, vitiligo-affected skin

Introduction
Vitiligo is a common depigmenting disorder with devastating psychological and social consequences.[1] Some studies show the autoimmunity of patients with vitiligo may protect them against melanoma; however, lack of melanin may involve greater photodamage and thus an increased risk of melanoma and nonmelanoma skin cancers.[2] Clinical experience indicates that skin cancers and solar keratoses are rare findings in sun-exposed vitiligo skin. Herein, we report a patient with widespread vitiligo, multiple basal cell carcinomas (BCCs), and squamous cell carcinomas (SCCs) in sun-exposed vitiligo skin.

Case Report
An 84-year-old Chinese man with Fitzpatrick Skin Type III had widespread vitiligo and was referred to our institution because of a 5-year history of growing tumors on sun-exposed vitiligo skin. Depigmentation started on the trunk 40 years ago and had been widespread but stable at least for the last 20 years, but no specific treatment had been administered. The patient worked as a farmer and had a history of chronic sun exposure dating back to his adolescence. He had neither avoided sun exposure intentionally nor used a sunscreen after the development of vitiligo. In the last 5 years, there were growing tumors on sun-exposed vitiligo skin. One month prior, ulceration and pain had occurred on the left temporal plaque. There was no history of exposure to arsenic or ionizing radiation and no family history of malignancy. Systemic symptoms were unremarkable. He was found to have a papule in the left ala nasi, which was there since he was a child and has grown larger with age. Cutaneous examination revealed multiple scattered erythematous plaques with an elliptical shape, scaly, or verrucous keratoses on areas of his face exposed to sunlight on vitiligo-affected skin [Figure 1a and b]. Some of these presented with clinical signs of infiltrative growth with a central ulceration. The lesions ranged in size from 0.5 cm×1 cm to 4 cm×3 cm, with the three largest being 4 cm×3 cm (the left temporal),
2 cm×2 cm (the left ala nasi), and 2 cm×2.5 cm (the left side of right lateral canthus). Regional lymph nodes were not palpable. There were extensive depigmented lesions on his frontal scalp, neck, trunk, and limbs, involving about 40% of his total body surface. Skin cancers were suspected clinically and treated surgically of the three largest involved sites. Intraoperative frozen section examination of all three lesions suggested the diagnosis of one BCC (the left ala nasi) and two SCC and showed clear surgical margins. After this, excision biopsies were conducted for four residual suspicious skin lesions with a 5-mm surgical margin. The postoperative pathology report of the skin lesions confirmed two different kinds of cancers: two lesions (the left temporal and the left side of the right lateral canthus) showed SCC [Figure 2a]; the left alanasi papule showed BCC and intradermal nevus [Figure 2b]; and the residual four excision biopsies demonstrated one nodular BCC [Figure 2c] and three solar keratoses.

The postoperative period was uneventful and good cosmetic results were obtained [Figure 1c and d]. On a follow-up examination 2 years after the initial visit, no recurrence or new lesions were noted.

Discussion

Vitiligo is an acquired depigmentation disorder affecting approximately 0.5% of the general population. This disease is characterized by the loss of the pigment melanin due to the partial or complete absence of functioning melanocytes in affected areas. One would expect that complete absence of melanin pigmentation in vitiligo increases the deleterious effects of ultraviolet (UV) light such as the development of skin cancer.[2] However, reported cases of skin cancer occurring in long-lasting vitiligo are rare, and only seven such cases have been reported.[3-5] An association with skin cancer, particularly nonmelanoma skin carcinoma (NMSC), has so far not been established and remains a subject of controversy. Numerous BCCs concomitant with SCCs in a vitiligo patient are exceptional. A few large cohort studies were designed to retrospectively assess the lifetime prevalence of melanoma and NMSC in patients with vitiligo.[2,6,7] Two of those studies showed that patients with vitiligo have a decreased risk of NMSC.[2,6] Another had contradictory findings that showed a higher but not significantly different age-adjusted incidence of NMSC compared with that in the US population.[7] The data from Teuling et al. showed 30 of the 1307 patients with vitiligo had
been diagnosed with a total of 37 BCCs during their lifetime and only one patient had one BCC and one SCC.\[6\] A prospective study was conducted to validate the possible influence of cumulative UV exposure in developing early photodamage and NSMC in vitiligo. The results confirmed the absence of an expected high risk for sun-induced damage and skin cancer in a large group of patients with vitiligo.\[8\] To date, in patients with vitiligo treated with psoralen–UV-A, studies still had failed to show an association with NMSC, although the follow-up time was short and patient numbers were limited.\[9\] All these data seem to indicate that absence of melanin does not enhance the development of clinical or histologic changes due to damage by everyday UV exposure. However, our patient had no particular risk factors for the development of NMSC except for chronic sun exposure. He was a farmer with long-lasting vitiligo, affecting both sun-exposed and sun-protected areas. BCCs and SCCs were obviously found on sun-exposed vitiligo lesions. The left ala nasi papule showed concurrent BCC and intradermal nevus in the vitiligo-affected area which had developed before vitiligo. We speculate that it is just a process of intradermal nevus converting to BCC over a long period of time. The findings support the concept of the gradual induction of NMSC by solar UV radiation. Therefore, cumulative UV in patients with vitiligo may still be a risk factor for NMSC. The association between vitiligo and NMSC deserves further assessment. The patients with vitiligo who have two kinds of NMSC at the same time are really rare.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

What is new?

Multiple cutaneous malignancies concurrence in vitiligo-affected skin on sun-exposed areas in a Fitzpatrick Skin Type III patient with widespread vitiligo without psoralen–ultraviolet (UV)-A or narrow-band UV-B therapy are rare, Cumulative UV in patients with vitiligo may still be a risk factor for nonmelanoma skin carcinoma.

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