

## Seborrheic Dermatitis Induced Koebnerization: A Probable Outcome Determinant in Vitiligo

Mufutau Muphy Oripelaye, Fatai Olatunde Olanrewaju, Olaniyi Emmanuel Onayemi and Olayinka Abimbola Olasode

Department of Dermatology and Venereology, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria

\*Corresponding author: Mufutau Muphy Oripelaye, Department of Dermatology and Venereology, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria, Tel: 2347030211101 E-mail: mmoripe@yahoo.co.uk

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### Abstract

**Backgrounds:** Vitiligo is a pigmentary disorder characterized by depigmentation and absence of melanocyte. It occurs in 0.5-1% of the population and commonly associated with Koebner phenomenon. Koebner phenomenon which is the occurrence of new lesions at site of injury has been described in several dermatoses including vitiligo. It could serve as a useful diagnostic aid and sometimes influence approach to the management of vitiligo when considering surgical intervention.

**Case report:** We report a 64 year old Nigerian who had progressive depigmentation on the scalp, face and palms of 1 year duration. He had prior scaly rashes for eight years which are distributed over the seborrheic areas. The depigmenting lesions were noted to be perpetuated by seborrheic dermatitis induced koebnerization.

**Conclusion:** Koebner's phenomenon induced by seborrheic dermatitis may be a perpetrating factor in vitiligo with attendant challenge in the treatment of the patients. This may further worsen the hitherto poor outlook of vitiligo thereby compounding the associated morbidity.

**Keywords:** Seborrheic; Dermatitis; Koebner; Vitiligo; Treatment; Challenge

### Introduction

Vitiligo is an acquire loss of skin pigmentation with associated absence of melanocyte. It has a prevalence of 0.5-1% in the general population and occurs in equal proportions among men and women [1,2]. The cause of melanocyte loss is not clearly understood, however, several theories explaining the cause have been advanced. Some of the proposed theories are autoimmune theory, melanocyte self-destruct theory, and neurological theory among others. vitiligo presents clinically with depigmented patches, which may be associated with transitional zone of hypopigmentation giving the trichrome sign. Associated perifollicular repigmentation gives the quadrichrome sign which also aids the diagnosis of vitiligo. Other clinical sign frequently associated with vitiligo is Koebner's phenomenon. This is a phenomenon whereby new lesions are developed at the site of injury. Difficulty in the surgical management of vitiligo has been described in association with Koebner phenomenon. The use of surgical modalities are limited to stable vitiligo and in some instances completely contraindicated in the presence of Koebner's response. We present 64 year old Nigerian whose seborrheic dermatitis similarly impedes the management of vitiligo by inducing koebner's phenomenon.

### Case Report

We report a 64 year old Nigerian who presented to the dermatology clinic of Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife with eight years history of recurrent scaly and itchy rash on the scalp and face and a year history of associated loss of pigment on the scalp, face and the hands (Figures 1-3).

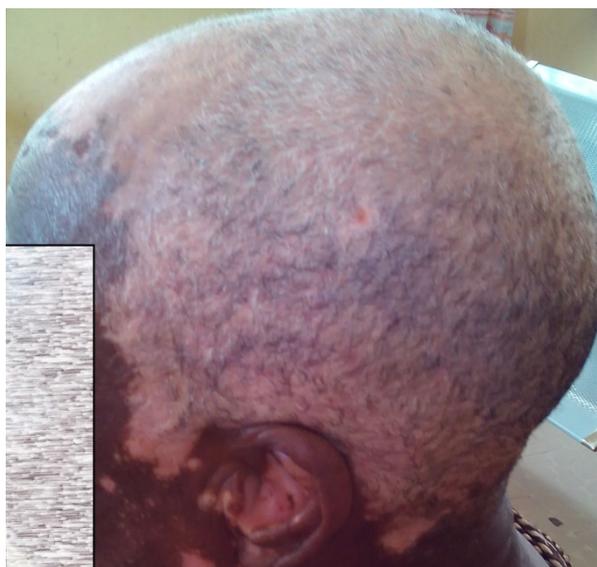
The scalp rashes in scaly with associated dandruff and occasional itch. Similar rash was also observed on the eye brows. There is no associated history of stroke, or other form of neurological defect. There is no features suggesting immunosuppression and retroviral screen was negative. The blood sugars as well as the complete blood counts were within normal limit.



Figure 1: Vitiligo involving the scalp and eyebrow.



**Figure 2:** Vitiligo involving the scalp and right ear orifice.



**Figure 3:** Vitiligo involving the scalp and left ear orifice.

Assessment of seborrheic dermatitis and vitiligo was made. The shared distribution of these lesions on the scalp and eye brow which was suggestive of Koebner's phenomenon was noted. Although vitiligo with palmar involvement carries poorer outlook, the patient has not responded to phototherapy a year later despite the concomitant treatment of the seborrheic dermatitis.

## Discussion

Vitiligo is an acquire loss of skin pigmentation with associated absence of melanocyte. It is a common depigmentary disorder occurring in 0.5-1% of the population and it is evenly distributed

among men and women [1,2]. Although it does not show racial predilection [3] impact in the black skin as a result of the increase contrast may enhance associated morbidity in the black race.

Vitiligo, like several other dermatoses exhibits the phenomenon of koebnerization. Koebner's phenomenon which is the development of new skin lesions at uninvolved site following trauma was first described in psoriasis by Heinrich Koebner [5]. This has subsequently been described in several other skin diseases including vitiligo. Various types of skin injuries have been noted to induce Koebner's phenomenon. These ranges from skin trauma such as biopsy incision, needle prick, surgical scar etc. Other inciting conditions include chemical irritation and numerous skin dermatoses such as seborrheic dermatitis and urticaria. High energy irradiation and UV light damage have also been implicated [5]. While seborrheic dermatitis is known to induce Koebner's response in some dermatoses, association with vitiligo has been sparsely reported. This report therefore seeks to emphasise the significance of this sinister association.

Although the cause of Koebner's phenomenon is not known, it has engendered a lot of interest in researchers seeking to clarify the pathogenesis of these dermatoses. Other significance of the phenomenon is in aiding the clinical diagnosis of the skin conditions by differentiating them from closely related differentials that do not exhibit Koebner's phenomenon.

The presence of Koebner's phenomenon in vitiligo has also been reported to influence both the therapeutic approach and treatment outcome of vitiligo patients. Surgical approach in the management of vitiligo has an increased risk of inducing vitiligo lesion both at the donor site as well as the recipient sites in patients with Koebner's response [6]. This has limited the use of surgical approach to patient with stable vitiligo, without Koebner's phenomenon. Similarly, we are reporting the index case to highlight another form in which Koebner's response could constitute an impediment to the management of vitiligo.

Seborrheic dermatitis is a chronic inflammatory skin disease, affecting the areas of the body rich in sebaceous glands. The scalp, face, upper trunk are frequently affected with seborrheic dermatitis. It has an annual incidence of 1-3% with slightly higher proportion in men [7]. It is a self-limiting disorder in infancy where it is induced by maternal androgen. However, it causes a chronic remitting and relapsing disease in the adults [8]. Although, the cause of seborrheic dermatitis is not known, a combination of factors such as presence of malassezia furfur, increase production of sebum, genetic predispositions and immunosuppression have been implicated [8]. Other factors thought to play some role in the etiology of seborrheic dermatitis include alteration in epidermal barrier function, presence of neurological disease and emotional stress [8].

Malassezia furfur has been implicated in pathogenesis of seborrheic dermatitis, it causes hydrolysis of sebum produce by the sebaceous gland through its lipase activity. Metabolite generated by this process induces inflammation which is further potentiated by pro-inflammatory cytokines such 1L-1, 1L-6 and TNF- $\alpha$  [8]. These prolong inflammatory processes lead to chronic dermatitis which perpetuates the Koebner's phenomenon caused by seborrheic dermatitis. The persistence of koebnerization will expectedly potentiate the vitiligo and even induce new lesions.

The relatively poor outlook of vitiligo being chronic pigmentary disorder with unpredictable course, associated with Koebner inducing

seborrheic dermatitis will undoubtedly present a treatment challenge which may further worsen the disease outcome.

## Conclusion

Vitiligo is a chronic depigmenting disorder in which about a third of the patients developed Koebner's phenomenon. In the effort to treat vitiligo, removing precipitating factors such as Koebner's response remains a key goal. The absence of cure for seborrheic dermatitis, and the remitting and relapsing nature, as well as the chronicity of this disease cause a difficulty in halting the Koebner's phenomenon it induced in vitiligo. This may pose treatment challenge which if further studied may be established as an outcome determinant in the management vitiligo.

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