Topical Simvastatin Solution Combined With Narrowband UVB in Treatment of Vitiligo: a Case Report

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Case report

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Abstract

Background: Simvastatin is now considered a potential therapeutic agent to treat vitiligo. To the best of our knowledge, this is the first case report about the successful treatment of topical simvastatin with narrowband UVB.

Case presentation: a 34-year-old Chinese female patient vitiligo was cured by topical simvastatin solution with narrowband UVB.

Conclusions: topical simvastatin may be a potential treatment against vitiligo.

Background

Sir, a 34-year-old Chinese female patient who developed depigmentation on her anterior chest in June 2018 and was diagnosed as vitiligo. The patient denied any auto-immune history or family history. The skin lesion was stable when the patient visited our hospital, and the area of the anterior chest skin lesion already reached to approximately 5% of the body surface area. The patient was first treated with narrowband UVB (NB-UVB) for 8 months. During the course of treatment, only a small amount of diffuse repigmentation was seen in the early stage, which was not obviously improved until the end of the treatment (a). Subsequently, the combined administration of NB-UVB with topical simvastatin solution was administered. To be specific, the application of topical simvastatin solution was applied as follows: 140mg of simvastatin tablet (Merck Sharp & Dohme, UK) was dissolved into 100ml glycerol solution (the simvastatin concentration in this solution was calculated to be 0.11%), and applied twice a day, along with NB-UVB twice a week. During the early stage of treatment, slight folliculitis occurred at the medication site of the patient, without any other adverse reactions (b). After two months of treatment, the perifollicular repigmentation was noted (c), and at four months later, the obvious improvement was observed (d).

Vitiligo is an autoimmune disease caused by autoreactive $CD8^+$ T lymphocytes that target melanocytes. Interferon-γ-induced CXCL10 plays an important role in vitiligo, and disruption of IFN-γ signaling by Janus kinase (JAK) inhibitors contributes to the repigmentation of human vitiligo patients[1, 2]. Moreover, simvastatin protects human melanocytes from HO-induced oxidative stress by activating NF-E2-related factor 2 (Nrf2), thus supporting that simvastatin may be a potential therapeutic agent for vitiligo[3]. In addition, clinical study has shown that the conventional daily oral dose of simvastatin has exerted no positive therapeutic effect on vitiligo[4], thus, topical use may be a potential treatment approach.

Interestingly, in this case, NB-UVB monotherapy did not appear to be efficacious, while the JAK inhibitor, simvastatin in combination with either NB-UVB phototherapy led to repigmentation. This phenomenon was consistent with the empirical results obtained by Liu LY *et al*. suggesting that immunosuppression and sun-exposure or phototherapy are both important for the treatment of vitiligo[5]. The role of simvastatin in the case remained unclear, we will design clinical trials with large sample size to further observe whether simvastatin combined with NB-UVB can effectively treat vitiligo.

Declarations

Ethics approval and consent to participate

The present study was extracted from the National Natural Science Foundation of China with code 81773335 and conducted at Third hospital of Hangzhou during 2017-2019.

Consent for publication

Not applicable.

Availability of data and materials

The authors stated that all information provided in this article could be shared.

Competing interests

The authors declare that there are no competing interests regarding the publication of this manuscript.

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Authors' contributions

Ai-E Xu and Miaoni Zhou contributed to the conception of the study,

Fuquan Lin and Wenting Hu performed the experiment,

Wenting Hu and Yangyang Ma wrote the manuscript.

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The present study was conducted in Third hospital of Hangzhou.

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Figures

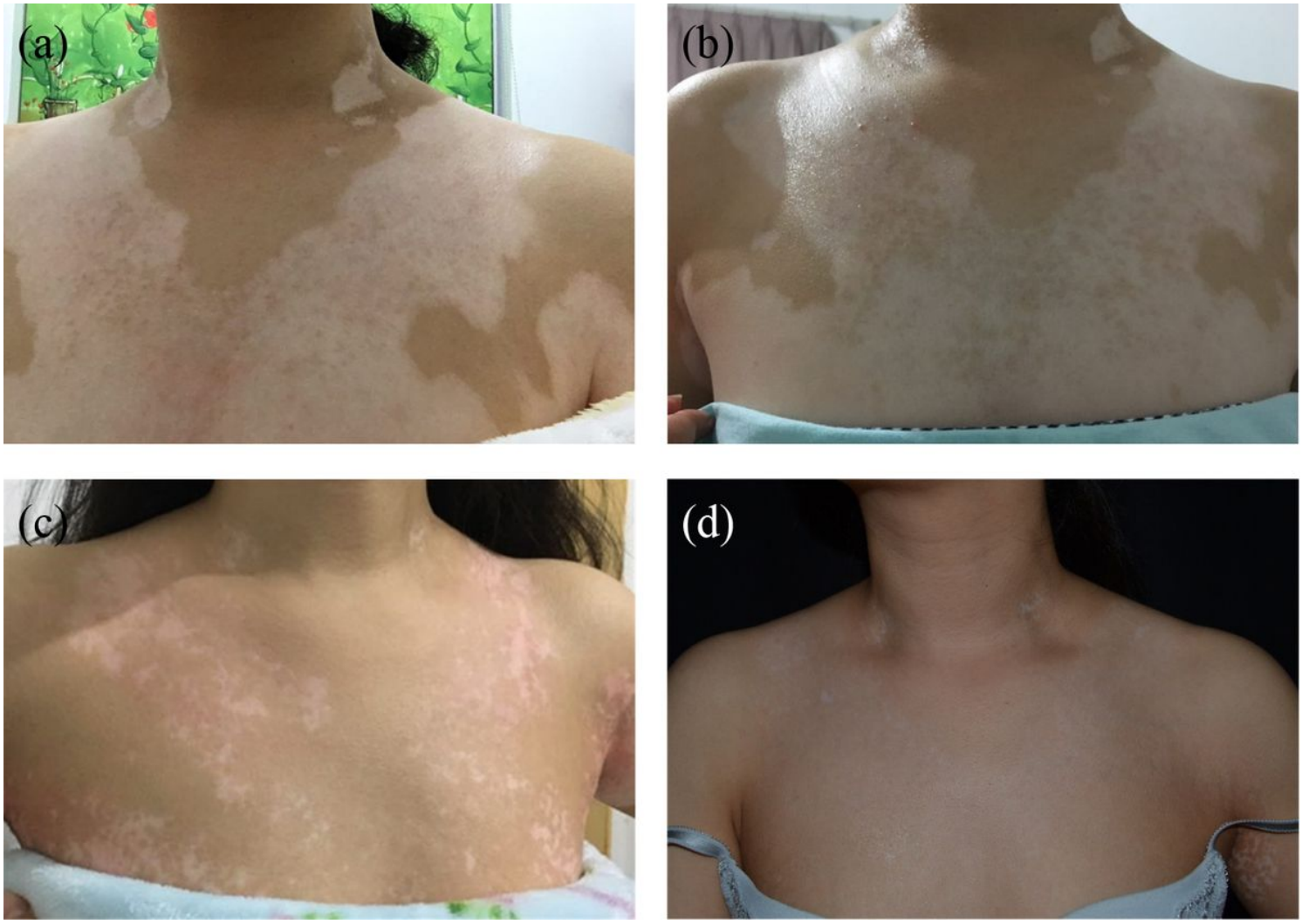

Figure 1

During the course of treatment, only a small amount of diffuse repigmentation was seen in the early stage, which was not obviously improved until the end of the treatment (a). During the early stage of treatment, slight folliculitis occurred at the medication site of the patient, without any other adverse reactions (b). After two months of treatment, the perifollicular repigmentation was noted (c), and at four months later, the obvious improvement was observed (d).