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Altered expression of microRNA-16 promotes narrowband UV-B–induced repigmentation in vitiligo

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Background: The role of microRNA is implicated in myriad immunologic processes and their role has been suggested in variety of autoimmune disorders. miRNA may play a role in the development of vitiligo and pigmentation. Objective: To study the effect of narrowband (NB) UVB treatment on the expression of miRNA in peripheral blood, lesional and non-lesional skin in active nonsegmental vitiligo (aNSV) and correlation with clinical parameters.

Methods: The expression level of 10 microRNA (miR-10a, -16, -21, -31, -125b, -155, -203, -223, -574, and -1290) in the PBMC and skin (lesional and non-lesiona) of untreated and NBUVB-treated active nonsegmental vitiligo (aNSV) patients (n = 20) and healthy individuals (n = 20) by quantitative polymerase chain reaction and results were correlated with body surface area (BSA) involvement and extent of repigmentation after NBUVB.

Results: MiR-10a, -16, -21, -31, and -203 were found to be significantly increased ($P <$ .05) in the PBMC of aNSV. Except for miR-31 similar expression pattern was observed in lesional skin of aNSV. miR-10a, -16, -155 levels were significantly decreased post-NB-UVB treatment in PBMC. MiR-16, -10, and -574 were significantly decreased after NBUVB treatment in lesional skin. A significant correlation found between expression levels of miR-16 in PBMCs with BSA%.

Conclusions: The miR16 revealed a distinct expression pattern pre-and post-NB-UVB treated aNSV. MiRNA-16 is important for in vitro induction of Tregs and in vivo production of peripheral Tregs by regulating the mTOR signaling pathway. Altered expression of PD1-Tregs was reported in vitiligo and miR-16 regulates macrophage polarization and T-cell activation by down regulating the PD-L1 suggesting the involvement of miR-16 in vitiligo pathogenesis.

Commercial disclosure: None identified.

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Traumatic nail signs predicting complete cure in dermatophytes onychomycosis of the toenail

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Background: Treatment of toenail onychomycosis may be not achieved complete cure, even though they reached mycologic cure. Traumatic nail dystrophy can be found concomitantly with onychomycosis. Aims of this study was identifying the complete cure rate of toenail onychomycosis and predictive factors emphasizing on traumatic nail signs for complete cure.

Methods: This retrospective study from medical record with 2-view photography was conducted in Siriraj Hospital, Bangkok, Thailand during January 2010 and December 2017. All patients were diagnosed as pure dermatophytes onychomycosis of the toenail and achieved mycologic cure after treatment. Primary outcome was prevalence of complete cure. Demographic data, risk factors and physical examination in patients with and without complete cure were compared.

Results: Fifty-four patients were included. Of these, total 32 cases met the complete inclusion criteria. The mean age (SD) was 65.7 (10.1) years (male 43.8%). Complete cure rate at a 12-month follow-up was 46.9% of patients with mycologic cure. There were 3 traumatic nail findings with significantly found in patients without complete cure: onychophosis ($P = .014$), toetip callus ($P = .013$), and onychauxis (nail plate thickness) ($P = .021$). Trichophyton rubrum infection and oral terbinafine were significantly associated with patients with complete cure.

Conclusions: Among patients with mycologic cure, half of patients did not reach complete cure especially those who presented with traumatic nail signs. Thorough examination for traumatic nail signs of the toenails from hyponychial view (onychauxis and toetip callus) and dorsal view (onychophosis) is essential.

Commercial disclosure: None identified.

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Fernblock promotes antioxidant defence systems in environmentally stressed human keratinocytes (UV, pollution) via Nrf2 pathway induction

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The skin is the most important defensive barrier of our body to protect us against environmental damage. It is well known that exposure to ultraviolet (UV) sun radiation leads to oxidative stress, photoaging, and photocarcinogenesis. However, more recently, research highlights the importance of environmental pollution damage to the skin, and how solar radiation can synergically interact with ubiquitous environmental pollutants to further increase hyperpigmentation, skin aging or cancer. In response, skin cells use biological defense mechanisms to reverse these deleterious actions. Antioxidant response element (ARE) induction by Nrf2 is one of the most important endogenous defense systems against oxidative stress. However, increasing data suggest that antioxidant and detoxifying enzymes induction capacity is reduced by aging. To address this, strategies combining topical protection and oral/topical antioxidants could help prevent oxidative stress, inflammation and associated pigmentation, and may induce endogenous antioxidant mechanisms such as Nrf2 pathway. We evaluated the effect of Fernblock treatment on Nrf2 and downstream antioxidant genes expression in environmentally stressed human keratinocytes. Protection against UVB and particulate matter was also studied by assessing changes in pro-inflammatory cytokines and melanin production. Our results showed that Fernblock significantly down-regulated IL-6 and IL-8 induction after UVB exposure and promoted the expression of several antioxidant-related genes which are downstream of Nrf2. Furthermore, we corroborated that Fernblock decreases cell death and melanin production. In summary, Fernblock treatment can induce a robust long-lasting Nrf2 activation, leading to increased protection against oxidative stress induced by stressful environmental conditions.

Commercial disclosure: Cantabria Labs.

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Elderly with aging-associated debilitating conditions with onychomycosis: Comorbidities, treatment outcomes, and duration to complete cure

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Background: Onychomycosis is one of the common dermatologic diseases worldwide, especially in the elderly. The elderly aged ≥70 years is defined as the elderly with aging-associated debilitating conditions (ADCs). This condition tends to have more comorbidities which could affect treatment results. Studies of onychomycosis in elderly with ADCs is required.

Objective: To determine comorbidities, treatment outcomes and duration to complete cure among ADCs and non-ADCs with toenail onychomycosis.

Methods: A retrospective cohort study was performed in ADCs and non-ADCs elderly with toenail onychomycosis caused by dermatophytes and mixed infection onychomycosis (dermatophytes and nondermatophytes) in the nail clinic, department of dermatology, faculty of medicine Siriraj hospital, Mahidol university, between 2008 and 2017.

Results: Of 143 patients, 49 patients (34.3%) were ADCs elderly with male predominate (77.6%). This group had more comorbidities (hypertension, dyslipidemia, cardiovascular disease, and impaired renal function) and significantly had poor peripheral circulation, compared with non-ADCs elderly ($P < .05$). Systemic antifungal treatment was not significantly different between ADCs and non-ADCs ($P = .156$) and cure rate was not significantly different between ADCs group (39.4%) and non-ADCs (28.6%; $P = .270$). The ADCs had median time to complete cure of 51 months, which significantly longer than that of non-ADCs (25 months; $P = .033$). Regarding multivariate analysis, patients with age ≥70 years and diabetes mellitus had significantly longer time to cure ($P = .048$, $P = .042$, respectively).

Conclusions: Age ≥70 years and having diabetes mellitus were considered as prognostic factors determining longer duration to cure of toenail onychomycosis.

Commercial disclosure: None identified.