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Challenges in recurring superficial fungal infections: a reappraisal for the twenty-first century

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Over the last decade, superficial fungal infection (tinea corporis, tinea cruris, and tinea faciei) has been challenged by a rise in the incidence of Trichophyton mentagrophytes species, poor or variable response to antifungal therapy (clinical cure, no response, and/or aggravation of symptoms after the initiation of an effective drug), frequent recurrence despite prolonged antifungal therapy, recurrence of lesion with diverse morphology, and/or lack of correlation between drug resistance and treatment outcome; poor correlation of risk factor (fungal infection of nail and disease in families) to chronic fungal disease, and recurrence was confined to treated tinea sites [1-8]. Such a diverse change in superficial fungal infection posed a diagnostic and therapeutic challenge for treating physicians. To overcome these challenges, research focused on various aspects of superficial fungal infection. Like epidemiology, species identification, clinical course and morphology, associated risk factors, drug resistance, and treatment [1-4,7-19]. However, researchers lacked consensus in identifying the cause of such diverse change in superficial fungal infection.

Researchers observed that the challenge was only observed in superficial fungal infections of the skin (tinea corporis, tinea cruris, and tinea faciei) [1,4,13,15,20]. They further observed that the changes were confined to the treated site of fungal infection despite adequate antifungal therapy. They also observed that the treated tinea site developed a fungal infection, adverse effects unique to prolonged topical steroid use, "topical steroid withdrawal syndrome," and trauma by a fungal infection on the atopic dermatitis skin developed chronic eczema/post-traumatic eczema. Further, observations were made that fungal infection(complicated), development of topical steroid withdrawal syndrome, and chronic eczema shared common features (like episodes of recurrence, episodes recurred with diverse morphology, poorly/variably responded to therapy, run a remitting and relapsing course) [1,21,22]. Hence, recurred lesions at the treated site of fungal infection need to be correctly diagnosed before initiating appropriate treatment.

The use of topical steroids and association of atopic dermatitis has increased in superficial fungal infected patients [1,2,14,15]. Researchers arbitrarily attributed the challenges in superficial fungal infection to risk factors; however, it was not supported by a well-designed study. Further, researchers observed there is a lack of correlation in diverse changes in fungal infection to immune status, associated comorbidity, occupation, tight clothes, topical steroid use [14,23], disease in the family [6], fungal infection of nail and hair [5,9], and drug resistance [1,2,7,8]. Hence, there is a need for further understanding of the interaction between a) risk factors and fungal infection and b) risk factors and skin. The interaction of risk factor topical steroid use and associated atopic dermatitis with fungal infection and skin is well known. The topical steroids have anti-inflammatory and immune-suppressive properties [24]. These properties of steroids may alter the course [25], morphology [11-13], and complicate the fungal infection [26,27]. While its prolonged use may develop adverse effects unique to topical steroid use, "topical steroid withdrawal syndrome" [21,28]. In Atopic dermatitis patients, the shift in immunity towards Th2 cytokines [29] may prolong the course of fungal infection. Inherent skin barrier defect of atopic dermatitis may facilitate the adhesion of fungal arthroconidia to Keratinized tissue of skin [30] and result in widespread fungal infection and/or increased predilection of disease to the frictional sites [4,9,13]. Further, the ability of traumatized skin (by surgery, friction and/or disease) of atopic dermatitis may develop post-traumatic eczema/chronic eczema [22,31,32]. Hence, there is a need to assess the recurred lesions at the treated tinea site to identify what has recurred in the treated tinea site (fungal infection or dermatosis unrelated to fungal infection).

The current challenge in the diagnosis of recurring lesions after adequate antifungal therapy is because of diverse morphology of recurred lesions, recurred lesion minimizing other dermatoses, poor response to therapy, variable response to antifungal therapy, and/or drug susceptibility studies test not correlating with treatment outcome in a real-world scenario. An ideal approach to diagnosis of superficial fungal is clinical. Laboratory tests are indicated only for the complicated and doubtful cases of fungal infection [33]. Since complicated fungal infection [1,3,19], topical steroid withdrawal syndrome [21], and chronic eczema/post-traumatic eczema [22] may share common clinical features like the appearance of lesions during medication, episodes appearing with diverse morphology, poor/variable response of lesions to therapy, episodes may continue to appear long after the completion of antifungal therapy and discontinuing topical steroid use; hence, patients with recurred lesions at the treated tinea site with history of topical steroid and associated atopic dermatitis may subjected to fungal test prior to initiating therapy.

Hopefully, this editorial will draw the attention of researchers and readership to focus on the diagnosis of recurred lesions, identifying fungal infection from the

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development of dermatosis unrelated to fungal infection at the treated site of fungal infection in patients who have risk factors like topical steroid use and associated atopic dermatitis.

Disclosure statement

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