



Efficacy of mindfulness meditation in psychological distress exacerbated tinea cruris: A case report

Swathi Swaroopa Borra¹ , Jemi Rachel Shaji¹, Ayilya Manomohan¹, Elsam Koshy², Sadagoban Gopal Krishnamoorthy^{1*} 

¹Department of Pharmacy Practice, JSS College of Pharmacy, JSS Academy of Higher Education & Research, Ooty, Nilgiris, Tamil Nadu, India.

²Department of Dermatology, Carecraft Hospital, Alappuzha, India.

ARTICLE INFO

Received on: 09/06/2022
Accepted on: 19/09/2022
Available Online: 05/02/2023

Key words:

Jock itch, tinea cruris, mindfulness meditation, skin infections, skin and psychological stress, alternative therapy.

ABSTRACT

Despite the possible behavioral and neurological benefits of mindfulness meditation (MM), its use in psychological distress exacerbated tinea cruris (TC) appears to be unexplored. This can be used with other interventions to reduce the distress associated with social anxiety and avoidance found in many skin conditions. MM practices shrink the amygdala, and in response, the prefrontal cortex becomes thicker which is associated with awareness, concentration, and decision-making. This case report examines the efficacy of MM in psychological distress exacerbated TC. A 33-year-old female patient with a history of recurrent TC was treated with antifungal medications at first and had no improvement due to observed psychological distress, but later with MM in conjunction with antifungals, her condition improved and complete resolution was seen after 8 weeks of treatment and no recurrence was observed with MM single-handedly without any antidepressant medication use. This case report indicates the improvement of the patient when meditation was added along with other interventions as the patient was in psychological distress, which was assessed by administering scales prior to and later to management.

INTRODUCTION

Tinea cruris (TC) is a fungal infection caused by *Trichophyton* in the groin area. It is also known as jock itch. The skin is a significant barrier and plays a role in the immune system, maintaining homeostasis between the internal tissues and the external environment. The threat to an organism is referred to as “stressor” and the response to the stressor is termed “stress response” (Koblentz, 1983). The complex association between skin conditions and stress has been a known fact since early times (Fink, 2009). People experience psychological stress under pressure at the physical, mental, or emotional level. It manifests when the pressure exceeds a person’s perceived ability of the brain to adapt, resulting in the release of stress hormones such

glucocorticoids, adrenaline, and corticotropin-releasing hormone. This causes a variety of biological and behavioral changes when adapting with stress (Chen and Lyga, 2014). The association between the skin and the brain is of a complex nature; the skin and the brain share an ectodermal origin and are both influenced by the same hormones and neurotransmitters, making psychological activities the brain’s main focus (Koblentz, 1983). The release of catecholamines by the sympathetic-adrenal-medullary axes, which binds to a number of adrenergic receptors and reduces skin blood flow, as well as alters immune functions, such as altered circulation, lymphocyte trafficking, cytokine production, and proliferation, is the mechanisms by which stress affects the skin. Stress can significantly impact the skin’s permeability barrier function and homeostasis. Stress activates the skin’s mast cells and decreases several skin immune markers, and as a result, these cells release stress hormones and inflammatory mediators. This could trigger a cascade of stress-related inflammatory responses. Mast cells also have been linked to a variety of skin diseases, including acne, atopic dermatitis, psoriasis, and pruritus. Chronic stress typically suppresses immunoprotection, makes people more susceptible to infections, and aggravates some allergic

*Corresponding Author
Sadagoban Gopal Krishnamoorthy, Department of Pharmacy Practice, JSS College of Pharmacy, JSS Academy of Higher Education & Research, Ooty, Nilgiris, Tamil Nadu, India
E-mail: sadagoban@jssuni.edu.in

and inflammatory reactions (Chen and Lyga, 2014). Not only does stress diminish skin quality, but skin infections also impair a person's well-being, which is shown in a study that cutaneous and mucocutaneous fungal infections degrade the quality of life (Khan *et al.*, 2019). A deep state of relaxation and a tranquil mind is produced by meditation. Mindfulness meditation (MM) benefits have been established for mood and anxiety disorders, and emotional disturbances (Arias *et al.*, 2006; Burns *et al.*, 2011). Mindfulness, defined as "paying attention in a particular way: on purpose in the present moment and non-judgmentally" (Kabat-Zinn, 1994), is a kind of mental coaching that can help people respond more adaptively to negative emotions (Bishop, 2002). When practicing meditation, attention is focused on eliminating chaotic thoughts which may be initiating stress. This may result in improved physical and emotional well-being. The prefrontal cortex associated with awareness, concentration, and decision-making becomes thicker when the amygdala shrinks which involves the initiation of the body's response to stress while practicing MM. A study conducted by Kabat-Zinn *et al.* (1998) found that patients with psoriasis have faster healing of their psoriatic lesions while receiving a brief MM-based stress reduction intervention. By reducing their physiological reaction to stress, mindfulness interventions may benefit people with skin conditions. The impact of stress on the skin may be greatly reduced by altering people's perceptions of stress through psychological interventions that target maladaptive cognitions and behaviors. In fact, mindfulness practices used in dermatology have contributed to higher rates of skin clearing, pointing to a physiological process of change. The majority of published studies on mindfulness interventions in dermatology have so far focused on people with psoriasis (Montgomery and Thompson, 2018). Whole-brain analyses revealed that the mindfulness-based stress reduction group had a larger posterior cingulate cortex, temporoparietal junction, and cerebellum regions than the controls. The findings imply that mindfulness-based stress reduction is associated with changes in gray matter distribution in brain areas responsible for learning and memory functions, emotion control, self-referential processing, and perspective taking (Hölzel *et al.*, 2011). Considering that chronic stress raises the risk of subsequent psychopathology, understanding the neurobiological underlying principles of MM aimed at lowering stress and enhancing well-being will be of significant clinical interest.

CASE REPORT

Mrs X, a 33-year-old female, complained of frequent infections in the groin region. She was diagnosed with TC and prescribed with T. Terbinafine 500 mg once daily and T. Levocetirizine 10 mg *hora somni* and had no improvement after 2 months. She mentioned that she practices good hygiene and denied any family history of any such infection. An erythematous patch was found in the groin region. 20% potassium hydroxide examination with scrapings from the lesion showed arthrosporic segmented hyphae, which confirmed the presence of TC. It was also observed to have spread centrifugally, with central clearings elevated slightly with sharp and demarcated borders. The dose of Terbinafine increased and topical Clotrimazole dusting powder was added for 1 month, which showed a failed response. The treatment plan was changed to T. Itraconazole, topical

Ketoconazole, and T. Chlorpheniramine, with a follow-up after 20 days. She visited the clinic with a better response to the treatment, but it was not as effective as anticipated as she still complained of itching and irritation in the region. To rule out reasons for unresponsiveness, she was interviewed and found to be stressed and anxious. On reconciliation, it was known that she was in a bad mood and this vexation was attributed to family problems. When the patient was further interrogated, she claimed that she was depressed and stressed for the past 9 months. Suspecting psychological distress as the root cause of disease exacerbation, three scales were provided to the patient to rule out the exact cause. The Kessler Psychological Distress Scale (K10) was used to briefly screen and identify levels of psychological distress. The Hamilton Depression Rating Scale, a clinician-administered depression assessment scale, was used to assess symptoms of depression. Cattell's 16 Personality Factors was used to assess stress and personality characteristics of the patient, with an additional 16 factors or dimensions of personality to describe and explain individual differences between people's personalities. The K10 score was 23, indicating she is likely to have a mild disorder. The Hamilton scale rating was found to be 13, indicating mild depression and Cattell's 16 Personality Factors showed that her emotional stability was low, and sensitivity, tension, vigilance, and apprehension were high. Meditation has been shown to produce positive outcomes in stress-related dermatological conditions (Arias *et al.*, 2006; Burns *et al.*, 2011). The patient was advised along with the medications to practice MM every day for 1 hour in the morning and evening, which is focused more on reducing stress, rumination, anxiety, negativity, emotional reactivity, and improving relationship satisfaction for 4 weeks. She visited after 30 days and found her irritation and itching had subsided and the erythematous patch had improved. The regimen was continued for a month. The scales were re-administered and dermatology examination was done after 2 months to assess the improvement. The K10 score was 12, indicating she is likely to be well. The Hamilton scale rating was found to be 9, which indicates normal and the Cattell's 16 Personality Factor showed that her emotional stability is high, and tension and sensitivity had a low score.

She showed gradual improvement and complete resolution after 8 weeks without any further complaints of infection and no recurrence was observed 12 months after completion of the therapy.

DISCUSSION

Jock itch is the second most common clinical presentation of dermatophytosis. Psychological stress triggers many dermatologic conditions and also leads to abnormal skin barrier function. Through psycho-neuro-endocrine-immunologic pathways, appropriately dedicated MM utilizes trance experiences to generate centering and specialized healing in skin conditions (Shenefelt, 2019). The practice of meditation removes accumulated stress, increases energy and health positively and also shows health benefits, which include reduction of stress and anxiety, decreased depression, physical and psychological pain reduction, improved memory, and increased efficiency (Arias *et al.*, 2006; Burns *et al.*, 2011; Chen *et al.*, 2012).

In this case report, we find that antifungals single-handedly did not improve the patient's condition, but with MM it showed improvement, and there was no recurrence of the condition 12 months after therapy. There are similarly other cases

which have shown that stress and anxiety are common triggers for skin conditions, like eczema, psoriasis, and rosacea. When we experience any such stressful situation, it eventually leads to increased production of stress hormones like adrenaline and cortisol. Increase in cortisol suppresses the immune system and causes an inflammatory response in the skin. The same way stress has proven to trigger rosacea flare-ups just as easily as common physical triggers like alcohol, spicy foods, etc. In a study, 300 patients with cutaneous disease, from Wenlock District Hospital, KMC Hospital Attavar, and Fr Muller's Hospital, were enrolled, and it was found that depression was the most prevalent primary psychiatric disorder. In the primary psychiatric condition, there was a statistically significant rise in tinea versicolor and dermatophyte infections (Kuruvila *et al.*, 2004). In a study conducted by Qadir *et al.* (2016), a higher incidence of fungal infections, especially tinea versicolor and onychomycosis, was observed in primary psychiatry conditions. In a review conducted by Keng *et al.* (2011), the subjects were enrolled in an 8-week meditation course. The class was once a week for 2 hours and the students were required to practice independently between classes. The subjects were taught attention stability and breathing control. The study concluded that statistically meditation had led to a significant improvement in the quality of life of the students who completed the course. Attending or practicing meditation resulted in a more significant positive impact on psychological health. All these studies support the fact that psychological distress can lead to fungal infections and MM has an impact on reducing psychological distress.

In this case report, when psychological distress was suspected as the root cause of the disease exacerbation, three scales were administered, which proved the improvement in her lifestyle as well as her disease condition as it was administered prior to and later to management. Overall, the outcome of this case report indicates that MM together with other interventions improves skin conditions.

CONCLUSION

MM is a low-cost, accessible, and adaptable strategy that can be used in addition to other therapies. The potential advantages of MM for those who have TC and other skin conditions need to be investigated further. The psychological and attentional benefits of MM in patients with TC exacerbated by psychological distress are encouraging, and by conducting a larger study, more information can be gathered regarding the generalizability of the results. Understanding the neurobiological mechanisms of MM with the goal of reducing stress and improving well-being will be of significant clinical interest as chronic stress increases the risk of psychodermatosis.

LIMITATIONS

Due to the scarcity of research in this area, generalizations to further describe applications to practice are limited.

AUTHOR CONTRIBUTIONS

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and

agree to be accountable for all aspects of the work. All the authors are eligible to be an author as per the international committee of medical journal editors (ICMJE) requirements/guidelines.

LIST OF ABBREVIATIONS

MM: Mindfulness Meditation; TC: Tinea cruris.

CONFLICTS OF INTEREST

The authors report no financial or any other conflicts of interest in this work.

FUNDING

There is no funding to report.

ETHICAL APPROVAL

Ethical approval was obtained from the Institutional Ethics Committee, JSS College of Pharmacy, Ooty, India (Approval number: JSSCP/IRB/10/2020-21, Date: 13/03/2021)

DATA AVAILABILITY

All data generated and analyzed are included within this research article.

PUBLISHER'S NOTE

This journal remains neutral with regard to jurisdictional claims in published institutional affiliation.

REFERENCES

- Arias AJ, Steinberg K, Banga A, Trestman RL. Systematic review of the efficacy of meditation techniques as treatments for medical illness. *J Altern Complement Med*, 2006; 12(8):817–32.
- Bishop SR. What do we really know about mindfulness-based stress reduction? *Psychosom Med*, 2002; 64:71–83.
- Burns JL, Lee RM, Brown LJ. The effect of meditation on self-reported measures of stress, anxiety, depression, and perfectionism in a college population. *J College Stud Psychother*, 2011; 25(2):132–44.
- Chen KW, Berger CC, Manheimer E, Forde D, Magidson J, Dachman L, Lejuez CW. Meditative therapies for reducing anxiety: a systematic review and meta-analysis of randomized controlled trials. *Depress Anxiety*, 2012; 29(7):545–62.
- Chen Y, Lyga J. Brain-skin connection: stress, inflammation and skin aging. *Inflamm Allergy Drug Targets*, 2014; 13(3):177–90.
- Fink G. 2009. Stress: definition and history. In: Squire LR (ed.). *Encyclopedia of neuroscience*. Academic Press, Cambridge, MA, pp 549–55, 2009.
- Hölzel BK, Carmody J, Vangel M, Congleton C, Yerramsetti SM, Gard T, Lazar SW. Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Res*, 2011; 191(1):36–43.
- Kabat-Zinn J, Wheeler E, Light T, Skillings A, Scharf MJ, Cropley TG, Hosmer D, Bernhard JD. Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing photo therapy (UVB) and photochemotherapy (PUVA). *Psychosom Med*, 1998; 60(5):625–32.
- Kabat-Zinn J. *Wherever you go, there you are*. Hyperion, New York, NY, 1994.
- Keng SL, Smoski MJ, Robins CJ. Effects of mindfulness on psychological health: a review of empirical studies. *Clin Psychol Rev*, 2011; 31(6):1041–56.
- Khan MI, Kashif M, Iqbal J, Aslam M, Waseem H, Mubbashir R, Mehak SJ, Sirajuddin R, Khalid J. Depression in patients with fungal infection in tertiary care hospital. *J Pak Assoc Dermatol*, 2019; 29(4):402–8.
- Koblentz CS. Psychosomatic concepts in dermatology: a dermatologist-psychoanalyst's viewpoint. *Arch Dermatol*, 1983; 119(6):501–12.

Kuruvila M, Gahalaut P, Zacharia A. A study of skin disorders in patients with primary psychiatric conditions. *Indian J Dermatol Venereol Leprol*, 2004; 70(5):292–5.

Montgomery K, Thompson A. The potential role of mindfulness in psychosocial support for dermatology patients. *Clin Dermatol*, 2018; 36(6):743–7.

Qadir A, Butt G, Aamir I, Asad F. Skin disorders in patients with primary psychiatric conditions. *J Pak Assoc Dermatol*, 2016; 25(4):282–4.

Shenefelt PD. 2019. Meditation, hypnosis, and psychotherapy for skin disorders. In: Katlein França K, Lotti T (eds.). *Advances in integrative dermatology*. John Wiley & Sons Ltd., New York, NY, pp 503–11, 2019.

How to cite this article:

Borra SS, Shaji JR, Manomohan A, Koshy E, Krishnamoorthy SG. Efficacy of mindfulness meditation in psychological distress exacerbated tinea cruris: A case report. *J Appl Pharm Sci*, 2023; 13(02):192–195.