The role of UVB therapy in treating psoriasis and atopic dermatitis.

Bryan Omiye*

Department of Traditional Chinese Medicine, hina Medical University, Taiwan

Introduction

Ultraviolet B (UVB) therapy is a widely used treatment for various dermatological conditions, particularly psoriasis and atopic dermatitis (AD). This form of phototherapy utilizes a specific wavelength of ultraviolet light (290–320 nm) to reduce inflammation, slow skin cell proliferation, and improve skin barrier function. Due to its efficacy and relative safety, UVB therapy has become an essential tool in managing chronic skin diseases that are often resistant to topical and systemic treatments [1].

UVB therapy works by modulating immune responses and altering skin cell behavior. In psoriasis, it slows down the rapid proliferation of keratinocytes and reduces the excessive production of inflammatory cytokines, such as tumor necrosis factor-alpha (TNF-α) and interleukins (IL-17, IL-23). For atopic dermatitis, UVB therapy helps restore the skin barrier by reducing inflammation and promoting antimicrobial peptide production, which aids in protecting the skin from infections [2].

There are two main types of UVB therapy: broadband UVB (BB-UVB) and narrowband UVB (NB-UVB). BB-UVB emits a broad range of UVB wavelengths, while NB-UVB focuses on a narrower spectrum (311–313 nm), which is more effective and associated with fewer side effects. NB-UVB has largely replaced BB-UVB as the preferred form of phototherapy for psoriasis and atopic dermatitis due to its superior efficacy and reduced risk of burns and skin aging [3].

Psoriasis is a chronic autoimmune skin disorder characterized by red, scaly plaques that result from excessive skin cell turnover. UVB therapy is a well-established treatment option, particularly for moderate to severe cases. It helps to reduce plaque thickness, erythema, and scaling by suppressing the hyperactive immune response. NB-UVB is especially beneficial for plaque psoriasis, with many patients experiencing significant clearance after consistent treatment sessions [4].

Atopic dermatitis, a chronic inflammatory skin disease associated with itching, dryness, and eczema-like lesions, also responds well to UVB therapy. Unlike psoriasis, AD is driven by an impaired skin barrier and immune dysregulation, including a Th2-skewed immune response. NB-UVB therapy helps alleviate symptoms by reducing inflammation and strengthening the skin barrier. It is particularly useful for patients who do not respond well to topical steroids or calcineurin inhibitors [5].

UVB therapy is typically administered in controlled clinical settings, with patients undergoing treatments two to three times per week. The duration of each session is carefully adjusted based on skin type, severity of the condition, and response to treatment. While UVB therapy is generally safe, prolonged exposure can increase the risk of burns, premature aging, and, in rare cases, skin cancer. Therefore, treatment should be supervised by dermatologists to optimize benefits while minimizing risks [6].

UVB therapy is often compared with other treatments, including systemic immunosuppressants and biologics. While biologic agents targeting TNF-α, IL-17, or IL-23 offer significant efficacy in psoriasis, they can be expensive and carry risks of systemic side effects. In contrast, UVB therapy provides a cost-effective, localized treatment option with a lower risk of systemic complications. For atopic dermatitis, UVB therapy can serve as an adjunct to topical treatments, particularly in cases resistant to conventional therapies [7].

One of the key advantages of UVB therapy is its ability to provide symptomatic relief without systemic immunosuppression. Unlike oral or injectable medications, UVB therapy does not significantly affect internal organs or require frequent blood monitoring. It is also suitable for long-term management, making it a valuable option for patients seeking non-invasive treatment alternatives [8].

Despite its benefits, UVB therapy has some limitations. Frequent clinic visits can be inconvenient for patients, especially those who require long-term treatment. Additionally, some individuals may not respond adequately to UVB therapy, necessitating combination therapy with systemic agents. The potential risk of UV-induced skin damage also raises concerns, particularly for fair-skinned individuals with a higher susceptibility to burns [9].

Recent advancements in phototherapy include home-based UVB devices, which allow patients to receive treatment in a more convenient setting. Additionally, research is exploring targeted UVB therapy using excimer lasers, which deliver high-intensity, focused UVB light to affected areas while sparing healthy skin. These innovations aim to enhance the effectiveness and accessibility of phototherapy for patients with chronic skin conditions [10].

Conclusion

UVB therapy remains a cornerstone in the treatment of psoriasis and atopic dermatitis, offering a safe and effective

***Correspondence to:** Bryan Omiye, Department of Traditional Chinese Medicine, hina Medical University, Taiwan, E-mail: bryan.omiye@gmail.com

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option for patients with moderate to severe disease. Its ability to modulate immune responses, reduce inflammation, and improve skin barrier function makes it a valuable tool in dermatological care. While challenges such as treatment accessibility and long-term skin risks persist, ongoing research and technological advancements continue to refine phototherapy as a viable treatment for chronic inflammatory skin disorders.

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